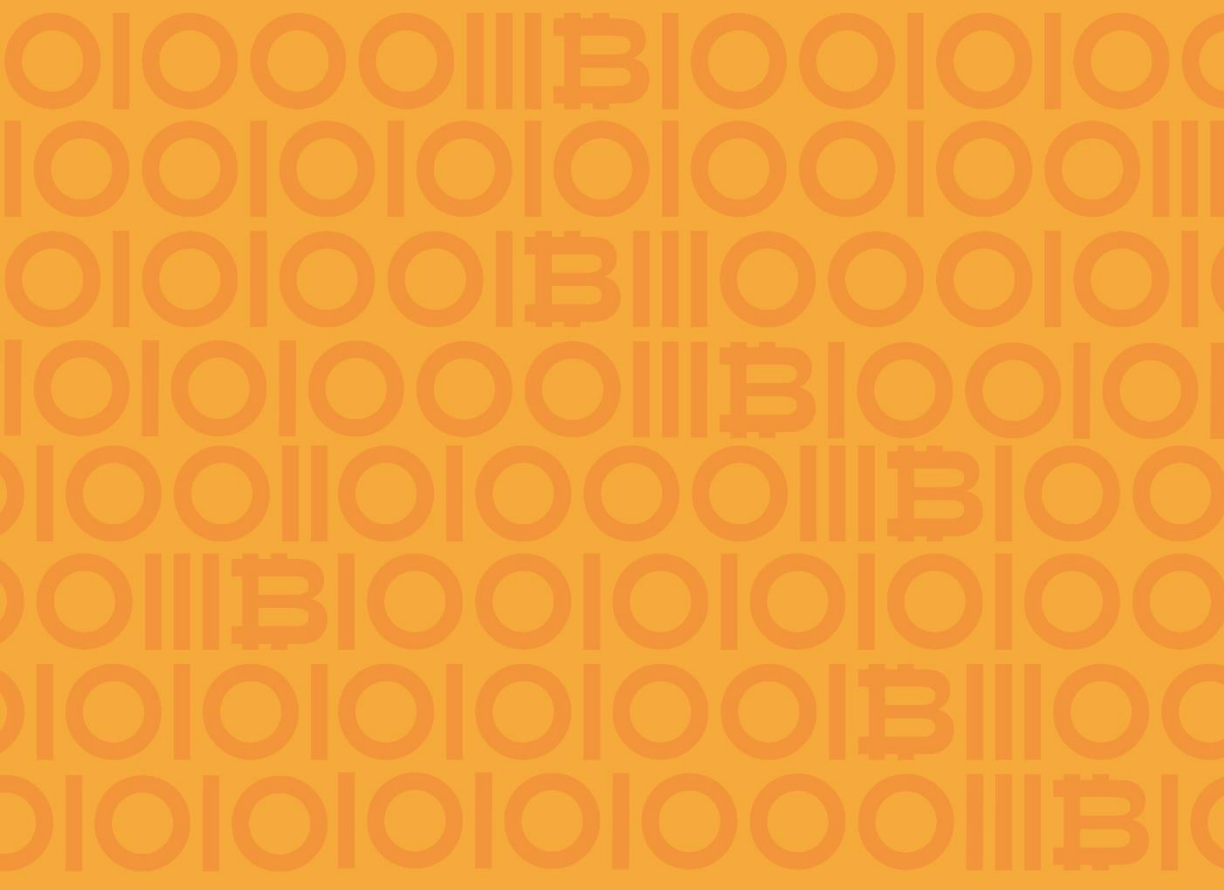


2019 Crypto Hedge Fund Report



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Introduction to Crypto Hedge Fund report

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

By sharing these insights with the broader crypto industry, the goal of this report is to encourage sound practices that can be adopted by market participants as the ecosystem matures.

The data contained in this report comes from research that was conducted in Q1 2019 across 100 of the largest global crypto hedge funds by assets under management (AuM). This report specifically focuses on crypto hedge funds and excludes data from crypto index funds and crypto venture capital funds.

Key Takeaways:

Size of the Market and AuM:

- We estimate that there are 150 active crypto hedge funds collectively managing US\$1bn AuM (excluding crypto index funds and crypto venture capital funds) ¹
- Over 60% of these funds have less than US\$10m in AuM with fewer than 10% managing over US\$50m
- The average crypto hedge fund AuM as of Q1 2019 is US\$21.9 million
- The median AuM of funds as of Q1 2019 (US\$4.3m) is 3X that of the median AuM at fund launch (US\$1.2m - January 2018), which indicates that funds have been relatively successful at fundraising despite difficult market conditions

Fund Strategy and Location:

- 36% of funds surveyed use or can use leverage and 74% can take short positions
- Of the funds surveyed, 44% pursue discretionary strategies, 37% quant and 19% fundamental
- Funds tend to be domiciled in the same jurisdictions as traditional hedge funds, with the top three jurisdictions for the fund entity being the Cayman Islands (55%), the United States (17%) and the British Virgin Islands (BVI) (13%)
- The majority of crypto hedge fund managers tend to be based in the United States (64%)

Experience and Governance:

