

3rd Annual Global Crypto Hedge Fund Report 2021



Contents

Introduction	2
Key takeaways	3
Crypto hedge funds	5
Survey data	6
Investment data	7
Strategy insights	8
Market analysis	10
Assets under management	11
Fund performance	12
Fees	14
Cryptocurrencies	16
Derivatives and leverage	18
Decentralised exchanges	21
Predictions	22
Non-investment data	23
Team expertise	24
Custody and counterparty risk	26
Governance	28
Valuation and fund administration	29
Liquidity and lock-ups	30
Legal and regulatory	32
Tax	33
List of crypto hedge fund survey respondents	35
Traditional hedge funds	37
Hedge funds who are investing in digital assets	40
Hedge funds who do not currently invest in digital assets	44

Introduction

This report provides an overview of the global crypto hedge fund landscape and offer insights into both quantitative elements (such as liquidity terms, trading of cryptocurrencies, and performance) and qualitative aspects, such as best practice with respect to custody and governance.

By sharing these insights with the broader crypto industry, PwC's goal is to encourage the adoption of sound practices by market participants as the ecosystem matures.

For this 3rd annual edition, PwC have partnered with the Alternative Investment Management Association (AIMA) to also survey some of the non-crypto focused hedge funds (referred to as 'traditional' hedge funds in this report). The data on these traditional hedge funds is provided in the second part of this report.

Key takeaways

Crypto Hedge Funds

1 Size of the market and AuM

We estimate that the total assets under management (AuM) of crypto hedge funds globally increased to nearly US\$3.8 billion in 2020 from US\$2 billion the previous year.

The percentage of crypto hedge funds with AuM over US\$20 million increased in 2020 from 35% to 46%.

The average AuM for this year's surveyed funds increased from US\$12.8 million to US\$42.8 million, while the median AuM increased from US\$3.8 million to US\$15.0 million.

The median AuM at fund launch is US\$1 million, indicating that funds have generally seen an impressive 15X increase in AuM.

2 Performance and fees

The median crypto hedge fund returned +128% in 2020 (vs +30% in 2019).

The median best performance strategy in 2020 was discretionary long only (+294%) followed by discretionary long-short (+129%), multi-strategy (+114%) and quant (+72%).

Median management and performance fees remained unchanged at 2% and 20% respectively, average management fees was also stable, at 2.3%, but average performance fees increased from 21.1% to 22.5%.

49% of crypto hedge funds have either a hard or soft lock and 31% have either an investor level or fund level gate.

3 Investor type and average ticket size

The vast majority of investors in crypto hedge funds are either high-net worth individuals (54%) or family offices (30%).

The median ticket size is US\$0.4 million, while the average ticket size is US\$1.1 million.

Over half of crypto hedge funds have average ticket sizes of US\$0.5 million and below.

Crypto hedge funds have a median of 23 separate investors.





4 Fund strategies, activities and trading

The most common crypto hedge fund strategy is quantitative (37% of funds), followed by discretionary long/short (28%), discretionary long-only (20%), and multi-strategy (11%).

Most crypto hedge funds trade Bitcoin 'BTC' (92%) followed by Ethereum 'ETH' (67%), Litecoin 'LTC' (34%), Chainlink 'LINK' (30%), Polkadot 'DOT' (28%) and Aave 'AAVE' (27%).

About half of crypto hedge funds trade derivatives (56%), but short-selling has drastically reduced, from 48% to 28% in 2020. Crypto hedge funds are also involved in cryptocurrency staking (42%), lending (33%) and borrowing (24%).

5 Governance

The percentage of crypto hedge funds using an independent custodian decreased in 2020 from 81% to 76%.

The percentage with at least one independent director on their board decreased from 43% to 38% in 2020.

The percentage of crypto hedge funds using third party research increased from 38% to 47% in 2020.

88% were using an independent fund administrator in 2020, up from 86% in 2019.

6 Location

Funds tend to be domiciled in the same jurisdictions as traditional hedge funds, with the top three being the Cayman Islands (34%), the United States (33%) and Gibraltar (9%).

The most common location for crypto hedge fund managers is the United States (43%), followed by the United Kingdom (19%) and Hong Kong (11%).

7 Non-crypto focused (traditional hedge funds)

Around a fifth of hedge funds are investing in digital assets (21%); the average percentage of their total hedge fund AuM invested in digital assets is 3%. More than 85% of those hedge funds intend to deploy more capital into the asset class by the end of 2021.

Around a quarter of hedge fund managers who are not yet investing in digital assets confirmed that they are in late-stage planning to invest or looking to invest (26%).

In terms of the main obstacles to investing, regulatory uncertainty is by far the greatest barrier (82%). Even those who do invest in digital assets cite it as a major challenge (50%). Client reaction/reputational risk is high (77%) as well as digital assets being outside the scope of current investment mandates (68%). Over half of the respondents said that they don't have enough knowledge of digital assets (64%).

64% of respondents said that if the main barriers were to be removed they would definitely start/accelerate their involvement/investment or potentially change their approach and become more involved.



Crypto hedge funds

This chapter comes from research that was conducted in Q1 2021 across the largest global crypto hedge funds by assets under management (AuM). This section specifically focuses on crypto hedge funds and excludes data from crypto index/tracking/passive funds and crypto venture capital funds.

Survey data and Methodology

This report shares the results of survey-based research conducted in Q1 2021 by Elwood Asset Management, combined with qualitative inputs on sound practices observed within the crypto hedge fund space from PwC's crypto team. The report focuses on actively managed crypto hedge funds which invest/trade in liquid, public cryptocurrencies and other instruments.

This report excludes:

- Crypto index funds (including passive/tracker funds); and
- Crypto venture capital funds (which make equity type investments).

The report excludes exchange-traded funds 'ETFs' and access products.

Given the focus of the report, there were certain participants in the survey whose data we needed to exclude from the final results, as our research showed they were not actively managed crypto hedge funds as described above.

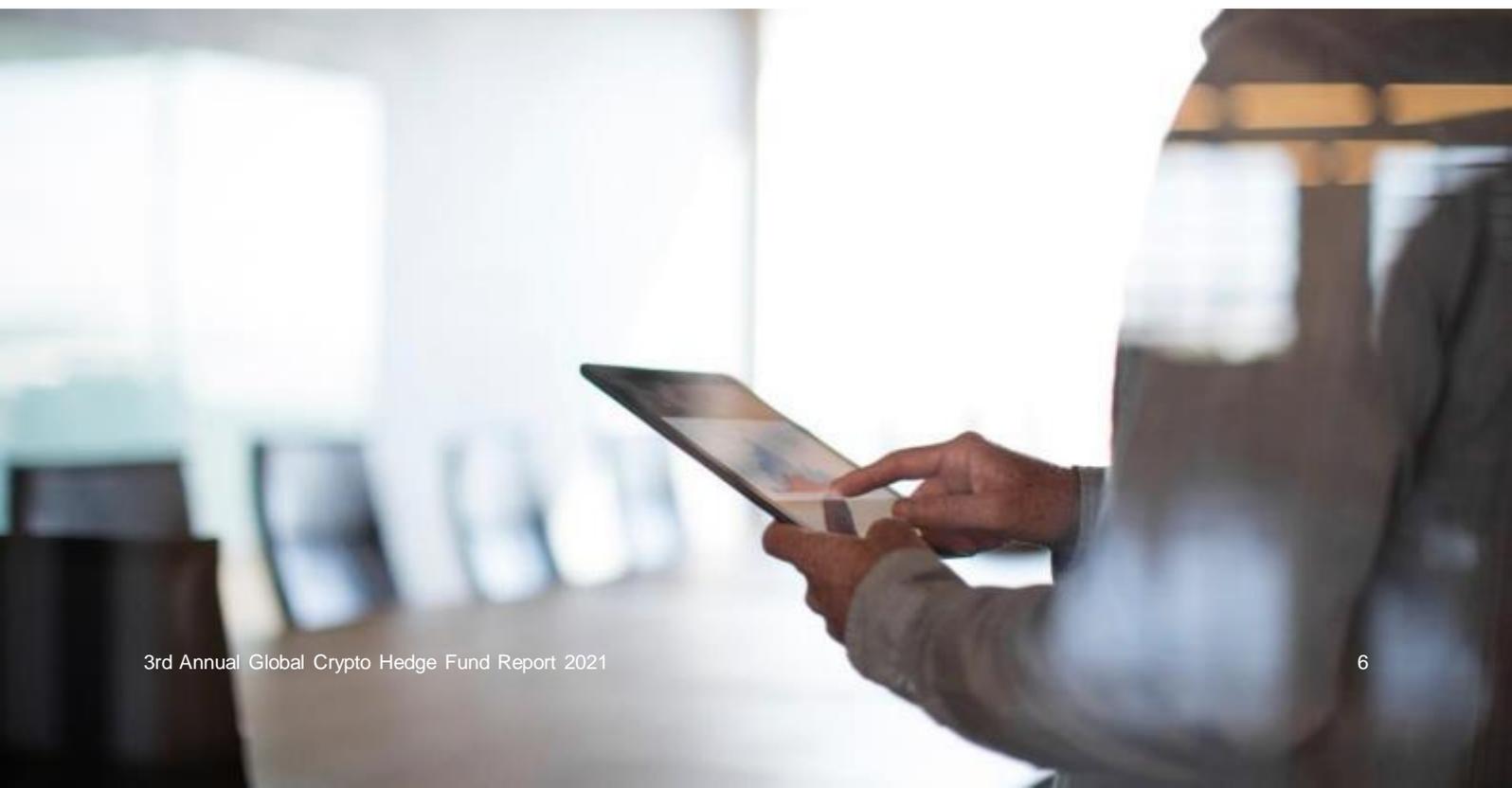
While most crypto hedge funds provided responses to all the survey questions

some were not in a position to provide information on certain topics/questions.

However, all data analysed in this report is based on information provided by a majority of the funds that Elwood surveyed.

There is an inherent element of survivorship bias in the fund universe surveyed, as the report only includes crypto hedge funds that were in operation in Q1 2021. Funds that were forced to shut down prior to this date due to the difficult market conditions of 2019 and early 2020 have been excluded. The data provided in this report, including performance data, has also not been verified by an independent fund administrator or other third party, but was provided by the crypto hedge fund managers directly.

Finally, all participants were asked to give consent to Elwood Asset Management and PwC for their name to be shared in the report. Some firms requested that their name not be shared. Those which have given their consent are listed in alphabetical order in the appendix. However, individual firms have not been linked to any specific comment or data point.



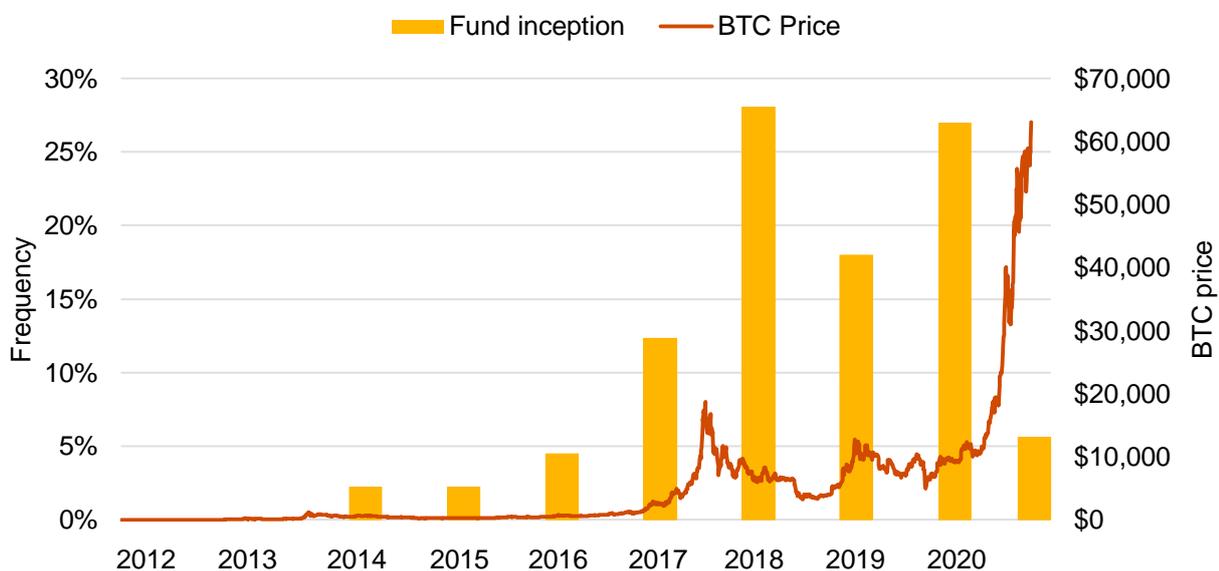
A low-angle, upward-looking photograph of two modern skyscrapers with curved glass facades. The buildings are set against a clear, bright blue sky. The perspective creates a sense of height and architectural grandeur. A yellow rectangular banner is overlaid on the left side of the image, containing the text 'Investment data'.

Investment data

Strategy insights

Our research this year shows that there are between 150 and 200 active crypto hedge funds currently. Our survey results suggest that four in every five of these were launched between 2017 and 2020 (81%).

