AURUM

Quant

QUANT STRATEGY DEEP DIVE

12-month review to August 2020

The last 12 months have been extremely challenging for the quant space as a whole. Quant hedge funds monitored by the Aurum Hedge Fund Data Engine delivered a net return of -5.7% on an asset-weighted basis, significantly below the Aurum Hedge Fund Composite Index*, which returned 5.2%. With the exception of statistical arbitrage (stat arb), all sub-strategies within quant were also negative for the period. Overall, the observed quant space AUM has shrunk in size, due in equal measure to net outflows and poor performance.

February and March 2020 saw some of the most extreme market moves ever witnessed. Given that many quant funds derive the majority of their trading signals from an analysis of historic price moves, it should perhaps not be a surprise that many found the unprecedented conditions of Q1 2020 tough to navigate. Indeed, our data puts the rolling 3-month performance for quant equity market neutral (QEMN), quant macro, stat arb and risk premia at or worse than either the Quant Crisis of 2007[1] or the low point of the Great Financial Crisis of 2008. However, in the aftermath of such a dislocation there tends to be significant trading opportunities. Statistical arbitrage strategies in-particular saw some of the best trading conditions of the last 12 years in April, May and June of 2020; this helped propel it to become the top performing sub-strategy over the last 12 months.

QEMN and risk premia in particular performed poorly over the period under review. The underperformance of Risk Premia is particularly interesting because it has been seen as a cheaper alternative to traditional hedge funds over the last few years and subsequently received significant investor inflows; as a likely response to prolonged underperformance these inflows have reversed. In contrast to the other sub-strategies, even top decile risk premia funds were down in both February and March 2020.

CTAs had another poor 12 months continuing the prolonged negative performance for the sub-strategy. Trend followers form a significant proportion of that strategy and are often held in portfolios in the hope they will be able to provide some protection in the event of a significantly large risk asset sell-off. Unfortunately, in the volatile months of February and March 2020 CTAs had negative performance, providing little of the much hoped for protection. This does not tell the whole story of course as there was significant dispersion between top and bottom quartile performers, so fund selection was key.

[1]During the week of August 6, 2007 a number of quantitative long/short equity hedge funds (typically strategies run at, or close to, market neutral and utilising varying degrees of leverage) experienced unprecedented losses. Some of these hedge funds were very high profile and – up until that point – highly successful.

NET RETURN OF MASTER AND SUB-STRATEGIES

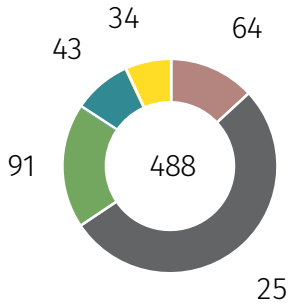
	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	YTD	1 YR
Quant	**0.5%**	**-0.8%**	**0.6%**	**0.2%**	**0.1%**	**-3.0%**	**-4.3%**	**0.6%**	**-0.1%**	**-0.9%**	**1.3%**	**0.1%**	**-6.2%**	**-5.7%**
CTA	-2.5%	-2.3%	0.9%	0.1%	0.5%	-2.2%	-1.5%	-0.1%	-0.7%	-1.0%	2.2%	-0.7%	-3.5%	-7.1%
Quant Macro	2.8%	-0.8%	1.7%	0.3%	-0.8%	-2.6%	-5.2%	1.2%	-0.4%	-0.1%	0.4%	0.4%	-7.1%	-3.4%
Quant EMN	1.2%	0.7%	-1.0%	0.5%	0.9%	-5.1%	-5.6%	0.1%	0.8%	-3.6%	1.4%	-0.6%	-11.3%	-10.1%
Risk Premia	0.7%	0.0%	0.3%	0.0%	-0.5%	-3.4%	-8.0%	0.6%	-0.4%	-0.1%	1.8%	1.1%	-9.0%	-8.1%
Stat Arb	0.3%	-0.6%	0.6%	-0.5%	0.9%	-1.0%	-1.9%	2.2%	0.6%	3.1%	1.1%	1.8%	6.8%	6.6%
HF Composite*	**0.2%**	**0.6%**	**1.0%**	**1.6%**	**0.3%**	**-2.3%**	**-8.3%**	**4.1%**	**2.4%**	**1.8%**	**2.3%**	**2.0%**	**1.7%**	**5.2%**

Asset weighted returns unless otherwise stated.