- 52% of funds use an independent custodian, yet only 25% have independent directors on their board
- The average size of fund team is 7-8 people
- Typical crypto fund investment professionals have between 3-4 years of investment management experience

Performance and Fees:

- The median fund returned -46% in 2018 vs a Bitcoin benchmark of -72%
- In 2018, the median fundamental fund returned -53%, discretionary fund -63% and quant fund +8%
- The average fees for crypto hedge funds are 1.72% management fee and 23.5% performance fee

¹ Total AuM is an estimate from conversations with fund managers. We believe that it represents a good estimate of the total crypto fund AuM

Investment

Data

Report Data

The data contained in this report comes from research that was conducted in Q1 2019 by Elwood Asset Management across 100 of the largest global crypto hedge funds by assets under management (AUM), combined with qualitative inputs from PwC's crypto team based on sound practices observed with crypto hedge funds and other industry participants.

This report specifically focuses on crypto hedge funds that we define as being active investment managers who invest/trade in liquid, public cryptocurrencies and/or invest in early stage cryptocurrency projects through Simple Agreement for Future Tokens (SAFTs) and other instruments.

This report does not include:

- Crypto index funds; and
- Crypto venture capital funds (making equity type investments).

Please note that of the 100 crypto hedge funds surveyed, there is an inherent element of survivorship bias as the report only includes crypto hedge funds that were in operation in Q1 2019. Crypto hedge funds that were forced to shut down prior to this date due to the difficult market conditions of 2018 have been excluded.

In addition, please note that the data provided in this report, including performance data, has not been verified by an independent fund administrator or other third party, but rather was provided by the crypto hedge fund managers directly.

Market Analysis

Our data shows that crypto hedge funds broadly operate across three different fund strategies: Fundamental, Discretionary and Quantitative.

Proportion of strategies used by crypto hedge funds*



19%

Fundamental



44%

Discretionary



37%

Quant

*By number of funds sampled

Fundamental: Funds which are long only and whose investors have a longer investment horizon. These funds tend to invest in early stage token projects, usually through SAFTs or similar agreement deals, and they also buy and hold more liquid cryptocurrencies. These funds tend to have the longest lock-up periods for investors at 12 months with a 90-day notice period on average.

Discretionary: 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 'generalised mining'.² 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 fundamental bucket at 12 months and a 30-day notice period.

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 limits these funds to trade only the most liquid cryptocurrencies. As a result, these funds typically have the shortest lock-up periods for investors at 6 months with a 30-day notice period on average.

² Generalised mining describes the practice of actively participating in cryptocurrency networks in order to generate returns. These activities range from Proof-of-Work mining to staking coins, validating nodes, etc.

Assets Under Management

The number of crypto hedge funds has significantly increased in the last three years as the asset class has begun to mature. Despite this, public information on the fund landscape remains scarce and existing data is often inaccurate. Our analysis suggests that claims such as 'over 350 cryptocurrency hedge funds exist' may be an overstatement.³ These metrics are typically compiled using web-scraping methods rather than relying on data gathered from crypto hedge funds directly, which is the approach taken for this report.

We estimate that there are actually only around 150 active crypto hedge funds, which collectively hold around US\$1 billion assets under management today. This excludes crypto index funds and crypto venture capital funds.

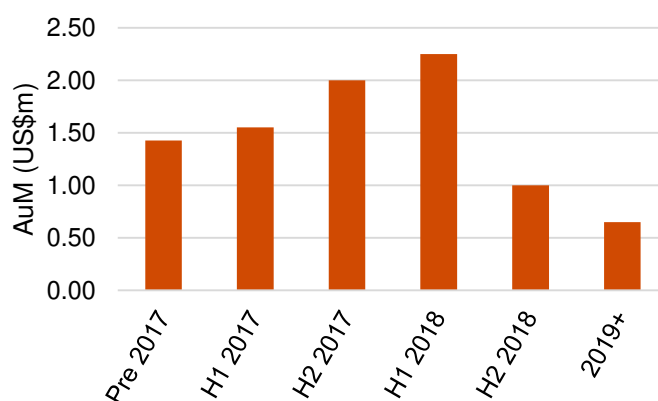
While this report did not set out to cover the entire crypto fund universe, our analysis suggests that the crypto hedge fund universe is much smaller than previously reported and so as a result we believe that this report does in fact capture the majority of the crypto hedge fund universe as of Q1 2019.

When it comes to AuM, we can see below that the distribution of AuM in crypto hedge funds follows a similar pattern to traditional hedge funds. A few large funds manage a large proportion of the total AuM, with a long tail of smaller funds.