Launch of new crypto hedge funds appears correlated to the price of Bitcoin



As shown by the graph above, the launch of actively managed crypto funds is highly correlated with the price of Bitcoin (BTC). The price spike in 2018 appears to have been a catalyst for further crypto funds to launch, while the decrease in 2018 led to fewer funds being launched in 2019. 18% of the survey respondents were launched in 2020, when prices were rising again.

We have classified crypto hedge funds according to four broad fund strategies:

- **Discretionary Long Only:** Funds which are long only and whose investors have a longer investment horizon. These funds tend to invest in early stage token/coin

projects, and they also buy and hold more liquid cryptocurrencies. These funds tend to have the longest lock-up periods for investors.

- **Discretionary Long/Short:** Funds which cover a broad range of strategies including: long/short, relative value, event driven, technical analysis and some strategies which are crypto specific, such as mining. Discretionary funds often have hybrid strategies which can include investing in early stage projects. They tend to have a similar lock-up period to the Discretionary long only group.

- **Quantitative:** Funds taking a quantitative approach to the market in either a directional or a market neutral manner. Indicative strategies include: market-making, arbitrage and low latency trading. Liquidity is key for these strategies and restricts these funds to only trading more liquid cryptocurrencies. As a result, these funds typically have the shortest lock-up periods for investors.
- **Multi-strategy:** Funds adopting a combination of the above strategies. For instance, within the limitations set in the prospectus of a particular fund, traders may manage discretionary long/short and quantitative sub-accounts.

Most common strategies of crypto hedge funds



Assuming our dataset is representative of the total crypto hedge fund universe, we conclude that quantitative funds are the most common among crypto hedge funds, making up for just over a third of all currently active crypto funds.

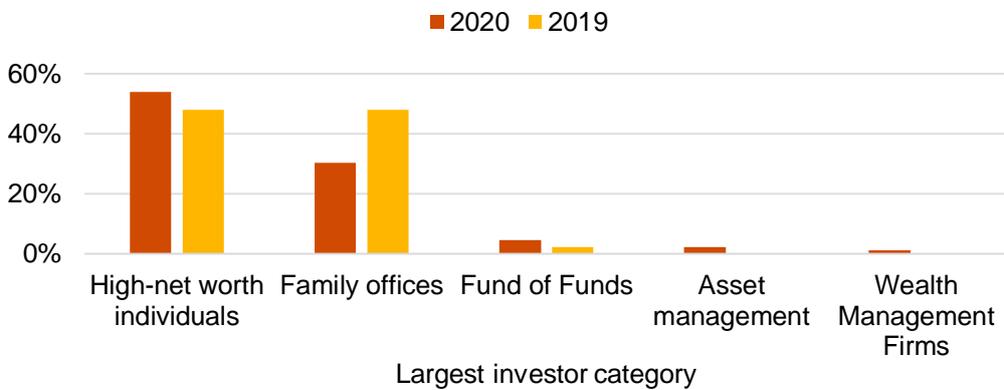
The next two larger categories are discretionary long/short (28%) and discretionary long only (20%), with multi-strategy funds making up a much smaller proportion, at 11%.



Market analysis

Looking at the market for crypto hedge funds, we identified High-net worth individuals 'HNWIs as the most common investor type in crypto hedge funds, with more than half of funds mentioning them as the most common investor type. Family offices come second (30%) and funds of funds, a distant third (4%). Although institutions have been aggressively ploughing into cryptocurrency markets, they are not yet prevalent investors in crypto hedge funds, with only one fund in our sample mentioning them as their main investor type and the top spots still dominated by HNWIs and family offices. Going forward, it is expected that this mix in the investor base while gradually change with the increased levels of interest from institutional investors.

Most common investors in crypto hedge funds

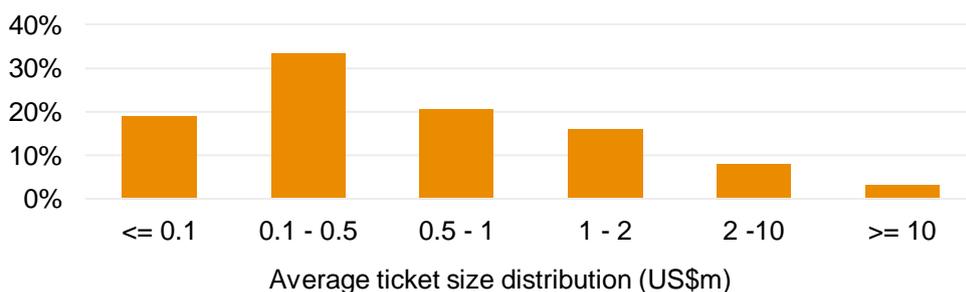


Number of investors in crypto hedge funds and average ticket size

	Average	Median
Number of investors	70.1	23.0
Average ticket size (US\$m)	1.1	0.4

The median number of investors in funds is 23 and the average is 70.1, while the median ticket size is US\$0.4 million and the average is US\$1.1 million. The graph below shows the distribution of the average ticket size and suggests that half of funds have tickets below US\$0.5 million.

Average investor ticket size distribution of crypto hedge funds



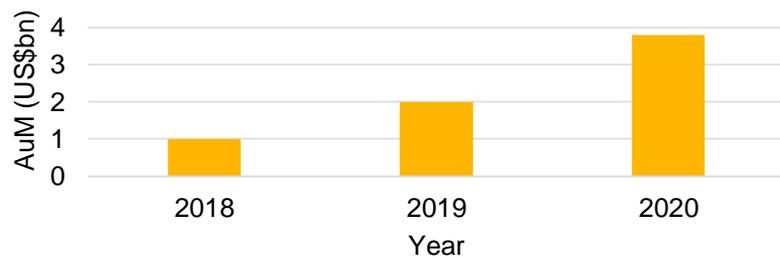


Assets under management

Average and median AuM of crypto hedge funds

	Average	Median
2020 year-end AuM (US\$m)	42.8	15.0
2019 year-end AuM (US\$m)	12.8	3.8
AuM level at launch (US\$m)	11.3	1.0

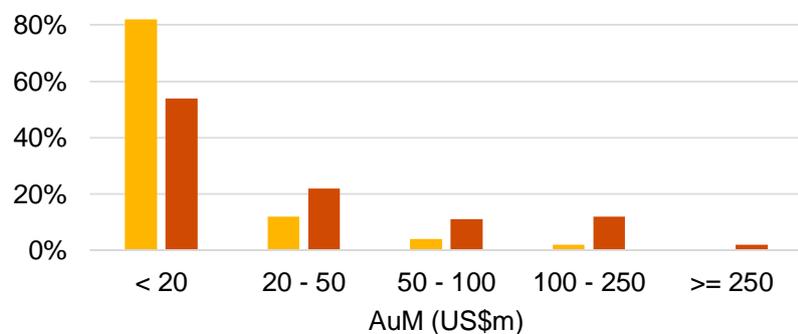
We estimate that the total AuM of crypto hedge funds globally increased to over US\$3.8 billion in 2020, just over US\$2 billion in the previous year. This data is based on the AuM responses given to us by the surveyed fund managers with certain adjustments due to some funds having not disclosed their total AuM.



The graph below shows the distribution of AuM held by individual crypto hedge funds. Although there are many smaller funds, assets are still highly concentrated among the largest hedge funds. Our survey showed that the top-10 largest crypto hedge funds control 63% of total AuM.

Crypto hedge fund AuM distribution

■ 2019 year-end AuM ■ 2020 year-end AuM



Also, the effect of the 2020 crypto bull market is clearly visible in the data above, with the number of funds with smaller AuMs being considerably lower in 2019 than in 2020, while, at the other end of the spectrum, the number of funds managing larger amounts of assets is considerably higher in 2020.



Fund performance

2020 year-end crypto hedge fund performance by strategies

	Average	Median
Quantitative Long / Short	+87%	+72%
Discretionary Long / Short	+202%	+129%
Discretionary Long Only	+231%	+294%
Multi-strategy	+108%	+114%

The table above shows a breakdown of the performance by investment strategy. On a median basis, quantitative long/short funds have considerably underperformed other strategies (72%), while discretionary long only out on top (294%). This is not surprising considering the market rally that took place in the fourth quarter of 2020.

2020 vs 2019 crypto hedge fund median performance comparison

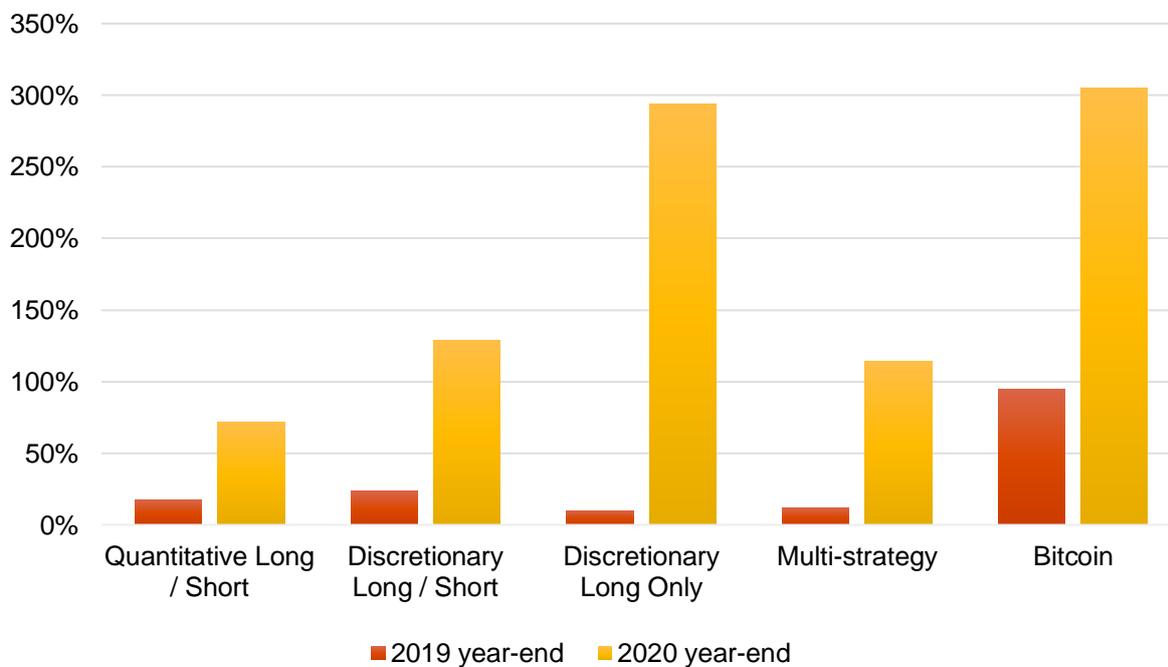
	2020	2019
Quantitative Long / Short	+72%	+17%
Discretionary Long / Short	+129%	+23%
Discretionary Long Only	+294%	+10%
Multi-strategy	+114%	+12%

Overall, the crypto hedge funds in our sample had a median performance of 184% last year, vastly higher than 2019 (17%) and, while different strategies have yielded different levels of performance, neither was

able to outperform BTC itself, which went up 305% during 2020. A similar picture can be drawn from 2019 data, when our sample had a median performance of 17%, against the BTC rally of 95% in that year.



2020 vs 2019 crypto hedge fund median performance by strategy



Our data also suggests that, while discretionary long-only funds were not able to capitalise on the 2019 cryptocurrency market recovery, lagging behind other strategies, they performed exceptionally well in the 2020 bull market. On the other hand, long-short underperformed, as one would expect bearish bets to do in a heated market.

Finally, it is important to note that, while the chart above does show funds underperforming their main benchmark, we are not able to tell whether they were able to offer higher or lower volatility in relation to cryptocurrencies, which could make crypto hedge funds more attractive investment propositions, despite the lower returns.

Fees

Crypto hedge fund management and performance fees

	Average	Median
Management fees (%)	2.3	2.0
Performance fees (%)	22.5	20.0

Median fees were the same as 2019: a 2% management fee with a 20% performance fee. Average management fees remained the same (2.3%) but the average performance fee increased (from 21.1% to 22.5%). The slight increase in performance fees can be simply attributable to the fact that fund managers were able to command higher performance fees in a bull market.

Going forward, we expect funds to incur higher costs, as regulations are likely to become more stringent and investors demand higher institutional set-ups. However, the growing number of funds, as we saw in 2020, is likely to increase competitive pressures between managers, which would eventually seek to lower their fees in order to attract new clients, especially institutional investors. As a result, investors are likely to benefit from increased investment options, while funds are likely to have their profits squeezed by lower margins and increased competition.





Despite the slight increase in management fees, crypto funds will still find it challenging to break even, unless they are able to attract enough investors, keeping in mind that the median crypto hedge fund in 2020 had US\$15 million in AuM.