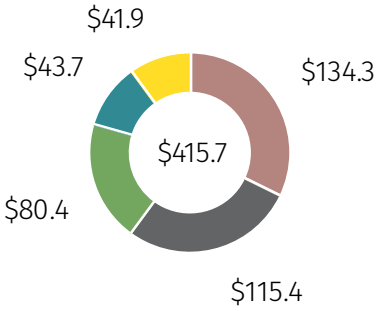
**Aurum Hedge Fund Data Engine Asset-Weighted Composite Index*

Key Numbers

NUMBER OF FUNDS

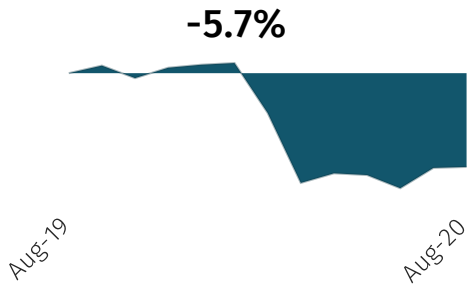


AUM ($ BN)

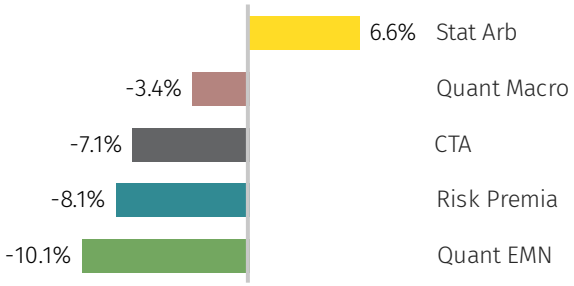


Quant Macro | CTA | Quant EMN | Risk Premia | Stat Arb

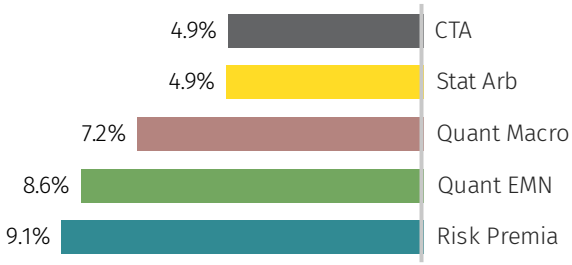
STRATEGY NET RETURN (1 YR)



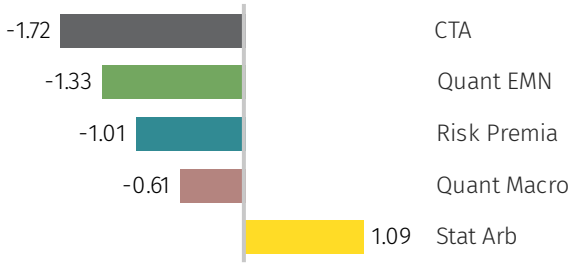
SUB-STRATEGY NET RETURN (1 YR)



STANDARD DEVIATION (1 YR)



SHARPE RATIO (1 YR)*

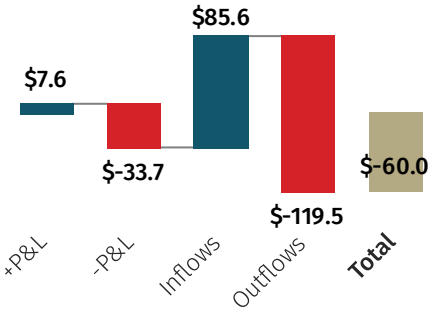


NET POSITIVE/NEGATIVE MONTHS (1 YR)