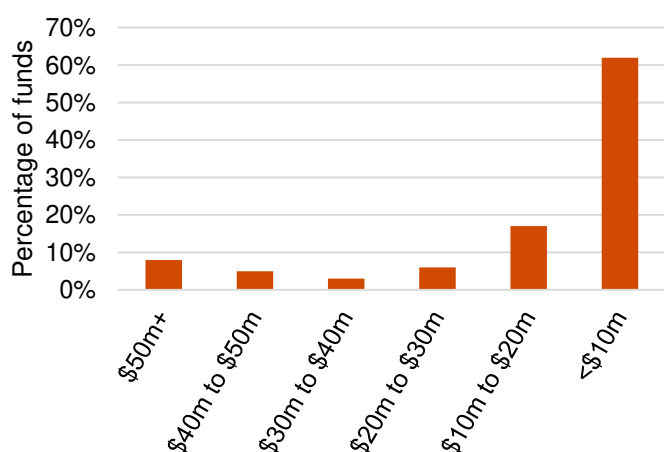
The average AuM of the funds we surveyed was US\$21.9 million. However, this number is skewed by several large funds, and therefore it is more appropriate to look at the median AuM, at US\$4.3 million.

The median AuM at fund launch was US\$1.2 million and the median launch date was January 2018, which indicates that the funds surveyed have been relatively successful in fundraising, especially considering that the Bitwise 10 index has fallen ~75% over this period.⁴ This also applies to market-neutral funds, since none of them have returned a 3x gain in this period and so these funds must have raised fresh outside capital.

Crypto hedge fund launch AuM (Median)



Distribution of crypto hedge fund AuM



Over 60% of crypto hedge funds have less than US\$10 million in AuM.

US\$3.6m
Average fund AuM at launch

US\$1.2m
Median fund AuM at launch

US\$21.9m
Average fund current AuM

US\$4.3m
Median fund current AuM

22/10/2017
Average fund launch date

08/01/2018
Median fund launch date

³ <https://cryptofundresearch.com/cryptocurrency-funds-overview-infographic/>

⁴ <https://www.bitwiseinvestments.com/indexes/Bitwise-10>



Fees

Unsurprisingly, our data shows that investor interest peaked during the crypto bull market of 2017. Funds that launched in H1 2018 were therefore raising capital during the bull run and consequently had the highest median fund launch, at US\$2.25m AuM. In contrast, the second half of 2018 was a challenging fundraising environment. Launches in 2019 have a smaller median launch AuM of US\$650,000. It will be interesting to see if the recent uptick in cryptocurrency prices in April 2019 will be matched by new subscriptions into crypto hedge funds as market sentiment begins to turn more positive.

The median fees charged by the crypto hedge funds we surveyed are 2% management fee and a 20% performance fee, as stated in their Private Placement Memorandums (PPMs). Therefore, if the median crypto fund manages US\$4 million and charges a 2% management fee they have US\$80,000 in annual revenue. This is unlikely to be sufficient to sustain a business operation, especially considering that the median fund has six employees who need to be paid.⁵

As a result, some funds are exploring ways to increase their income in order to cover costs. For example, we have seen quant funds diversify their approach and start market making, and early-stage focussed funds take on advisory roles for new projects. Other funds remain focused on their core strategy and hope to cover costs via the performance fee. However, in a market which has collapsed ~75% this is perhaps a risky approach to take and may not be the most viable long-term strategy. Other funds are seeking to raise additional capital by selling stakes in their General Partner (GP).

Average Crypto Hedge Fund Fees (2018)

	Average Management Fees	Average Performance Fees
All funds	1.72%	23.5%
Fundamental fund	1.75%	22.8%
Discretionary fund	1.76%	23.2%
Quant fund	1.57%	26.8%

Median crypto hedge fund fees (2018):

2.00% management fees

20.00% performance fees

Despite difficult market conditions, the median crypto hedge fund grew its AUM 3X in 2018.

⁵ Assuming a high water mark, no performance fees and that the management company manages only one fund

Crypto Hedge Fund Strategy Insights

Use of leverage permitted?



Can take short positions?



As the cryptocurrency market has matured, more and more funds which take a quantitative approach have launched. This has been aided by the development of the lending market, thus allowing these funds to take short positions and utilise market-neutral and a variety of other strategies.

Indeed, 86% of the quantitative funds surveyed have the ability to take short positions, compared to 80% of discretionary funds. As per our definition, fundamental funds are long only and cannot take short positions.

However, this data is more nuanced. Although many of the discretionary fund managers say that they can take short positions and it is permitted in their PPM documents, some of them have never taken short positions and do not anticipate doing so. In many cases, these funds have not built the infrastructure and Over-The-Counter (OTC) relationships in order to borrow cryptocurrencies and put on short positions. Therefore this 80% figure is likely lower in practice for discretionary managers. As using short positions is a key tool for risk management, it may be in the funds' interests to make their PPMs as permissive as possible.

When it comes to the use of leverage by crypto hedge funds, the opposite case can be argued. Of the funds surveyed only 36% use, or are permitted to use, leverage and so it appears that crypto fund managers are willing to restrict themselves in this regard. However, it is unclear if fund managers have chosen not to use leverage on an already volatile asset class due to investor concerns, or because the cryptocurrency derivatives market is still so nascent and therefore the use of synthetic leverage from futures and options has not yet fully developed.

From our conversations with fund managers, it does seem that the answer is roughly split 50:50 between these two reasons. This is combined with the fact that some of the largest crypto futures exchanges are not open to persons located in the United States, which is where the majority of crypto hedge funds are based. So, in order to trade on these exchanges and employ leverage, funds based in the United States would have to create a non-US fund entity, which would incur additional set-up costs.