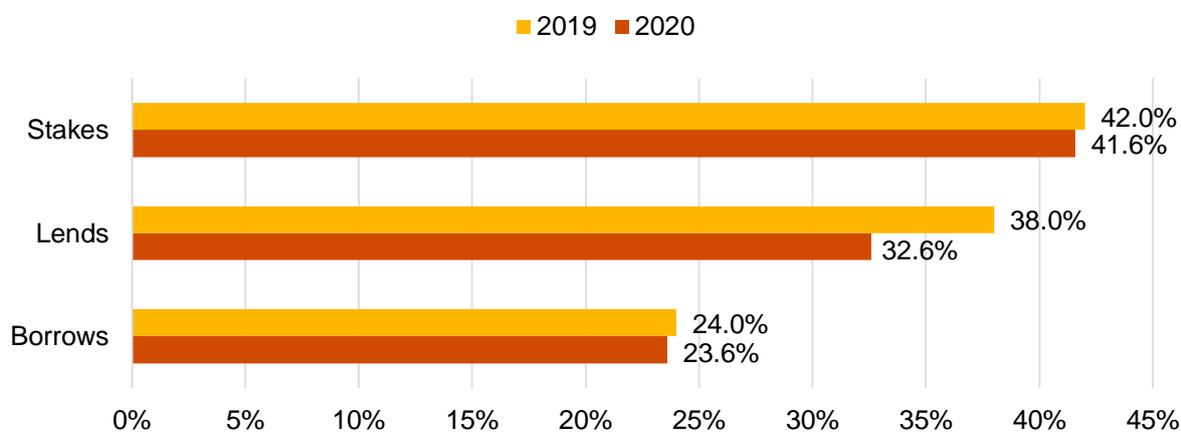
To illustrate this point, if the median crypto fund manages US\$15 million and charges a 2% management fee, then they have US\$300,000 in annual revenue. This is unlikely to be sufficient to sustain a business operation, especially considering that the median fund has a payroll with six employees. As a result, some funds are exploring ways to increase their income in order to cover costs. For example, we have seen quantitative long/short funds diversify their approach and start market making, and early-stage focused funds take on advisory roles for new projects, while other funds seek to raise additional capital by selling stakes in their General Partner (GP). Some funds remain focused on their core strategy and hope to cover costs via the performance fee. In 2020, this would have been extremely successful, as the median fund returned 128% and would have been able to generate an additional US\$3.8m in income, assuming the above mentioned median AuM. While this approach looks positive at first, the downside is that managers may be inclined to take additional risks, especially towards year-end if they are still under their high-water mark.

Cryptocurrencies

Looking at how crypto hedge funds are using Bitcoin and other cryptocurrencies other than for investment purposes, we asked whether they stake, lend or borrow digital assets.

The activities listed below were highlighted by the funds.

Percentage of crypto hedge funds involved in staking, lending and borrowing



The number of funds staking, borrowing and lending has remained stable across the board, despite a slight drop in the percentage of funds involved in lending in 2019.

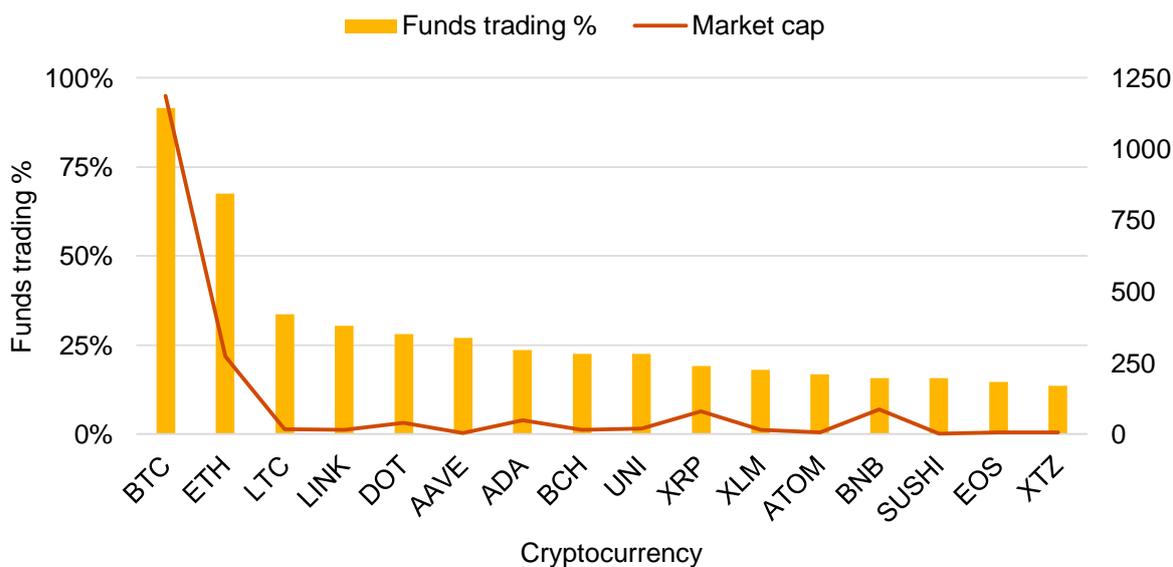


Looking at daily trading activity attributed to BTC, 56% of the funds in our survey reported that at least half of their daily cryptocurrency trading volume is BTC, while 15% of funds are pure Bitcoin funds and trade only BTC.

We also asked funds to name their top traded altcoins by daily volume (stablecoins were excluded). We found that the top five were: Ethereum (ETH, 67%), Litecoin (LTC, 34%), Chainlink (LINK, 30%), Polkadot (DOT, 28%) and Aave (AAVE, 27%).

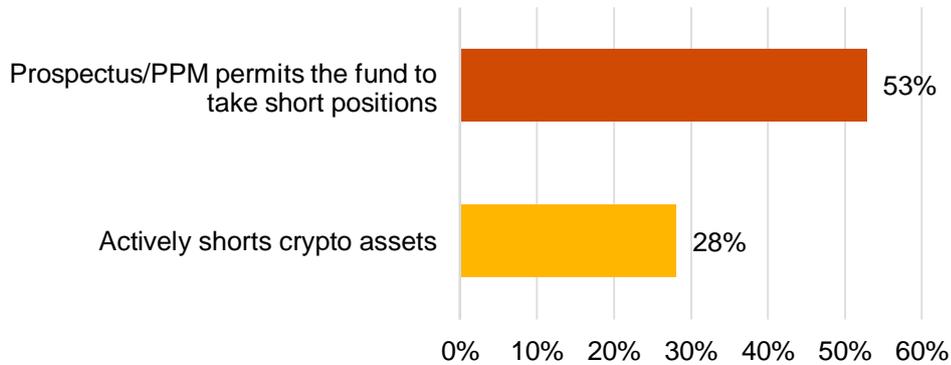
Among the top 15 traded altcoins, some of them are considerably more popular than their market capitalisation would suggest. Litecoin and Chainlink are the second and third most traded altcoins, but their market capitalisations are far lower than Polkadot and Cardano, which fare lower in the trading ranks. Aave, the fifth most traded altcoin by hedge funds, has a market capitalisation of US\$5 billion, compared to Cardano's US\$48 billion, which ranks one position below it.

Cryptocurrencies traded by crypto hedge funds and their market cap

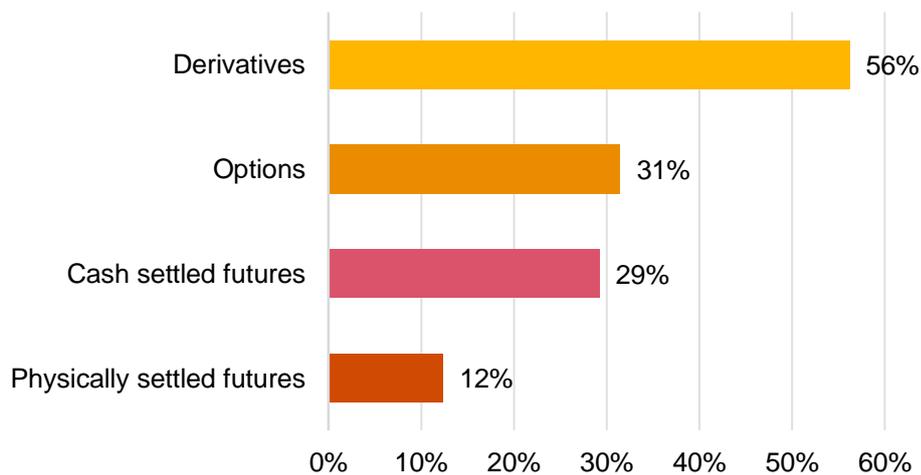


Derivatives and leverage

Crypto hedge funds and shorting



Crypto hedge funds and derivatives



Derivatives can either be used as hedging or alpha-enhancing instruments. 2020 was a very busy year in this space. Bitcoin futures open interest saw a substantial rise, indicating increasing institutional interest in cryptocurrencies. As a result, existing derivatives exchanges sought to enrich their offerings, while a number of new players entered this space, leading to a decrease in the concentration of trading volume distribution between exchanges. Towards the end of the year, Bitcoin futures notional trading volumes exploded and trading currently includes billions of US dollars per day, up from hundreds of millions a year ago.

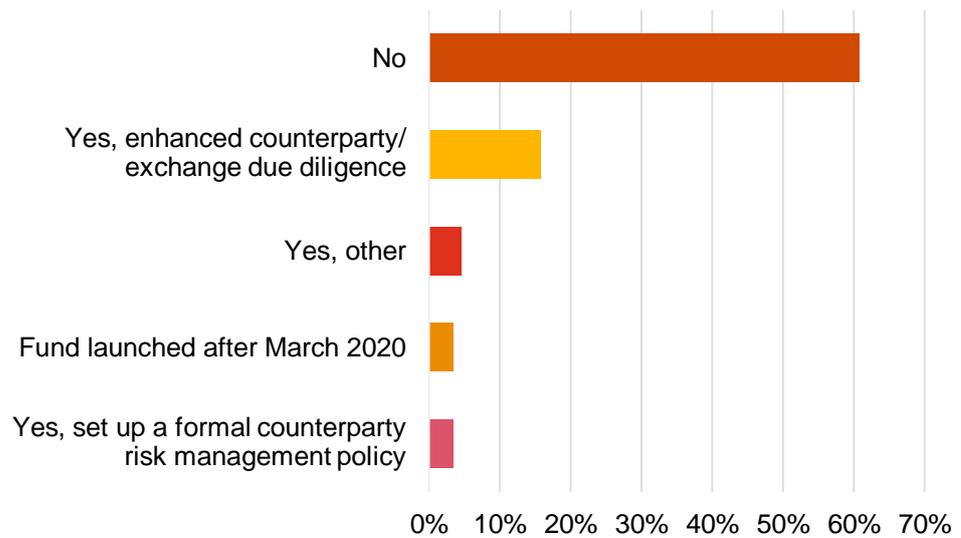
The increased number of players and liquidity is rapidly transforming the cryptocurrency derivatives market, enabling widespread institutional adoption, which will, in turn, allow exchanges to offer more sophisticated products, further allowing crypto hedge funds to take advantage of mispricing and arbitrage opportunities.





Our 2020 data shows that more than half of the surveyed funds use derivatives, with options being the most commonly used tool (31%). However, in contrast with our previous survey, funds are taking less short positions, with only 28% stating they actively short cryptocurrencies. This is consistent with the extremely bullish views in this market, especially from Q4 2020 and into Q1 2021, when the survey was conducted.

Changes in risk management policy after the March 2020 crypto market crash

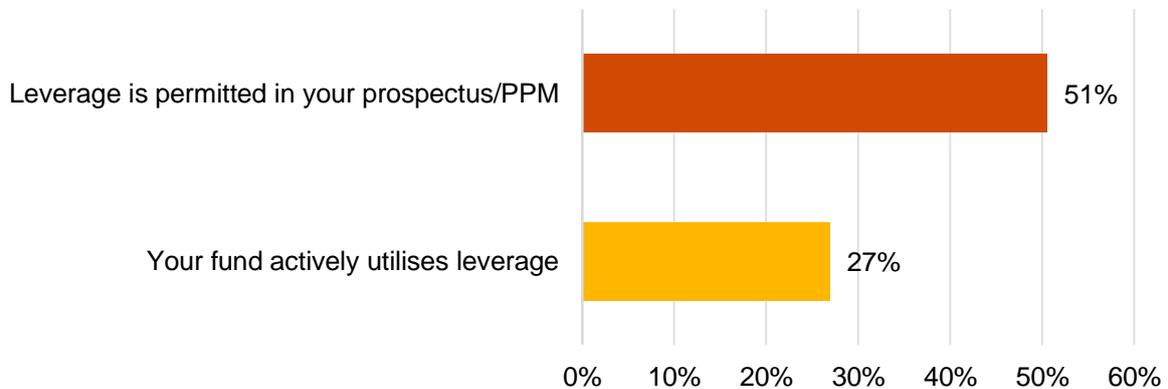


In March 2020, Bitcoin crashed to US\$4,904, 53% below its intra-year peak of US\$10,344 in February. The drop was particularly abrupt on the week of 9th of March, when prices collapsed by 27% in a single day.

In light of this event, we asked the crypto hedge funds whether they put new risk management policies in place. Most funds (61%) stated that no changes had been made, with some funds mentioning that they already had risk management systems in place. Among the funds that did implement new policies, the most common was establishing counterparty or exchange due diligence so as to not be exposed to events such as the one described above. Others implemented a formal counterparty risk management policy and changes in management techniques.