58.3%
positive
months

41.7%
negative
months

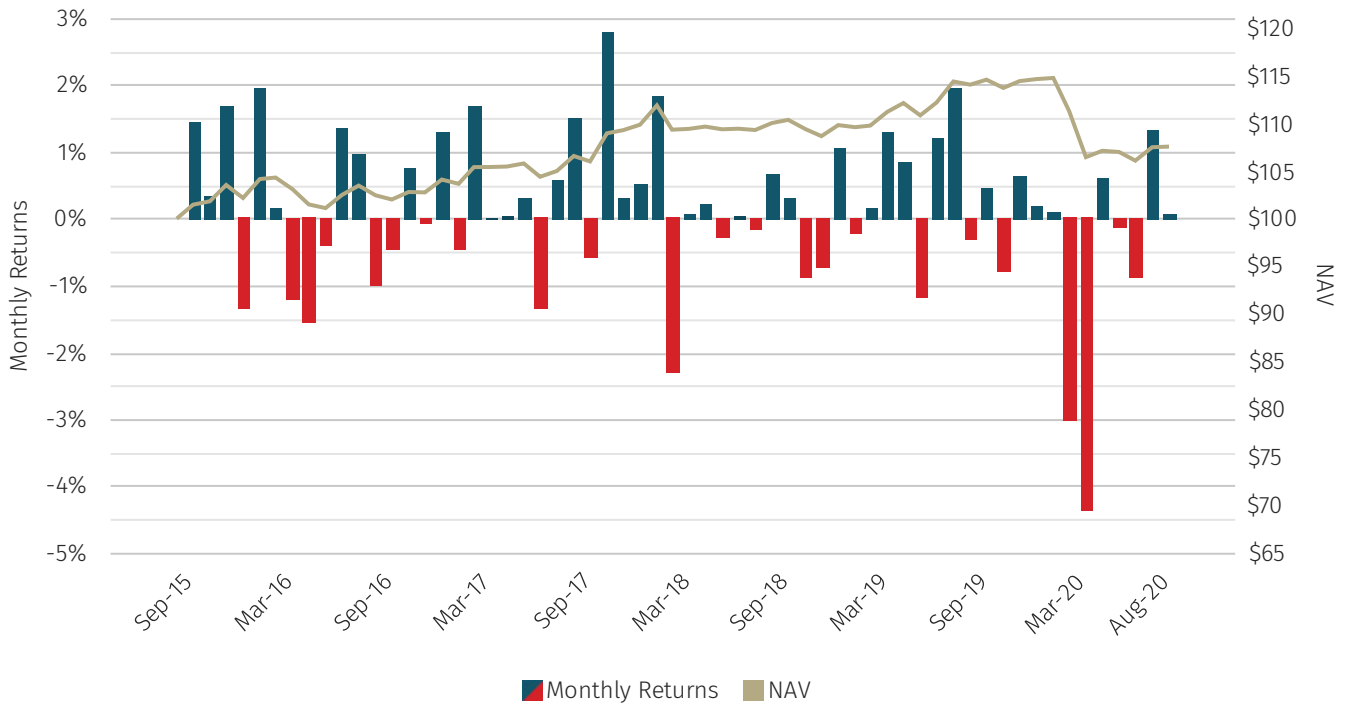
AUM CHANGE $BN (1 YR)



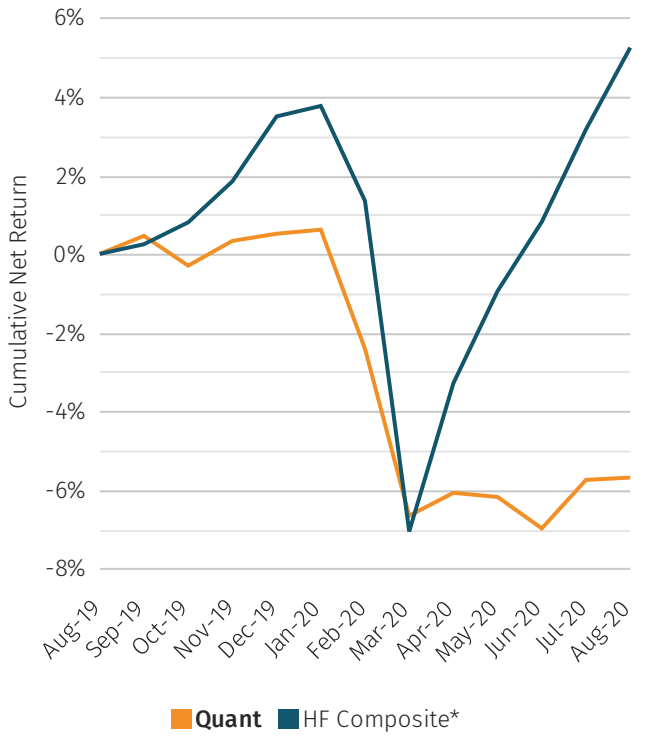
**Risk Free Rate = period average of 3-month US Libor 1.18%. Source: Aurum Funds Limited*