Fund Performance

2018 was a challenging year in crypto markets, with Bitcoin down 72%. The median crypto fund returned -46%, which in absolute terms is a poor return for investors and highlights the extremely volatile and high risk nature of this asset class.

However, the majority of the managers we surveyed use Bitcoin as their benchmark. Therefore, it can be argued that these managers did manage to outperform their benchmark and add some alpha. With a beta coefficient of 0.82 to Bitcoin, the median fund's returns are closely linked to the movement in the price of Bitcoin.

If we drill down further, and segment these funds into their respective buckets, we can extract more useful insights. The median quantitative fund returned 8% in 2018. Meanwhile, the median fundamental fund returned -53% and the median discretionary fund returned -63% in 2018.

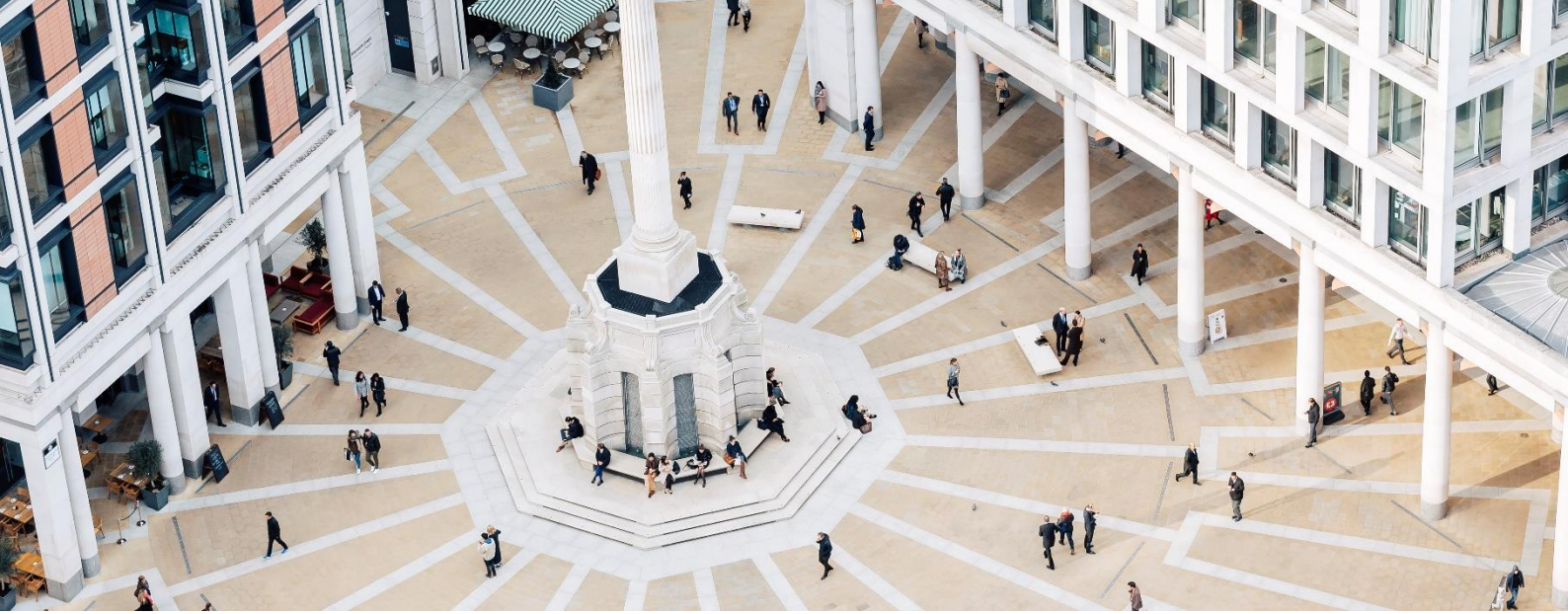
2018 Media Crypto Fund Performance: -46%
2018 Bitcoin Performance: -72%

The outperformance of the fundamental funds relative to the discretionary funds in 2018 was due to the fact that these funds had invested a larger proportion of their assets into Initial Coin Offerings (ICOs) and early stage projects. These funds managed to exit some of these positions in the first half of 2018 and profit from the outsized returns. Discretionary managers had generally less exposure to ICOs and so missed out on these returns.