Crypto hedge funds and leverage



In bull markets, managers are likely to compound their returns by increasing leverage and taking larger exposure to their underlying positions. Our data shows that about half (51%) of funds are allowed to use leverage and, although we are seeing a rise in financial institutions offering

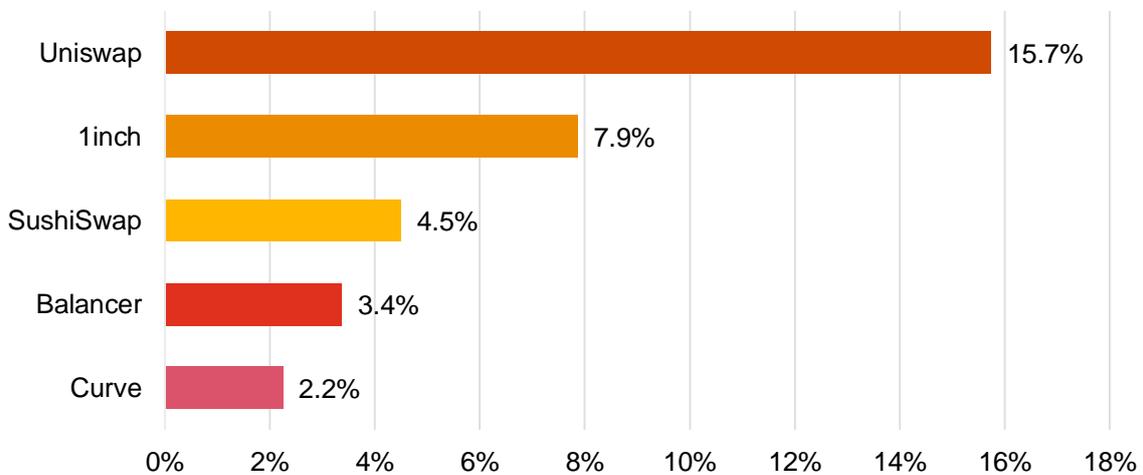
cryptocurrency collateralised loans, several obstacles remain in order for it to become more widespread (e.g. high collateral requirements, inherent risk, price volatility). As a result, only 27% of crypto hedge funds actively use leverage, up from 19% in 2019.

Decentralised exchanges

Decentralised finance (DeFi) had extraordinary growth in 2020 and was the year's buzzword within the cryptocurrency community. DeFi protocols aim to render peer-to-peer financial services, which allow cryptocurrency trading, loans, interest accounts without the use of traditional banks and traditional financial intermediaries.

Last summer, DeFi started booming and, between April 2020 and April 2021, the trading volume on these platforms grew more than 90-fold, with Uniswap making up for half of the DeFi market volume in April 2021.

Top 5 most used decentralised exchanges by crypto hedge funds



Our data shows that 31% of crypto hedge funds use decentralised exchanges, with Uniswap being the most widely used (16%), followed by 1inch (8%) and SushiSwap (4%).



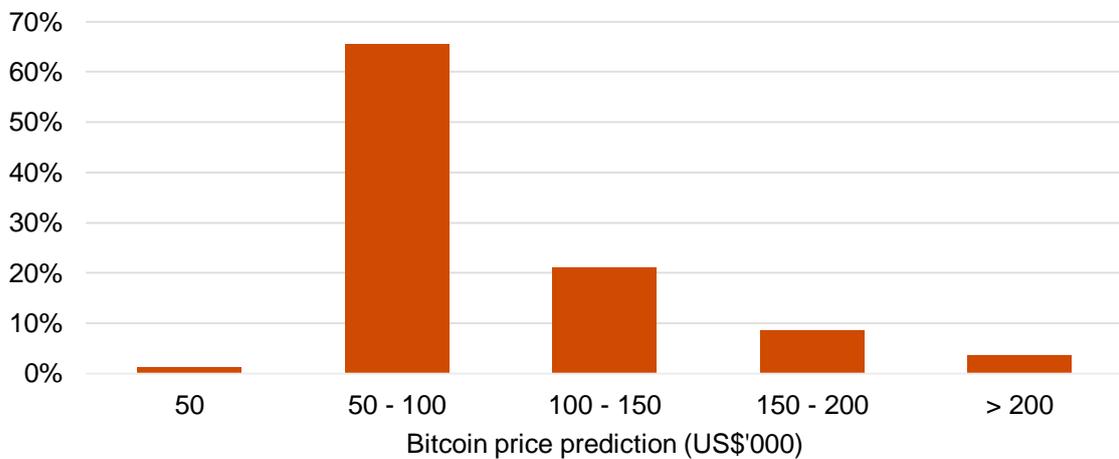
Outlook or Fund manager predictions

This year, we gave crypto hedge fund managers the opportunity to provide their views on where the price of Bitcoin and overall cryptocurrency market capitalisation would be on 31 December 2021.

Our data shows that managers remain bullish on Bitcoin. At the time of the closure of our survey, the Bitcoin price was hovering

around US\$59,000, and all but one respondent predicted a value higher than that, with the median predicted price being US\$100,000. In fact, the majority of predictions were in the US\$50,000 to US\$100,000 range (65%), with another 21% predicting prices would be between US\$100,000 and US\$150,000.

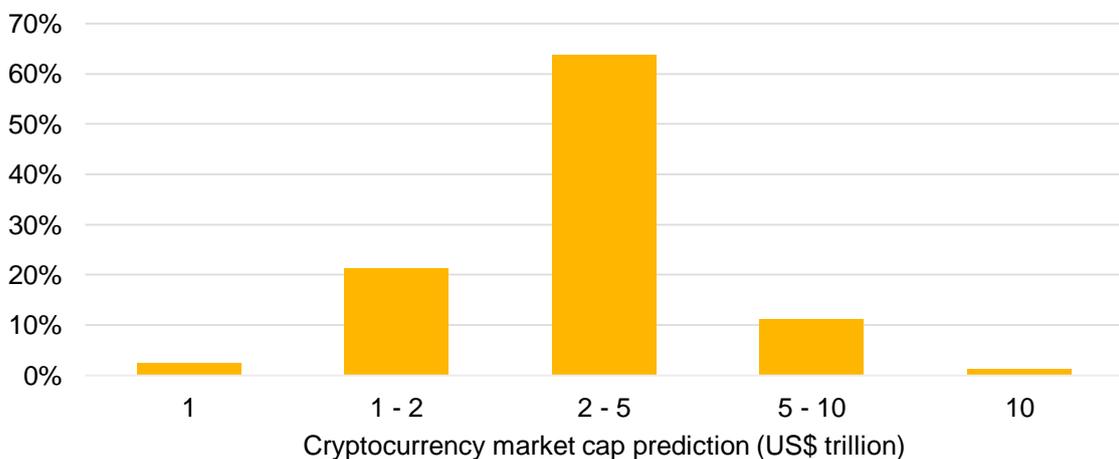
Distribution of Bitcoin price predictions for the end of 2021



With regards to the total cryptocurrency market capitalisation, by the time we closed our survey, the crypto market was worth approximately US\$2 trillion. Fund managers are also bullish, with over 76% of funds

estimating that market capitalisation would finish the year above current levels, with the median predicted level at US\$3 trillion, and most forecasts falling in the US\$2 trillion to US\$5 trillion range.

Distribution of cryptocurrency market cap predictions for end of 2021



An aerial photograph of a dense urban skyline, likely Hong Kong, featuring numerous high-rise buildings and green spaces. A prominent yellow rectangular box is overlaid on the center of the image, containing the text "Non-investment data".

Non-investment data



Investment Team expertise

Change in crypto hedge fund average team size and cumulative years of investment management experience

	2020 Average	2020 Median	2019 Average	2019 Median	2018 Average	2018 Median
Team size	7.6	6	8.7	6	7.5	6
Cumulative years of team investment management experience	60	40	50.1	40	24	20

In 2020, the average size of the investment teams marginally decreased from 8.7 to 7.6 people, while the average number for cumulative years of investment management experience has increased from 50 to 60. This suggests that there is an increasing number of experienced investment professionals entering into this space, thus leading to financially savvier crypto fund teams. But it is possible that there may also be survivorship bias where crypto funds that closed during the previous year had a higher proportion of junior staff. Additionally, it could also mean that newer funds are being established that had fewer but more experienced staff at the initial stage.

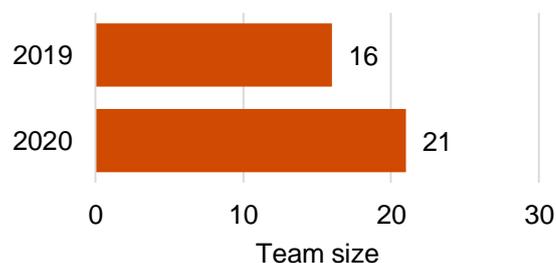
We expect this trend to continue where we see experienced finance professionals enter the crypto space as the industry evolves and matures.

An investment team with 'traditional' asset management experience will likely give investors, as well as regulators, greater confidence that the fund is being managed in a professional and compliant manner.

Experienced, non-investment professionals are also critical for the smooth running of the fund and its operational set-up. For example, a Chief Operating Officer (COO) or Head of Compliance with years of experience in the 'traditional' asset management world will be well-versed in applicable rules and regulations and the importance of investor protection. As previously mentioned, due to the particular nature of crypto assets, having a Chief Technology Officer (CTO) with a strong tech background is often essential.

Cumulative years of team crypto/blockchain experience

	2020 Average	2020 Median	2019 Average	2019 Median
Cumulative years of team crypto/blockchain experience	21	19	16.0	14.5



Compared to 2019, we have seen a continued increase in the cumulative years of team/blockchain experience, in particular it has grown from 16 to 21 years. We expect this number to grow as individuals continue to gain more experience in this niche field

and as funds increasingly seek to hire individuals with deep crypto and blockchain experience (e.g., researchers, consultants, engineers). This is likely to give funds competitive edge, a better understanding of a fast changing and complex market.

Percentage of crypto hedge funds using third party research

	2020	2019	2018
Use of third party research	47%	38%	7%

In 2019, our data showed that 38% of the funds surveyed used third party research. While funds may have historically relied heavily on proprietary valuation models, third party research in recent years have become more available as the industry continues to grow.

crypto assets making it challenging for in-house teams to cover the whole market themselves. Increased number of dedicated crypto research providers offering targeted research and analysis and managers may find it more efficient to outsource certain parts of their due diligence process. They can then focus their attention and energy on specific areas of expertise where they have an edge and can generate alpha.

This year, our data shows a near 10% increase in the number of funds using third-party research. This may be due to a number of factors, such as the growing universe of





Custody and counterparty risk

Percentage of crypto hedge funds using an independent custodian

% of funds using custodians by strategy	% (2020)	% (2019)
Quantitative Long / Short Crypto	64%	74%
Discretionary Long / Short Crypto	84%	88%
Discretionary Long Only Crypto	83%	89%
Multi Strategy	80%	88%
Quantitative Long Only Crypto	100%	n.a.

In the traditional fund management space, using an independent third-party custodian is expected. There is a large number of established players, from licensed custodians to prime brokers, who can take custody of fund assets. In crypto, this is not as straightforward due to the complexity of maintaining private keys, multi-signature wallets, hot/cold wallet set-ups or other innovative ways to hold the private key of fund's crypto assets.

For funds using such a self-custody approach, having the in-house technology and expertise to design and monitor the self-custody set-up is also very important.

Compared to the 2019 data, the use of independent custodians has decreased slightly. 76% of funds are now using one or more independent custodians (either third party or exchange custodians), down from 81%.

Whilst it is difficult to determine what is causing, we believe that it may be due to the increased levels of comfort that many crypto hedge funds may have towards their crypto exchange and other counterparties. Also, it may be due to the increased levels of usage of decentralised exchanges.



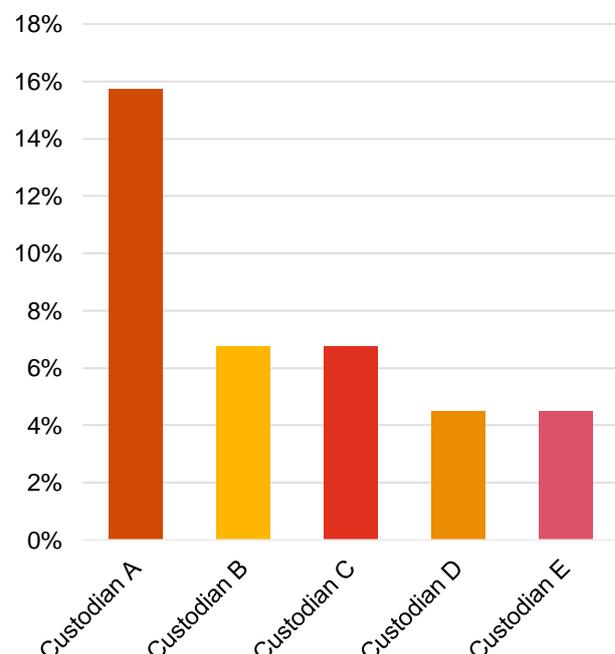
It is important to remember that crypto quant funds traditionally leave their assets directly with the various exchanges as they trade continuously. However, for these quant funds, having a well-defined and enforced risk management policy is likely to be more important than having a custodian. Conducting regular counterparty risk assessments on these exchanges is also becoming important, as institutional investors will likely focus on this area as part of their operational due diligence.