Master Strategy Performance

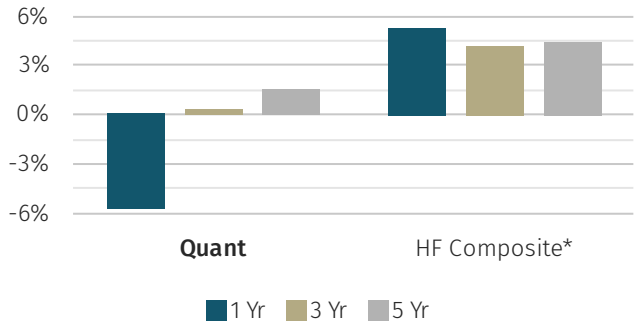
NET MONTHLY RETURN (5 YR)



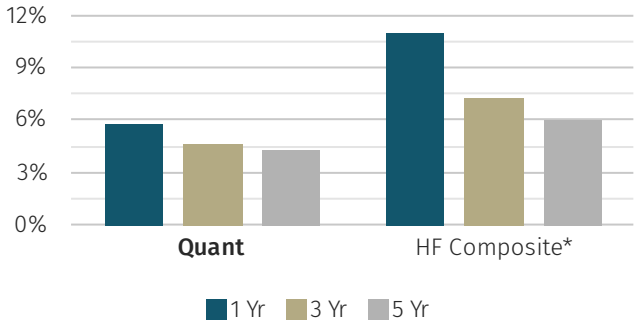
RELATIVE RETURN VS HF COMPOSITE (1 YR)



NET RETURN (ANNUALISED)

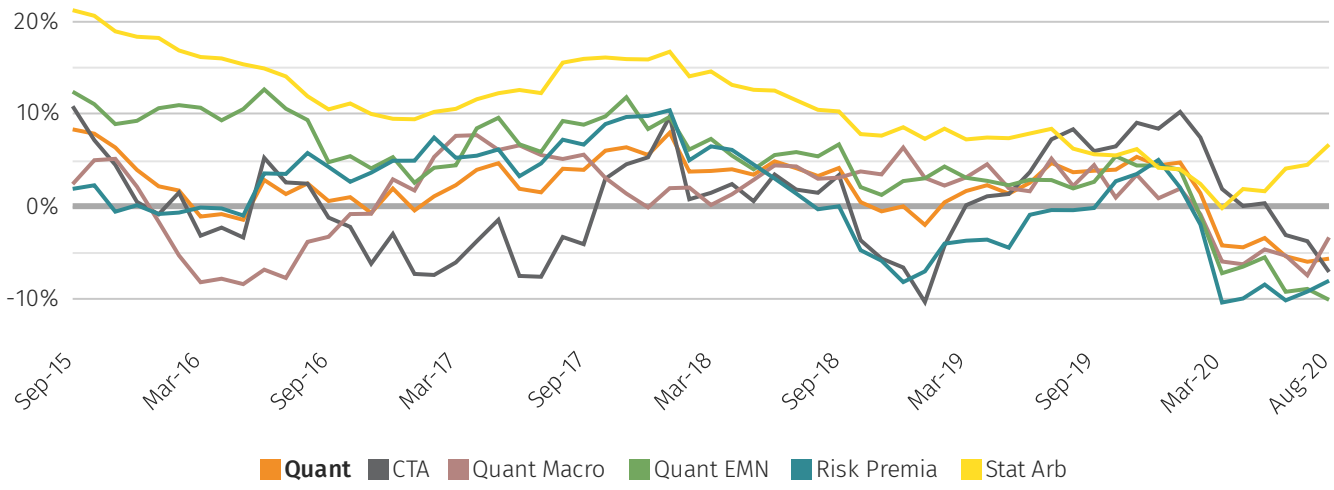


VOLATILITY (ANNUALISED)