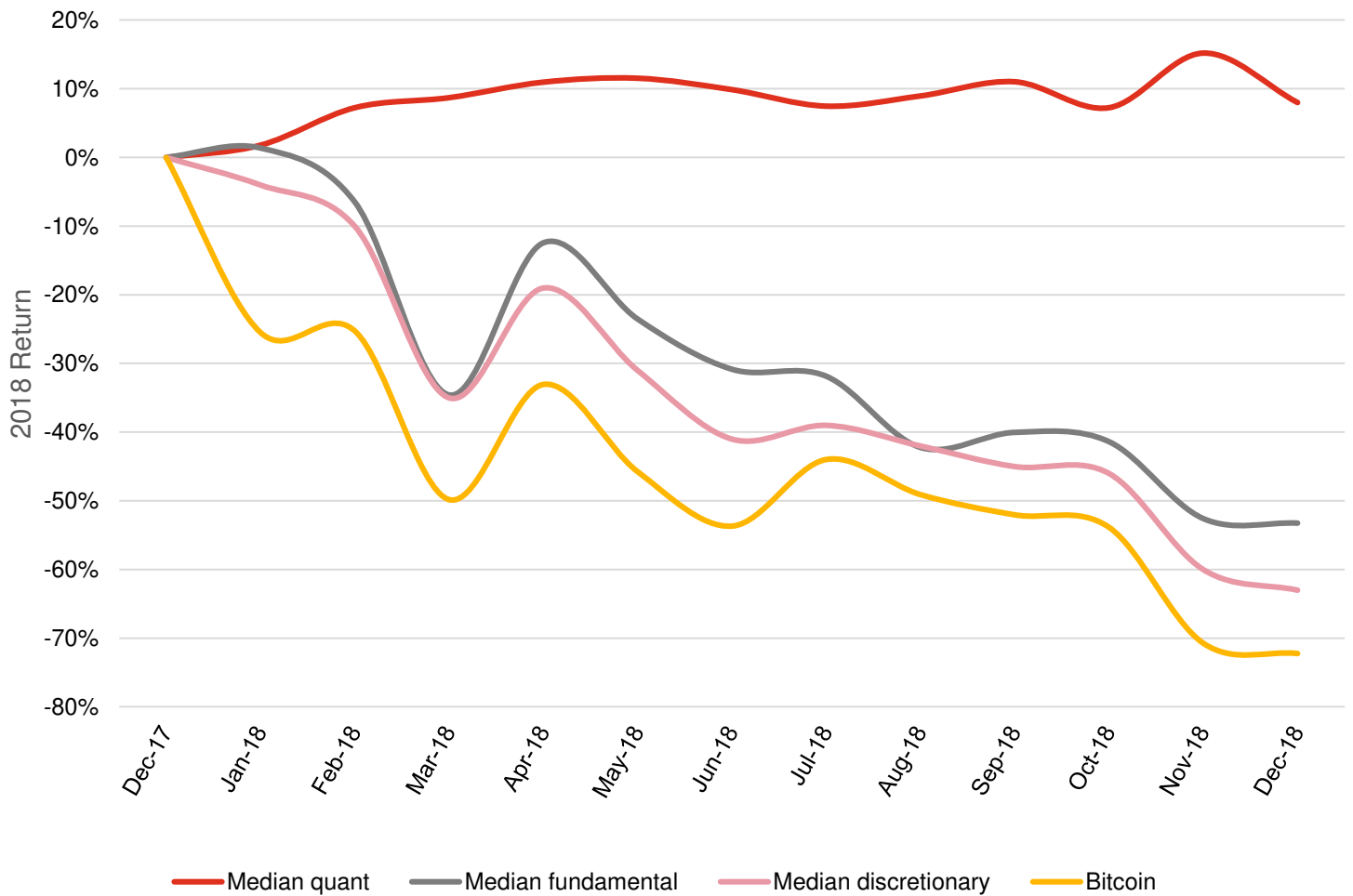
The median fundamental and discretionary funds had a relatively high beta to Bitcoin, at 0.75 and 0.74 respectively, whereas the median quantitative fund had a massively negative beta of -2.33.

Please note that all performance data was self-reported by each crypto hedge fund that we surveyed and that this data has not been verified by their respective fund administrators.

	2018 Return	Beta
Median all funds	-46%	0.82
Median fundamental fund	-53%	0.75
Median discretionary fund	-63%	0.74
Median quant fund	+8%	-2.33
Bitcoin	-72%	1.00



Median 2018 crypto hedge fund return



Non-Investment Data

Custody

Type of custody approach used by crypto hedge funds:



Our data suggests that there is an equal split between self-custody and the use of external custodians — either third party or exchange custodians.

Encouragingly, fund managers reported to us that they are implementing sound practices with respect to private key management and segregation of duties. These should hopefully mitigate the inherent risks associated with the safekeeping of digital assets.

In addition, an increasing number of custodians are becoming regulated and able to get insurance coverage. Others are looking at obtaining System and Organisation Controls (SOC) reports, which provide a level of transparency around internal controls for existing and prospective customers.

52% of crypto hedge funds reported using an independent custodian.