Given the relevance of these developments, it is interesting to examine the overall crypto custody landscape. From the chart below, we can see that there is no 'market leader' and that the industry is fragmented. Our data shows that the most frequently named custodian serves only 15% of the crypto hedge fund universe in our report. While this data weighs each fund equally (not factoring in AuM), we still consider it relevant as it shows how fragmented the custodian ecosystem is.

Some of the larger hedge funds will have more than one custodian. There are many reasons for this. Some do it for counterparty risk management reasons, especially considering the increased hacking risks in the industry. Others may require a second custodian due to their primary choice not offering custodial services to their full asset list. Unfortunately, onboarding a second custodian is not always possible for smaller funds due to the minimum monthly fees that are added to the fund expenses, which could significantly impact their net performance.

We also note that the vast majority of custodians used by funds are regulated or licensed in some form. This is a positive development for the industry and indicates the further institutionalisation of the space. In addition, a handful of custodians also have System and Organisation Controls (SOC) reports (or their ISAE 3402 equivalent), which are different from financial audits. These reports provide a level of transparency around financial reporting (SOC 1/ISAE 3402) and operational controls (SOC 2) and help to build customer trust in their risk management framework. We expect to see an increase in the number of custodians that obtain such public assurance reports. This should give comfort not only to investors in funds which use these custodians but also to the funds' service providers.

Most frequently used crypto custodians among crypto hedge funds



Governance

Percentage of crypto hedge funds with independent director

	2020	2019	2018
Independent director on board	38%	43%	25%

Having independent directors on a fund board is critical, especially when difficult decisions need to be made that will impact investors. For example, whether a side pocket needs to be set up to hold certain assets or whether restrictions need to be imposed on investor redemptions. In the crypto space, critical decisions are exacerbated by volatility issues and illiquid assets.

In 2021, we have seen a decline in the percentage of crypto hedge funds with an independent director on their board from 43% to 38%. Whilst difficult to pinpoint why this occurred, we believe that it may be due to the rising markets in 2020

and the great returns being generated by crypto hedge funds which may have made many of the investors more forgiving of such requirements.

As the institutionalisation of the industry continues and the de facto requirement by institutional investors to have independent directors on the boards of the funds, we expect this percentage to increase. The wider availability of board directors with relevant expertise and knowledge of the space will also be a driver of this trend. In the early years these candidates were a rare commodity. But now, as the industry matures, there are more candidates to choose from. This trend is likely to have a positive impact on funds' ability to attract institutional investors and is another development that should continue as the industry becomes more institutionalised.



Valuation and fund administration

Percentage of crypto hedge funds using an independent fund administrator

	2020	2019
Use of independent fund administrator	88%	86%

An independently verified Net Asset Value (NAV) is a crucial piece of information for fund auditors as well as investors, and we expect to see more developments in this area. We are happy to see that over 88% of the crypto hedge funds in our report this year use an independent fund administrator.

It is very unlikely that institutional investors will select any fund without an independent administrator. While this was acceptable in the early days of the industry, there is no excuse for a crypto hedge fund to calculate its own NAV each month. We expect only a very restricted number of funds, such as those with small AuM or who hold niche crypto assets, to be able to value part of their portfolio themselves.

Regardless of the choice of fund administrator, the valuation policy needs particular focus. Most funds will have their valuation methodologies and frameworks set out in the PPM. It is important for any fund to ensure that it complies with what is set out in its documentation. Management fees are determined based on NAV and performance fees are typically charged on NAV appreciation over a set period (e.g., above a 'high-water-mark').

Investors expect a monthly NAV to be available and verified by an independent, reputable fund administrator. Cryptocurrency exchanges can provide independent price quotes for certain crypto assets. But for those portfolios made up of less liquid crypto assets, managers may have to source a valuation from an independent third-party which satisfies the requirements set out in the Private Placement Memorandum (PPM).

However, being able to accurately value a crypto fund remains challenging. This is particularly true for funds that hold illiquid tokens or crypto investments via Simple Agreement for Future Tokens (SAFTs). There are also details that are important for funds trading some of the more liquid crypto assets, such as: the cut-off time for valuation (crypto markets operate 24 hours a day) or how many and which price sources to use (the same crypto asset may be priced differently at different exchanges globally).



Liquidity and lock-ups

The liquidity and lock-up terms of the crypto hedge fund universe are largely similar to the previous years. Quant funds provide the most liquid fund terms and multi-strategy funds the least. Quant funds trading liquid exchange-listed crypto assets can provide better liquidity in relation to investments in early-stage projects or multi-strategy funds, where managers need to consider the various portfolio strategies and instruments ahead of executing trades.

One surprising takeaway is that we are seeing hard locks (where an investor is not allowed to redeem until the end of the lock-up period) and soft locks (where an investor is allowed to redeem early by paying a penalty) being used across the various fund strategies, with nearly a third of the funds (31%) having one or the other.

Although hard locks are commonly used in situations where liquidity could be an issue, many liquid quant funds have some in place. Also, it may be that some funds were able to negotiate fee reductions via side letters in exchange for locking up their capital. As the industry matures and becomes more competitive, it will be interesting to see whether new crypto hedge fund vintages result in a change in the mix of fund terms that we see below.

Average crypto hedge fund redemption terms by strategy (2020)

Strategy	Redemption frequency	Redemption notice period	Lock up period	Hard lock	Soft lock
Discretionary Long / Short	Monthly	30	1 year	30%	21%
Discretionary Long Only	Monthly	30	1 year	32%	20%
Multi-strategy	Monthly	30	1 year	22%	17%
Quantitative	Monthly	30	1 year	20%	40%

We have not analysed fund liquidity overall, as each strategy is different and has its own liquidity constraints, however we have done an analysis of gates.

Gates are a useful mechanism that allow fund directors to put in place restrictions in very limited circumstances, which limit the speed at which investors can redeem. The main purpose of a gate is not to protect the fund manager, but rather the remaining shareholders in the fund, so as to ensure that assets do not need to be liquidated in a fire sale solely to meet the large number of redemption requests.

There are two main types of gates:

- Fund-level gates
 - Triggered only when redemptions are over a certain threshold of the fund (e.g. when over 25% of fund NAV or of total number of shares in issue at a particular redemption day).
 - All investors generally receive their redemptions on a pro-rata basis depending on the number of investors redeeming, but the total redemption amount is capped (e.g. at 25% of the NAV or total number of shares).
 - As there is no priority, the scaled-down redemption request will be treated on the next redemption day on a pro-rata basis with any new redemption requests.
- Investor-level gates
 - Always applied when an investor chooses to redeem (e.g. investors can only redeem 25% of their investment each redemption day regardless of whether other investors are redeeming at the same time).

Our data shows that the majority of crypto hedge funds have some sort of gate mechanism in place. Whether the industry will move towards investor level or fund level gates over the coming years is still unclear.

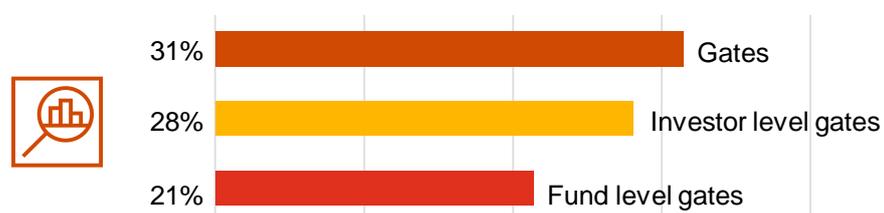
Fund-level gates may be seen as fairer, as they can only be triggered if a certain threshold of redemption requests on a particular redemption day is crossed. For example, if there is only one investor redeeming, with limited impact on the fund, then there is no reason for a gate to be imposed in the first place. The downside for an investor is that they do not know whether their redemption request will be fulfilled, which may cause some cash management issues if the investor has their own liquidity requirements. Fund-level gates also put more pressure on the fund's board of directors, as they are responsible for deciding when to enact the gates.

Investor-level gates can be seen as somewhat favouring the fund manager at first glance, as the investor will never be able to redeem his capital in one go, but rather over a set number of months, during which time the fund manager will continue to collect fees. However, many investors prefer investor-level gates. Although they cannot redeem their full investment in one go, they know exactly what amount they will receive, which helps their cash flow management.

Generally speaking, investors are now comfortable with both gate mechanisms. In practice, the final decision as to which one to put in place is often made after consulting with the lead or Day 1 investor on their preference.

We will continue to track this data over the coming years.

Percentage of crypto hedge funds with redemption gates



Legal and regulatory

Top Crypto Hedge Fund Domiciles		Top Crypto Hedge Manager Location	
Cayman Islands	34%	United States	43%
United States	33%	United Kingdom	19%
Gibraltar	9%	Hong Kong	11%
British Virgin Islands	8%	Cayman Islands	8%
Luxembourg	3%	Switzerland	7%
Liechtenstein, Netherlands, Singapore, Isle of Man and Australia	<5%	Spain, Gibraltar , Singapore, Isle of Man, Malta, Canada and Australia	<5%

Compared to the previous year, the Cayman Islands and the United States have maintained their position as the top-two places where crypto hedge funds are domiciled. With that being said, their market share has declined overall, from (Cayman Islands - 42% to 34%) and (United States - 38% to 33%). We have also seen Gibraltar overtaking the BVI and Luxembourg pushing down Liechtenstein with the others.

Our data last year showed that the Cayman Islands was the second jurisdiction in terms of number of crypto hedge fund managers after the United States. However, we believe that this data was misleading: despite the investment management entity being based in the

Cayman Islands, very few of the managers were physically based there.

For this reason, we look to where the investment team is physically located. Using this new approach, our data shows that two thirds of crypto hedge fund managers are located in the United States and the United Kingdom - two existing financial centres with a large number of traditional hedge fund managers. A significant number of fund managers are also located in Hong Kong Gibraltar and Switzerland.

We would expect this to remain mostly constant unless we see particular governments or authorities implement come up with policies to try and attract such fund managers to their jurisdictions.



Tax

A crypto hedge fund and its manager will need to consider many of the same tax issues that need to be considered when structuring, establishing and operating a traditional hedge fund and fund manager. These include but are not limited to:

- Choice of fund vehicle and ensuring that the fund is set up to be attractive to investors with different tax attributes;
 - If the hedge fund will have non-US and US investors, depending on investor mix, the relevant structuring considerations may span a wider spectrum. For instance, considering the use of a flow-through entity versus a blocked structure to mitigate double taxation and to preserve tax attributes of the character of income derived by entity, unrelated business taxable income considerations for tax-exempt investors, and effectively connected income considerations for non-US investors where applicable.
- Operating issues with respect to contributions, taxable income allocations, distributions, transfers, and redemptions;
- Managing fund and investor tax reporting as well as CRS/FATCA and other reporting;
- Consider tax reporting issues based on the nature of underlying activities of the hedge fund, including the application of passive activity rules, deductibility of expenses, collateral issues specific to various types of investors, wash sale rules, straddle rules, short sale rules, bond discount and premium amortisation, foreign currency transaction rules, among others. In addition, US investors may face various tax issues in the offshore fund context including the passive foreign investment company and controlled foreign corporation rules which are designed to prevent avoidance of current tax on income and character conversion.
- Understanding the capital gains and withholding tax implications of different trades (if any);
- Choice of entity of the fund manager and structuring the performance fees or other compensation structure used to incentivise key staff of the manager;
- Dealing with transfer pricing between any connected entities responsible for managing the fund.

However, there are a number of areas where crypto funds have tax issues that are unique. These include:

- Different and unique sources of income/gains - crypto hedge funds can have a variety of sources of income that may require special considerations from a tax perspective (e.g., staking income, mining income, token rewards, coin lending, hard fork, chain split, and airdrops). The taxation of the types of crypto and the such income/gains derived will often be jurisdiction-specific and, in many jurisdictions, the tax treatment is not yet clear. The tax characterisation of crypto held by hedge funds may evolve from initial acquisition throughout the holding period until disposal as certain events occur.
- Fund tax safe-harbours - if the fund is established in a different jurisdiction to the investment team, then detailed consideration will need to be given as to whether the activities of the investment team could result in tax obligations arising for the fund. Many jurisdictions have safe harbours in place to prevent funds from suffering tax in the location of the investment team as a means of encouraging the development of their local investment management industries. In many cases, these exemptions were written into law prior to the advent of digital assets and therefore there is significant uncertainty as to whether many safe-harbor regimes or fund exemptions can be relied upon for crypto funds. For example, regimes such as the UK's investment manager exemption,

Hong Kong's unified fund exemption and Singapore's fund exemption include lists of qualifying investments. Many crypto assets (particularly payment tokens and utility tokens) may not qualify as qualifying investments.