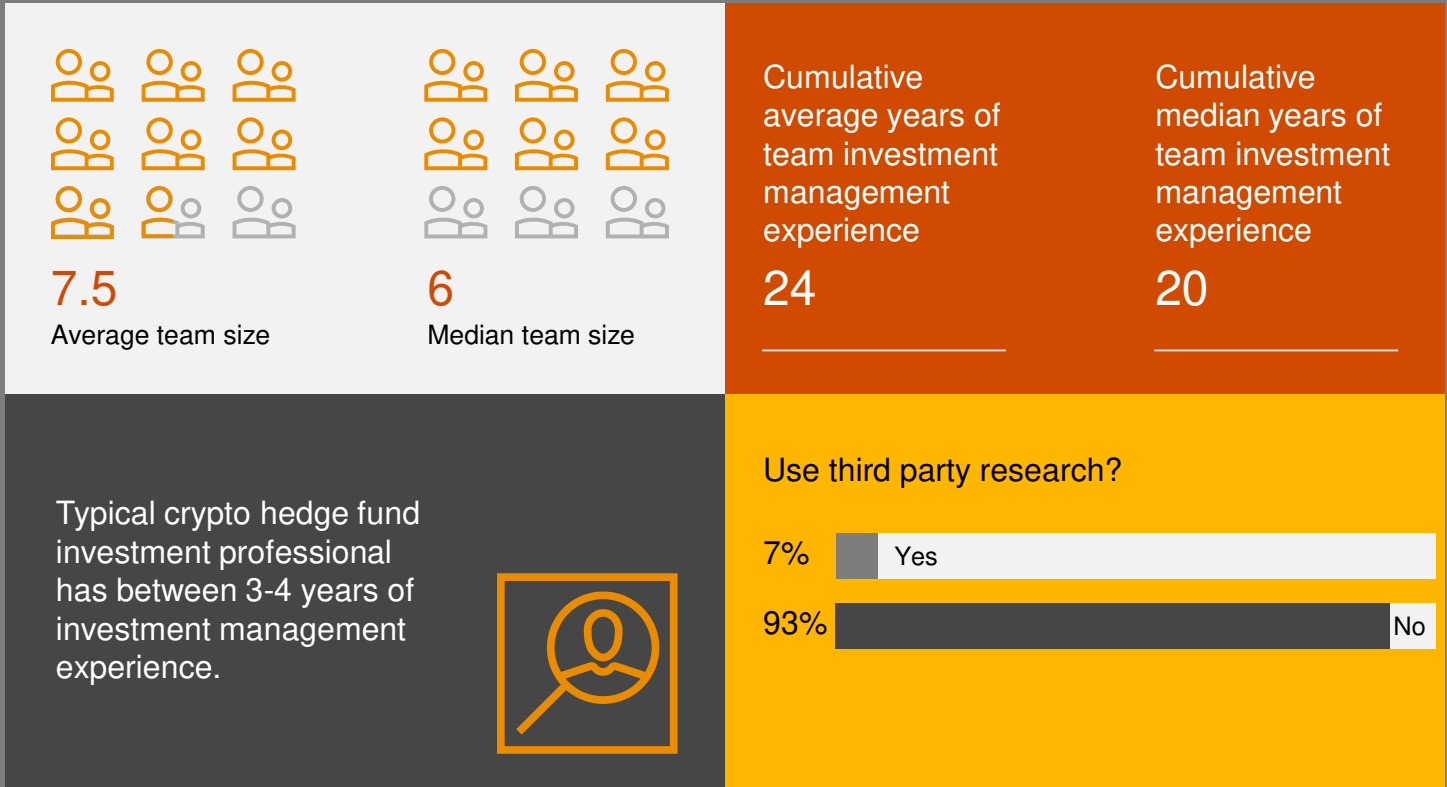
Despite this progress, we still have not seen the large 'traditional' custodians have a live offering for the crypto space. The entry of such players would provide institutional investors with the level of comfort they require when writing large ticket sizes worth hundreds of millions or billions of dollars. Recent announcements by some of the traditional financial services providers that they plan to expand into the digital asset custody space may be a game changer when their offerings become more widespread and available to all.

In the traditional fund management space, using an independent third-party custodian is expected and there are a large number of established players, from licensed custodians to prime brokers, who can take custody of fund assets. This is not as straightforward in the crypto space, given the realities of public and private keys — which is why many crypto fund managers often use multi-signatory wallets, hot/cold wallet set-ups or other innovative ways to hold the private keys of the fund's crypto assets. In addition to hacking risks, holding private keys may also raise regulatory concerns in some jurisdictions where regulations forbid a manager from directly holding client assets. For funds using such a self-custody approach, having the in-house tech and cyber expertise to design and monitor the self custody set-up is also very important.

Most institutional investors will raise these issues as part of their operational due diligence, and it is important for a crypto fund manager to have thought through these issues and have proper controls and risk frameworks in place.

While there is no perfect fix to this custody problem yet, the good news is that many players globally are now working on it and we expect to continue to see solutions come to market in the short and medium term.

Team Expertise



While our research shows that the size of the average crypto hedge fund team is 7 to 8 people, the cumulative average investment management experience is 24 years. This may indicate that an increasing number of experienced investment professionals are moving into the crypto asset space. Having an investment team with 'traditional' asset management experience will likely give not only investors, but also regulators, greater comfort as they seek to absorb the regulation of digital assets into existing frameworks or create bespoke frameworks. Non-investment professionals will also be key, as an experienced 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. Due to the particular nature of crypto assets, having a Chief Technology Officer (CTO) with a strong tech background may be very useful.

We expect many more 'traditional' asset management professionals to join crypto hedge funds in the short and medium term as the space continues to 'institutionalise' and grow.

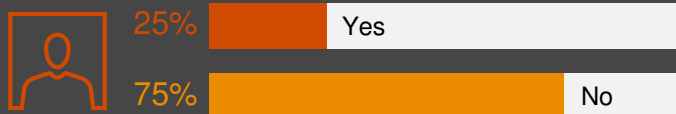
Only 7% of the crypto hedge funds in our universe use third party research. This could be because proprietary valuation models are relied upon and many funds conduct their own research. Furthermore, given how nascent the asset class is, very few dedicated crypto research providers currently exist.

Over 90% of crypto hedge funds do not use third party research.



Governance

Percentage of crypto hedge fund boards with independent directors



Only 25% of crypto hedge fund boards have independent directors.

The majority (75%) of funds do not have independent directors on their boards. Corporate governance is an important issue and most traditional funds today have independent directors. One reason may be the lack of directors with the relevant level of crypto expertise.

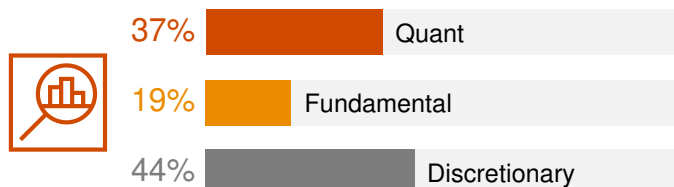
This is critical, especially when difficult decisions need to be made that will impact investors, such as whether a side pocket needs to be set up to hold certain assets or whether some restrictions need to be imposed on investor redemptions. These issues are likely to be even more relevant when dealing in crypto assets which are volatile or relatively illiquid.

Having the portfolio managers also control the board of the fund may work for 'friends and family' type funds, but it is unlikely that an institutional investor will invest in a fund which does not have proper governance.

Having independent directors on the board of the fund is seen as an accepted fund expense. We expect crypto hedge funds to focus increasingly on fund governance as they look to raise capital from institutional investors.

Counterparty Risk

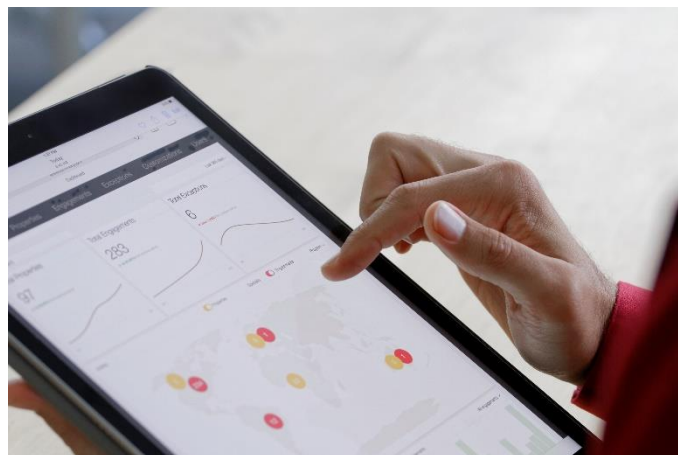
Crypto hedge fund strategies



Use of leverage allowed?



Short positions allowed?



Each crypto hedge fund requires a different level of sophistication in their custody process depending on their investment strategy. For example, a long only fund which seeks to pick winners in the space by investing in individual coins and early stage projects will need a secure cold storage custody solution as it seeks to hold these assets for a long time. Alternatively, a quantitative fund which trades at a very high frequency might have no need for a cold storage solution because its strategy requires it to keep all crypto assets on an exchange. In such instances, counterparty risk monitoring of such crypto exchanges becomes fundamentally important.

For fundamental and discretionary fund managers, custody is likely to be a very important part of the operational due diligence process for investors. Having clearly defined cold storage or third party custodian solutions with clear internal guidelines on its governance and controls becomes fundamental. Questions regarding existing insurance coverage levels and scope are also likely to come up in such investor discussions.

If your crypto fund trading strategy requires leaving substantial assets at exchanges, having a proper counterparty risk framework with constant monitoring is key. This may involve strategies such as using numerous exchanges, limiting the maximum exposure to one exchange at any point and conducting regular counterparty risk assessments on these exchanges.

Institutional investors will likely focus on this area as part of their operational due diligence. It is therefore very important if a fund intends to target that investor base.

Valuation and Fund Administration

Our data shows the median redemption term for a crypto hedge fund is quarterly with 30 days' notice and a 12 month lock-up period. This is in line with the liquidity of similar hedge funds in the 'traditional' world.

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 such documentation. Management fees are determined based on Net Asset Value (NAV) and performance fees are typically charged on appreciation in NAV over a set period e.g. above a 'high water mark'.

Independent valuation is key in order to verify fund performance and to give investors, particularly institutional investors, peace of mind that their assets are being properly valued. Having a detailed and rigorous valuation policy that determines the process and the related checks and balances on valuation is vital.

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 cryptoassets, managers may have to source a valuation from an independent third party which satisfies the requirements set-out in the PPM.

Today there are only a limited number of fund administrators servicing the crypto space. But this looks set to change over the coming months as the industry matures and some of the more established players become more comfortable with crypto assets and decide to move into this space.