- Because of these uncertainties, extra care is needed, and there may be more uncertainty in many of the tax positions that crypto funds take on. As the market develops and becomes more institutional, managers should expect an increased focus on this topic from investors.



List of crypto
hedge fund
respondents

List of crypto hedge fund respondents (in alphabetical order)

Alpha Sigma Capital	Digital Asset Risk Management Advisors (DARMA Capital)
Aludra Capital	Galois Capital
Amber Group	Hilbert Capital
Apollo Capital	Hyperion Decimus, LLC
Astronaut Capital	Incrementum AG
Attis Capital LLC	KR1 plc
BitBull Capital	L1 Digital
BitCapital	Nickel Digital
Block Asset Management	North Block Capital
BlockTower Capital	ODIN88 Asset Management, LLC
Bloomwater Capital	Off the Chain Capital
Blue Block Group	Panxora Management Corporation
Cambrian Asset Management	Plutus21 Capital
CMCC Global	Prime Factor Capital
Coincident Capital	Quantia Capital
CryptAM Capital	Sigil Limited
Crypto Consulting AG	Silver 8 Capital, LLC
Crypto Fund AG	Strix Leviathan
Cyber Capital B.V.	Systematic Alpha
DBL Digital	Tensoralpha
DCAP Capital	Typhon Capital Management
Digico Capital Advisors	Walden Bridge Capital
Digital Asset Capital Management	

Traditional hedge funds

This year, the Alternative Investment Management Association (AIMA) was invited to partner on this initiative and provide insights into the rising interest in the digital assets industry from the perspective of non-crypto focused hedge funds (referred to as 'Traditional' hedge funds in this report). AIMA's chapter within this report looks at whether "traditional" hedge funds have investments in digital assets, their views on the growing asset class and what they believe would be the catalysts for them to invest initially and more significantly in digital assets.

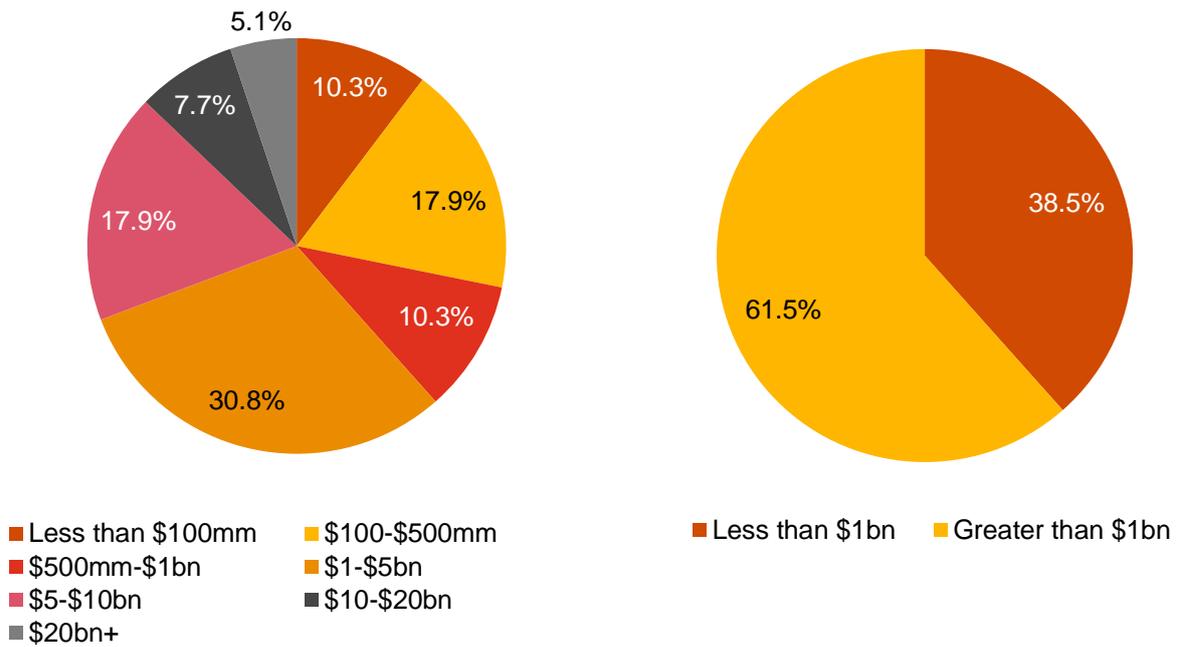
Introduction

This chapter forms part of the ongoing series of annual crypto reports conducted by PwC and Elwood Asset Management which commenced in 2019. This year, the Alternative Investment Management Association (AIMA)¹ was invited to partner on this initiative and provide insights into the rising interest in the digital assets industry. This chapter looks at whether “traditional” hedge funds have investments in digital assets, their views on the growing asset class and what they believe would be the catalysts for them to invest initially and more significantly in digital assets.

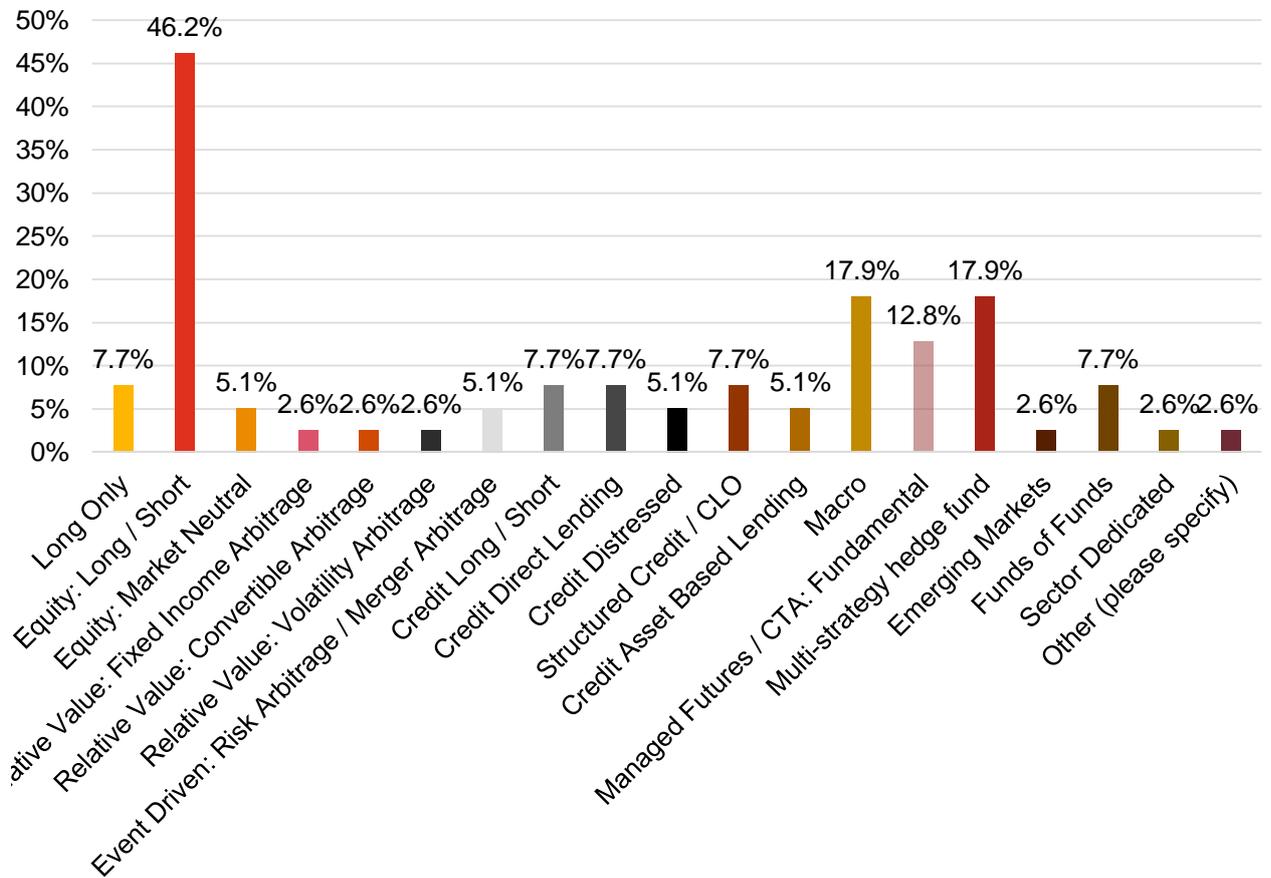
The data contained in this chapter comes from a survey that was conducted in the first quarter of 2021 with 39 hedge funds that accounted for an estimated US\$180 billion in Assets Under Management (AuM). More than 60% of the responses were from hedge funds who manage assets of at least US\$1 billion.

¹ AIMA's work in digital assets is overseen by its global Digital Assets Working Group ('AIMA DAWG'). This Group is a senior-level industry steering committee tasked with driving AIMA's regulatory engagement, thought-leadership initiatives and operational guidance in the growing area of digital assets. It encourages thought-leadership across the industry and shares innovations with market participants and regulators to create a feedback loop that encourages the institutionalisation of digital assets.

Breakdown of participants: What is your total hedge fund AuM?



Breakdown of participants: Strategy breakdown

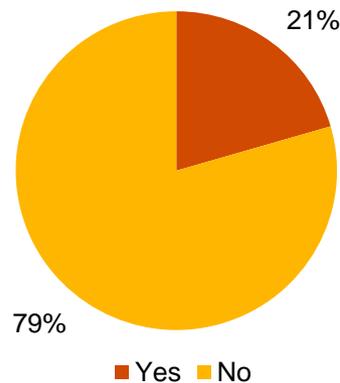


Hedge funds who are investing in digital assets

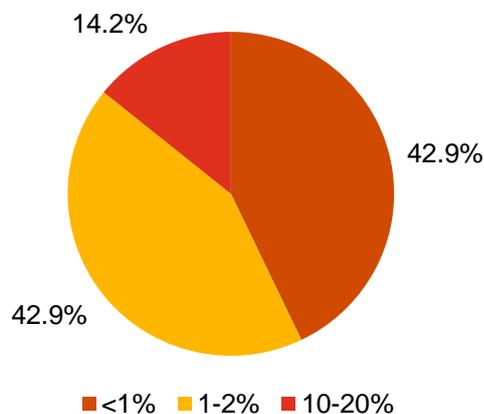
The survey highlights that around a fifth of survey hedge funds are currently investing in digital assets (21%). Of those hedge funds who invest in digital assets, the average percentage of their total hedge fund AuM invested is 3%

Hedge funds active in digital assets that have 10-20% of their portfolio invested accounted for 14% of respondents. It is possible that some hedge fund managers who initially may have invested a smaller percentage of their total AuM, e.g. 1-2%, earlier on in the current crypto cycle have seen that portion of their AuM grow exponentially in the past year.

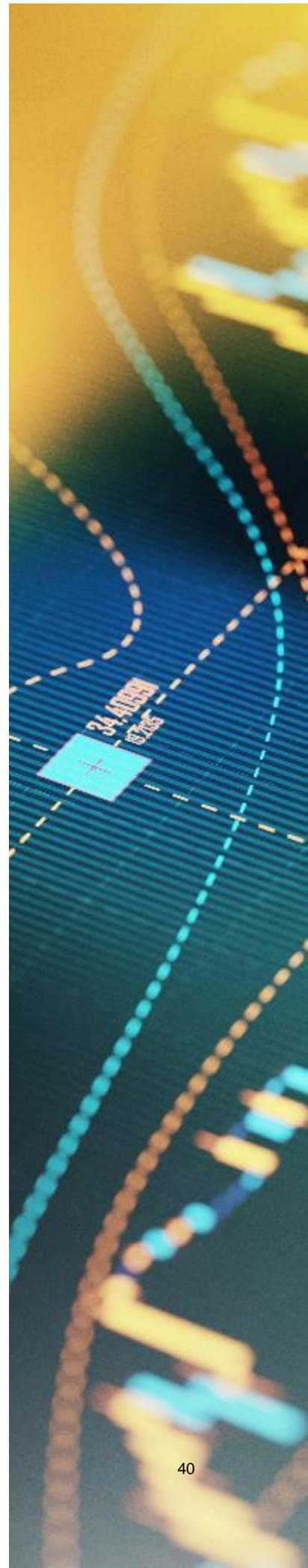
Breakdown of participants: Are you currently investing in digital assets?



What percentage of hedge fund AuM is invested in digital assets

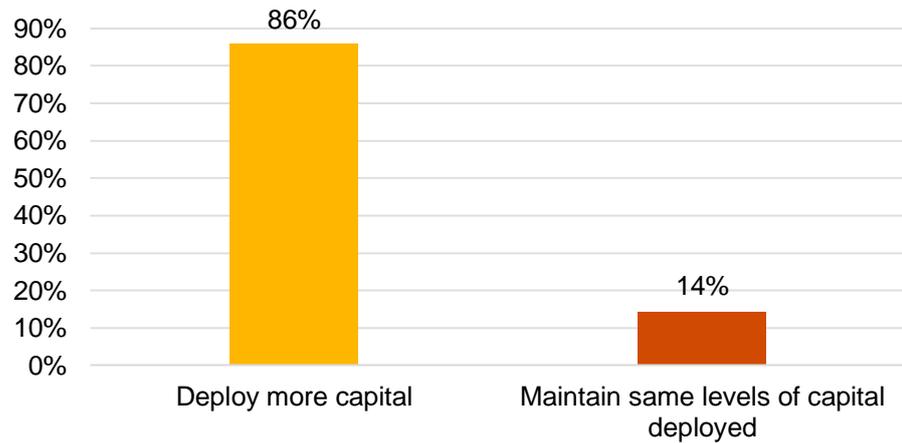


Average percentage of hedge fund AuM is invested in digital assets is 3%



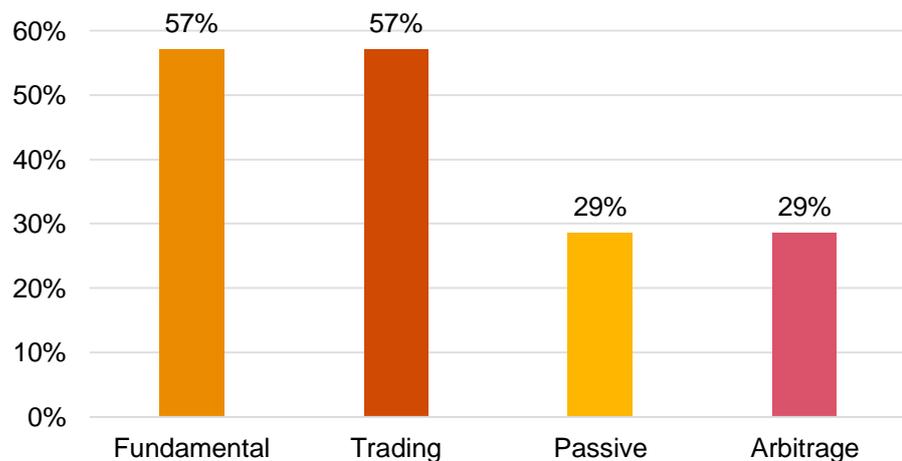
86% of hedge funds who are currently investing in digital assets intend to deploy more capital into the asset class by the end of 2021 with the remainder (14%) planning to maintain the same level of capital.

By the end of 2021 do you intend to, with respect to digital assets



When asked what investment strategies (fundamental, trading, arbitrage, venture, pre/post ICO, passive, other) best describe hedge funds exposure to digital assets, the majority responded with fundamental² (57%) and trading (57%). Those currently adopting a passive approach to investing in digital assets included 29% of respondents, with the same number stating they are using arbitrage.

What investment strategies best describe your digital assets exposure

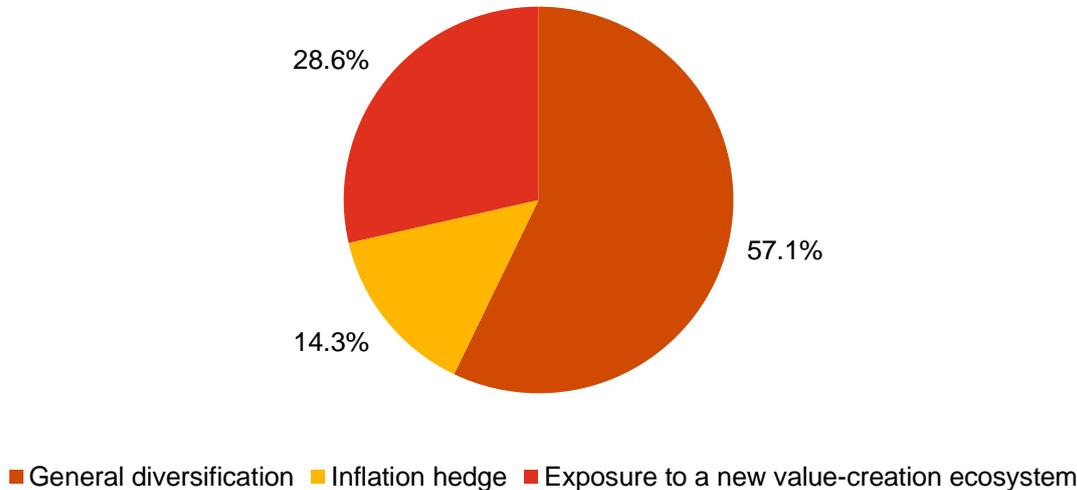


Why invest in digital assets?

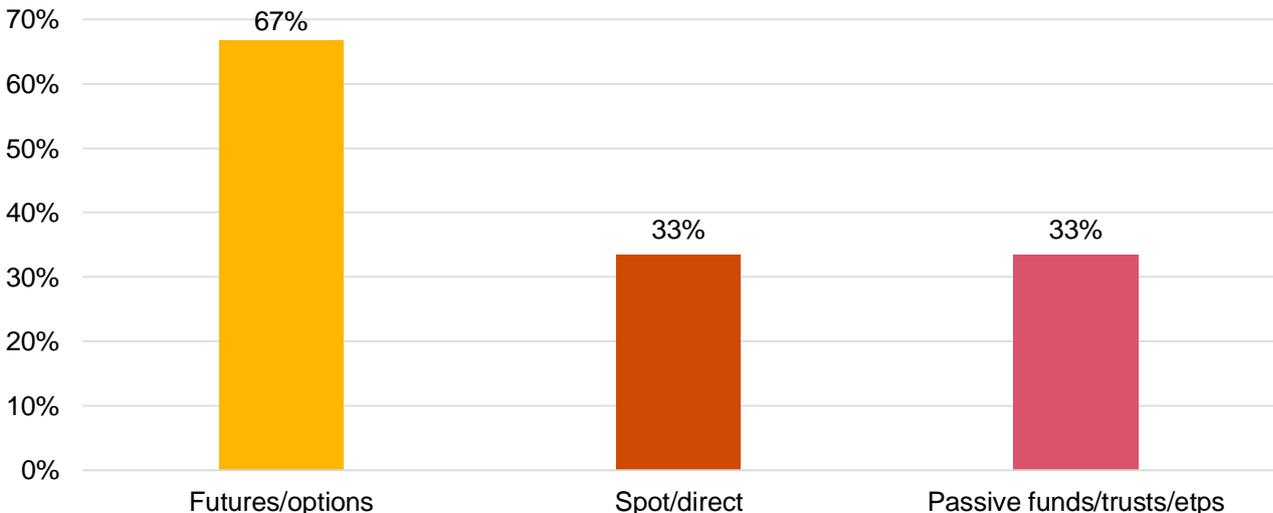
The most common primary reason given by hedge fund managers for including digital assets in their portfolio is 'general diversification' – as per 57% of the population that responded. Of the remainder, just under one third of respondents (29%) stated 'exposure to a new value-creation ecosystem' as the primary reason to invest while 14% suggested that it made for a good inflation hedge.

In terms of exposure, two thirds of the hedge funds who responded have invested in digital assets through derivatives trading (futures/options). While respondents also confirmed that they invest in digital assets, using traditional value strategies – direct/spot (33%) – or passive funds – trusts/etps (33%).

What is the primary reason for including digital assets in your portfolio



How are you invested (all that apply)

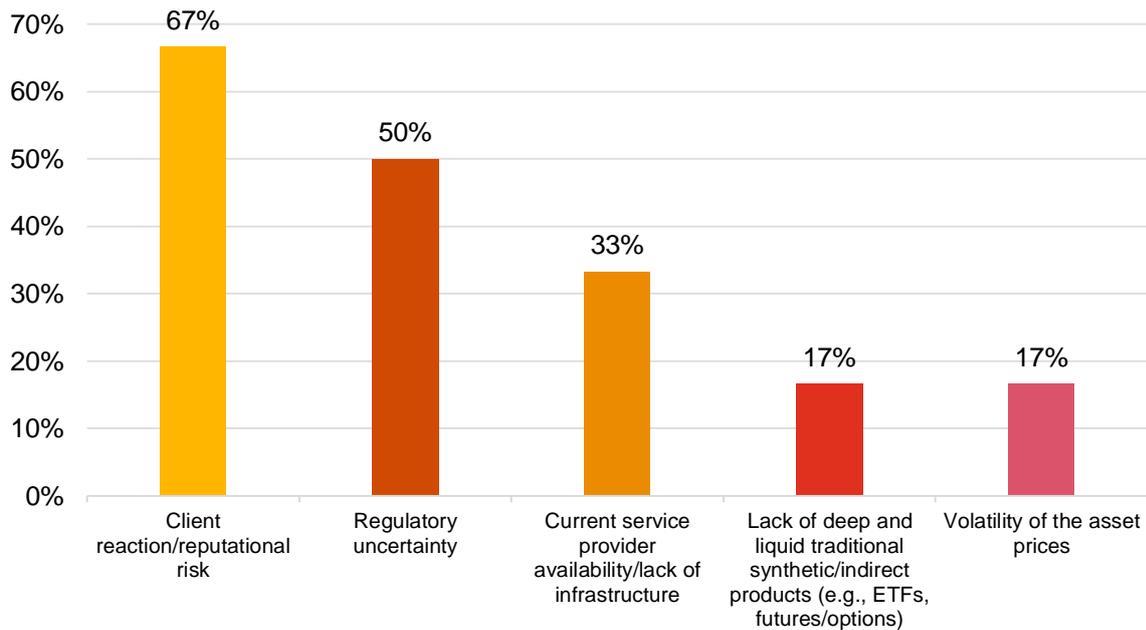


Main challenges for hedge funds investing in digital assets

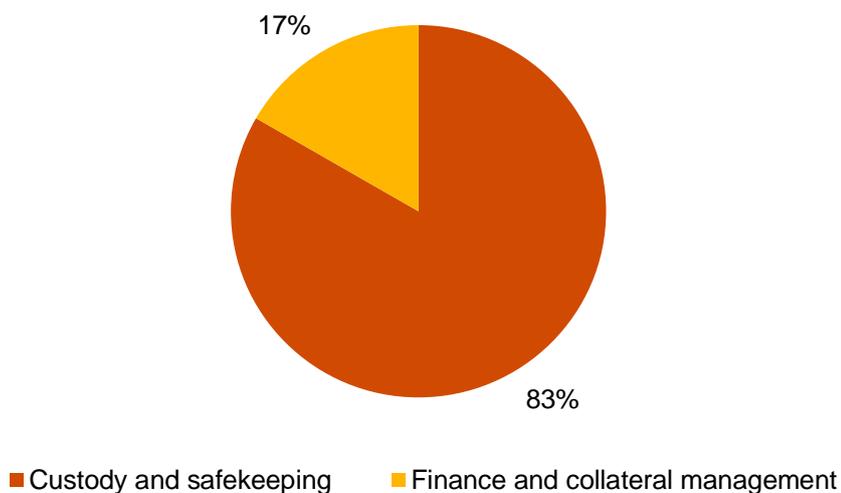
The top three challenges cited by hedge fund managers who currently invest in digital assets are: (i) client reaction/reputational risk (67%), (ii) regulatory uncertainty (50%), and (iii) current service provider availability/lack of infrastructure (33%).

Custody and safekeeping is seen as the market infrastructure area being the most in need of essential improvements for digital adoption (83%).

What are your main challenges when it comes to investing in digital assets (all that apply)



Where do you see the biggest need for market infrastructure improvements

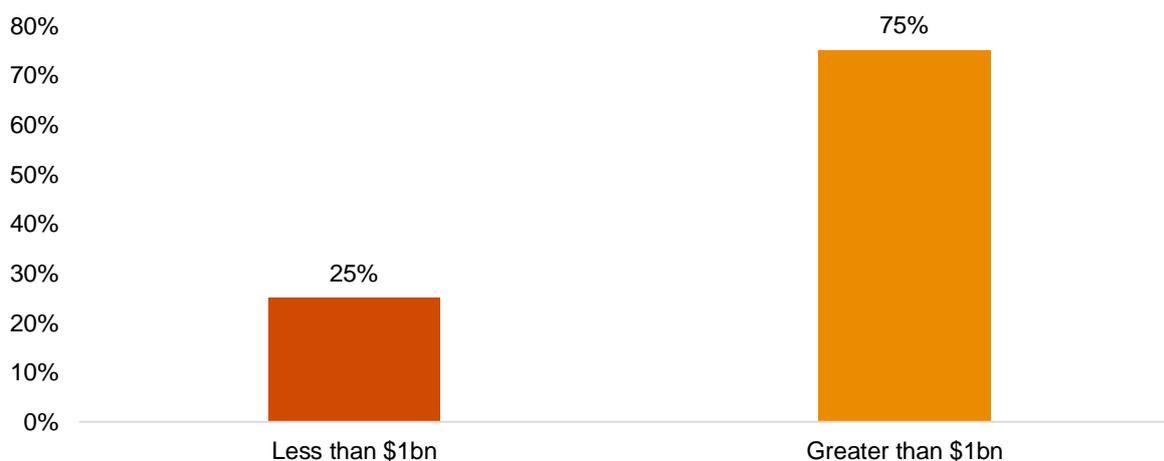


Hedge funds who do not currently invest in digital assets

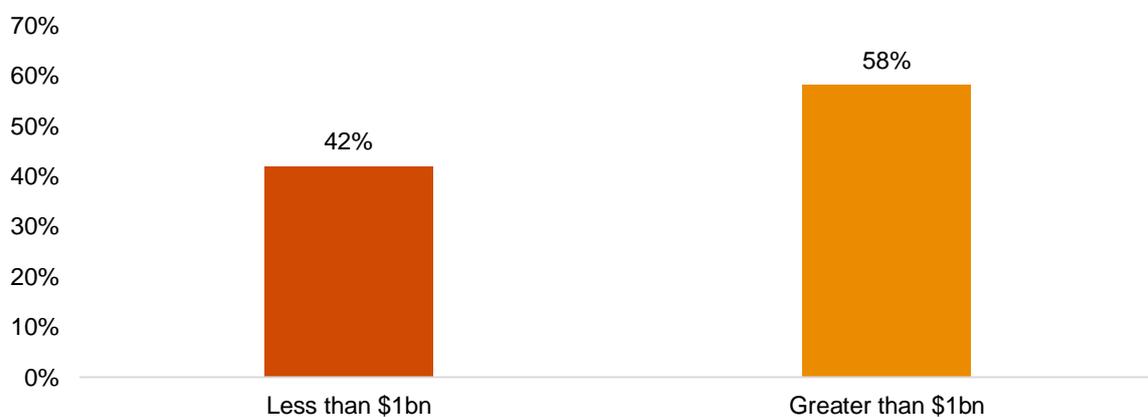
Around 80% of hedge fund managers who responded to the survey are not currently investing in digital assets. Of those who do not invest in digital assets, 58% of responses were from larger hedge funds (which we describe as any hedge fund which has US\$1 billion or greater in assets under management).