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 SAFTs. There are also details that are important for funds trading some of the more liquid crypto assets such as: what is the cut-off time for valuation (crypto markets don't sleep) or how many and which price source to use (the same crypto asset may be priced differently at different exchanges globally). The recent PwC [publication](#) on accounting considerations for crypto assets could be a useful guide, as well as the [Guide to Sound Practices](#) for the Valuation of Investments published by the Alternative Investment Management Association (AIMA).

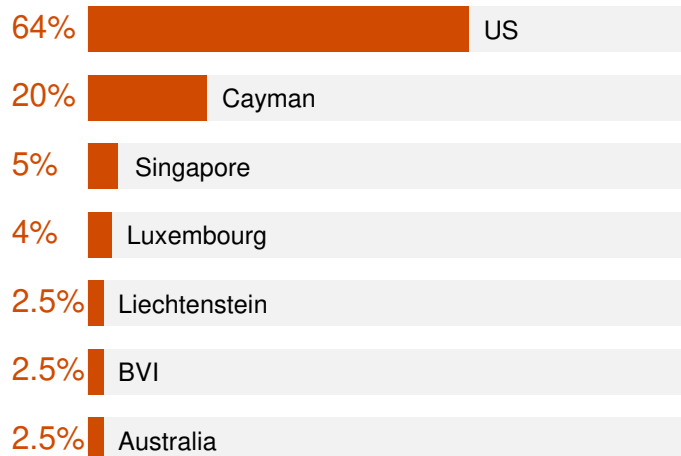
Currently there is a lack of 'traditional' fund administrators in the crypto asset space and most funds use relatively small fund administrators for NAV calculations. As an independently verified NAV is crucial information for the fund auditor as well as investors, we expect to see more developments in this area as these functions 'institutionalise' further.

Average Crypto Hedge Fund Redemption Terms by Strategy (2018)

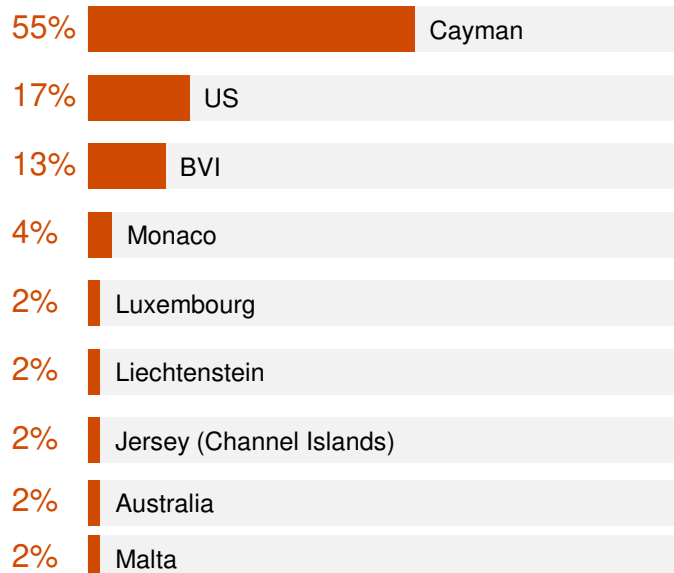
	Redemption frequency	Redemption Notice Period	Lock-up Period
Fundamental funds	Quarterly	90 days	12 months
Discretionary funds	Quarterly	30 days	12 months
Quantitative funds	Monthly	30 days	6 months

Legal and Regulatory

Where is the crypto hedge fund management company located?



Where is the crypto hedge fund domiciled?



Majority of crypto hedge fund managers seem to be based in the United States.

Crypto hedge funds tend to be domiciled in the same jurisdictions as traditional hedge funds.

When it comes to the investment management team and fund jurisdiction, our data is consistent with locations typically used by hedge funds, (e.g. Delaware, Cayman). This may simply be due to the fact that these jurisdictions are familiar with traditional hedge fund managers, their legal counsel and their early investors.

The same is true when it comes to the jurisdiction of the fund manager. The majority of crypto fund managers seem to be based in the United States.

However, please note that this data should be interpreted with caution as it looks at the jurisdiction of the investment manager that entered into a contractual agreement with the fund. In many cases the investment manager that is legally contracted with the fund may be located in an offshore jurisdiction (e.g. Cayman Islands) but the team is physically located in an onshore jurisdiction (e.g. Singapore, Hong Kong).

About

PwC

About PwC:

At PwC, our purpose is to build trust in society and solve important problems. We are a network of firms in 158 countries with more than 250,000 people who are committed to delivering quality in assurance, advisory and tax services.

The PwC Global Crypto team is composed of over 150 professionals active in over 25 countries that offer a “one stop shop” solution for our crypto clients across our multiple lines of service. Our clients range from crypto exchanges, crypto funds and ICOs/STOs to traditional financial institutions moving into the crypto space, as well as national regulators with regards to their crypto policies.

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About

Elwood

About Elwood:

Elwood is an investment 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 March 2019 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

Elwood Asset Management Services Limited (FRN 823616) is an Appointed Representative of MJ Hudson Advisers Limited (FRN 692447), which is authorised and regulated by the Financial Conduct Authority.

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