Around a quarter of hedge fund managers who are not yet investing in digital assets confirmed that they are in late-stage planning to invest (9%) or looking to invest (17%), while just under two thirds are unlikely to invest in the next three years (57%). 17% of hedge funds said that they are curious about digital assets but waiting for further maturity with the large majority of those respondents holding at least US\$1 billion in AuM (75%).

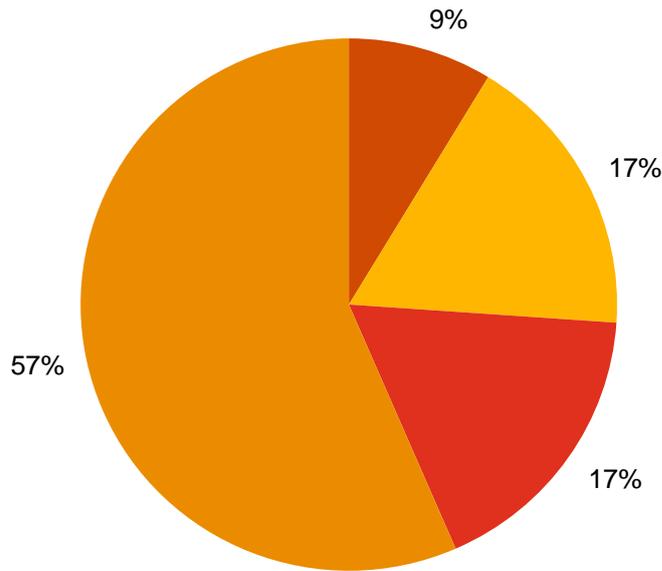
Breakdown of those who do invest in digital assets



Breakdown of those who do not invest in digital assets

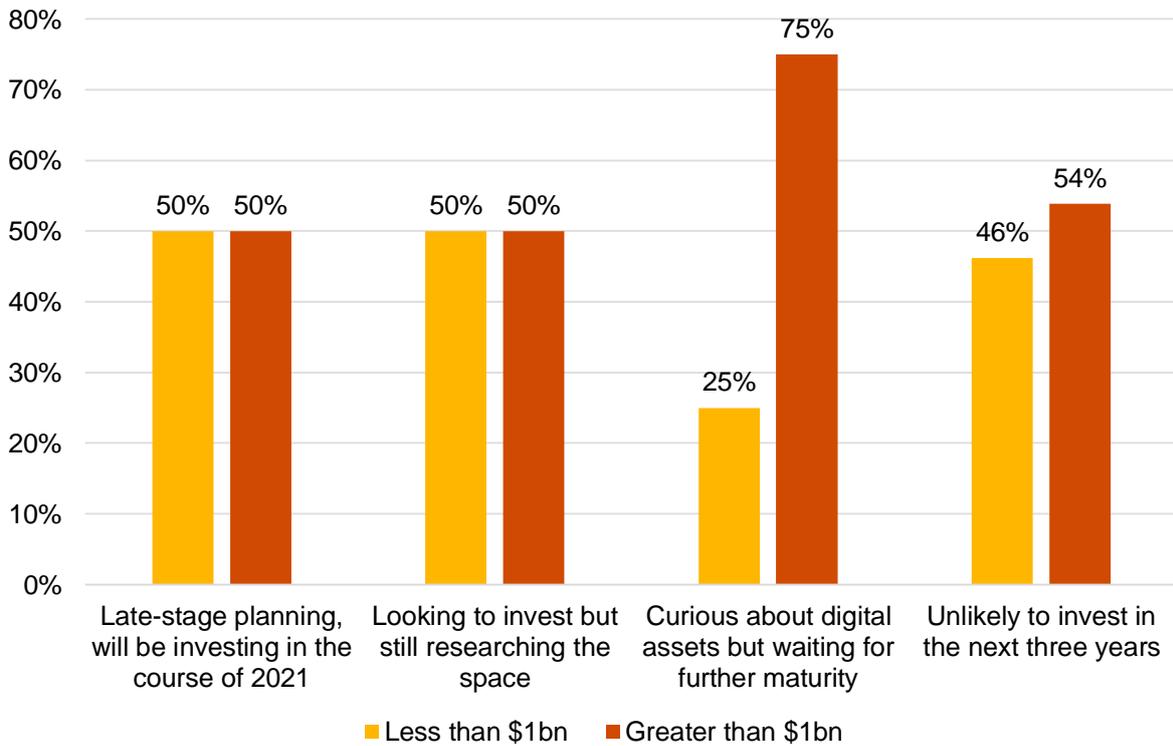


What is your current plan with respect to gaining digital asset exposure



- Late-stage planning, will be investing in the course of 2021
- Looking to invest but still researching the space
- Curious about digital assets but waiting for further maturity
- Unlikely to invest in the next three years

What is your current plan with respect to gaining digital asset exposure (size breakdown)

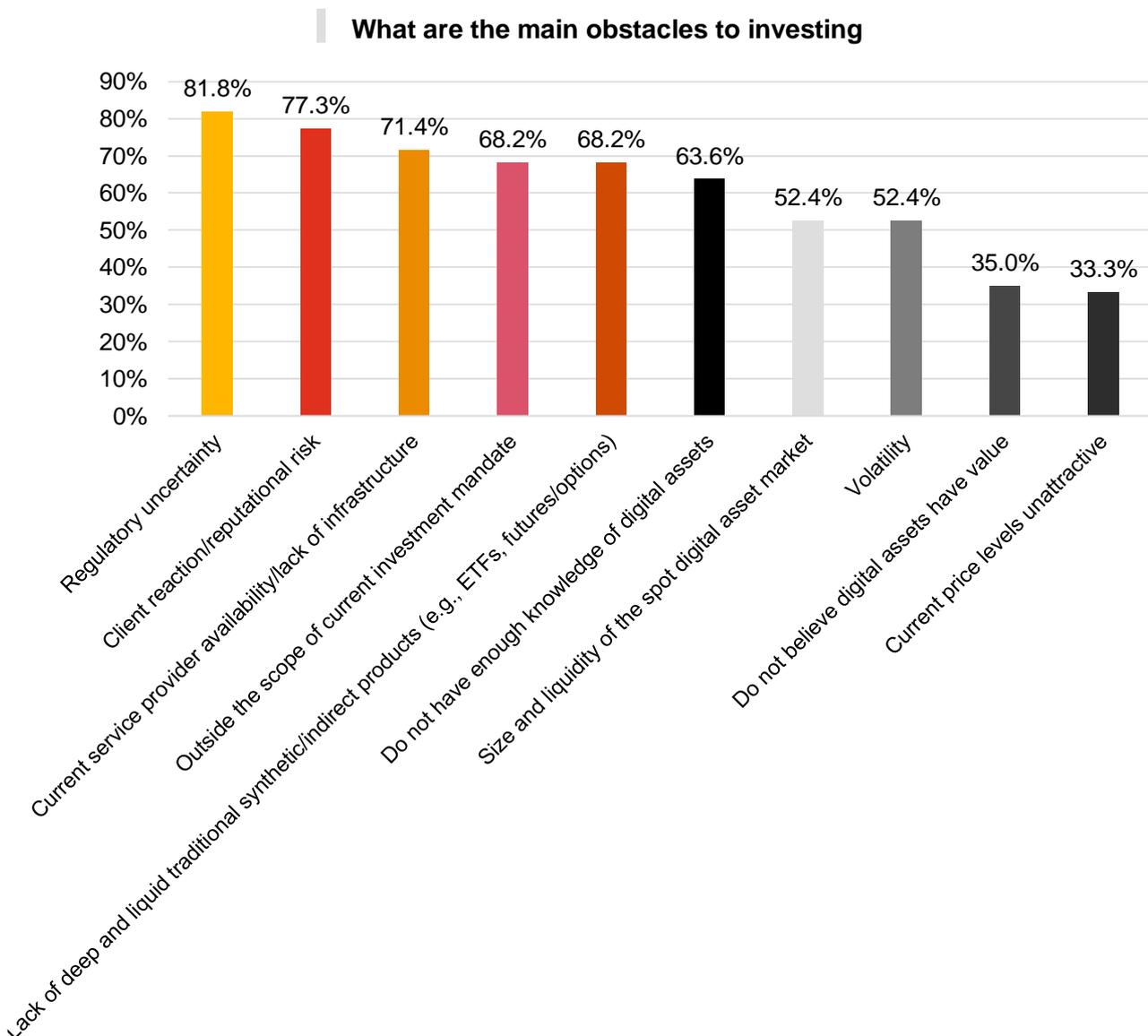


Reasons for why hedge funds are not investing in digital assets

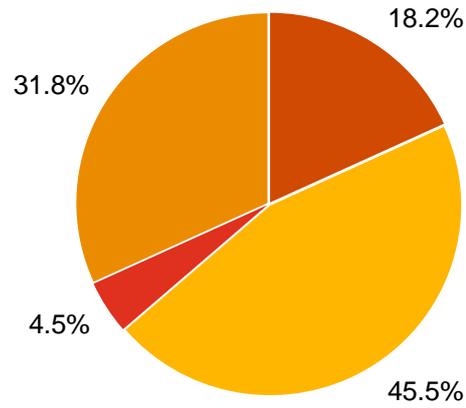
The four main reasons cited by hedge fund managers when looking at investing in digital assets are:

- Regulatory uncertainty,
- Client reaction/reputational risk,
- Lack of infrastructure/service provider availability, and
- Outside the scope of current investment mandate.

Around two thirds of respondents said that if the main barriers were to be removed they would either actively accelerate involvement/investment in digital assets (18%), or potentially change their approach and become more involved (46%). While 32% of respondents stated that the removal of barriers would still probably not impact their current approach given investing in digital assets remains outside their mandate.



If the main obstacles to investing were to be removed would you



- Definitely start or accelerate involvement/investment
- Potentially change approach and become more involved
- Probably not change approach to digital assets and remain skeptical
- Probably not change approach as obstacles not relevant (not our space)



About PwC

At PwC, our purpose is to build trust in society and solve important problems. We are a network of firms in 1558 countries with more than 28450,000 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 that 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 regards to their crypto policies.

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About Elwood

Elwood is an investment and technology firm established in 2018 which specialises in digital assets. The team at Elwood combines an institutional heritage in finance with a deep knowledge of blockchain technology to create breakthrough products for global investors.

In December 2018 Elwood launched its first product, the Elwood Blockchain Global Equity Index, which offers investors exposure to the growth in the blockchain ecosystem via a highly liquid and regulated vehicle. Find out more at www.elwoodam.com

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About AIMA

The Alternative Investment Management Association (AIMA) is the global representative of the alternative investment industry, with around 2,000 corporate members in over 60 countries. AIMA's fund manager members collectively manage more than \$2 trillion in hedge fund and private credit assets.

AIMA draws upon the expertise and diversity of its membership to provide leadership in industry initiatives such as advocacy, policy and regulatory engagement, educational programmes and sound practice guides. AIMA works to raise media and public awareness of the value of the industry. AIMA set up the Alternative Credit Council (ACC) to help firms focused in the private credit and direct lending space. The ACC currently represents over 200 members that manage \$450bn of private credit assets globally.

AIMA is committed to developing skills and education standards and is a co-founder of the Chartered Alternative Investment Analyst designation (CAIA) – the first and only specialised educational standard for alternative investment specialists. AIMA is governed by its Council (Board of Directors). For further information, please visit www.aima.org

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² This Working Group is a senior-level industry steering group tasked with driving AIMA's regulatory engagement, thought-leadership initiatives, and operational guidance in the growing area of digital assets.

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