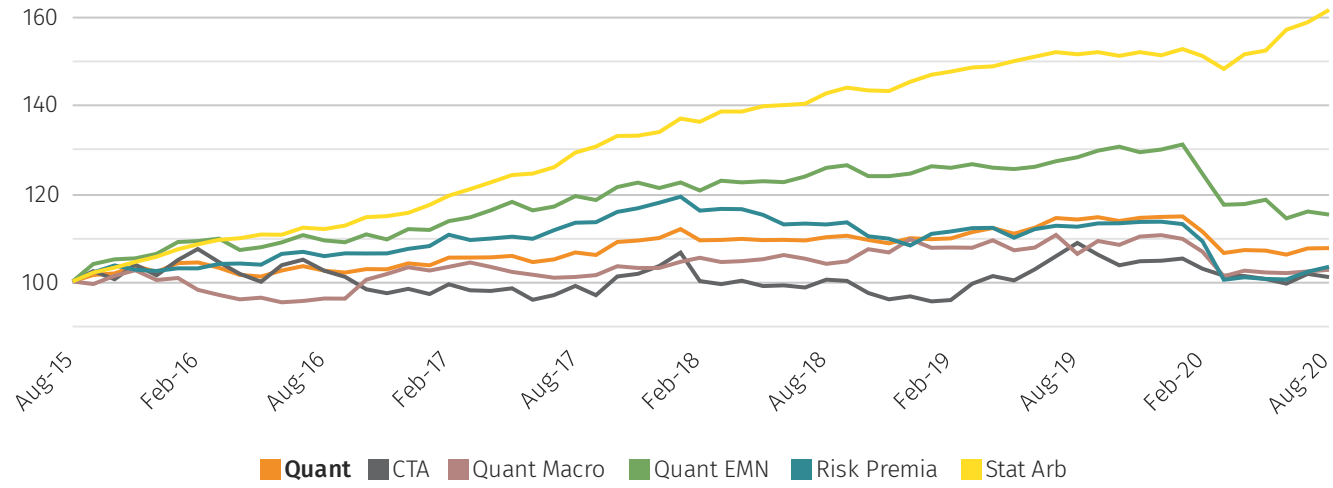


HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index
Source: Aurum Hedge Fund Data Engine.

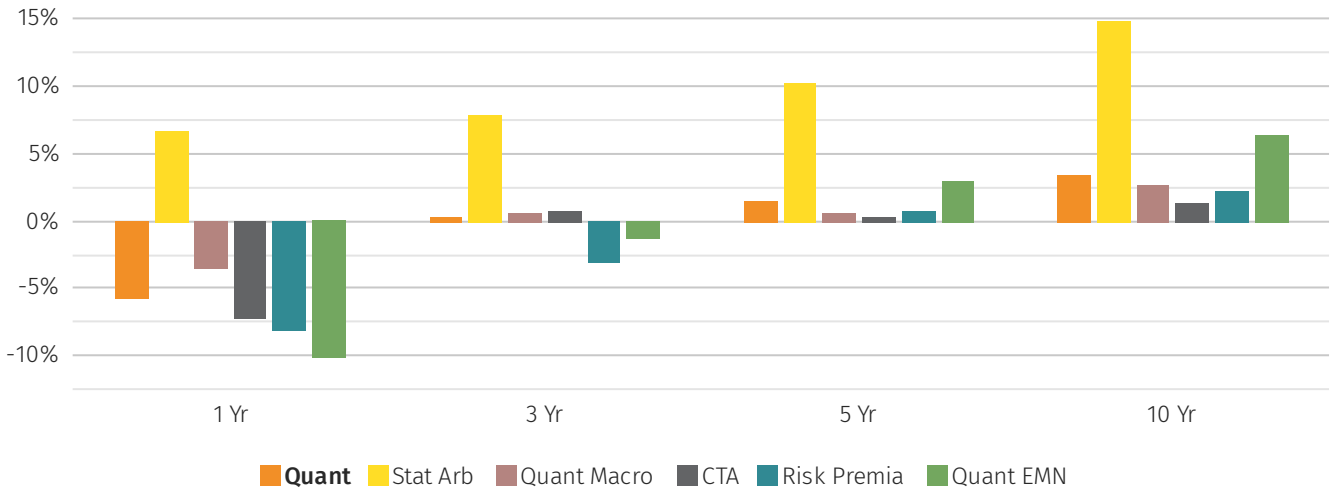
ROLLING 12 MONTH NET RETURN (5 YR)



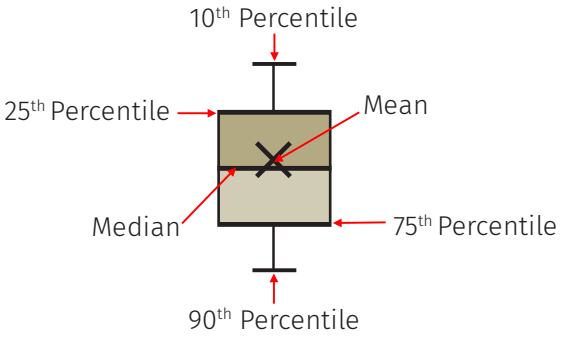
CUMULATIVE NET RETURN (5 YR)



COMPOUND ANNUAL RETURN (ANNUALISED)

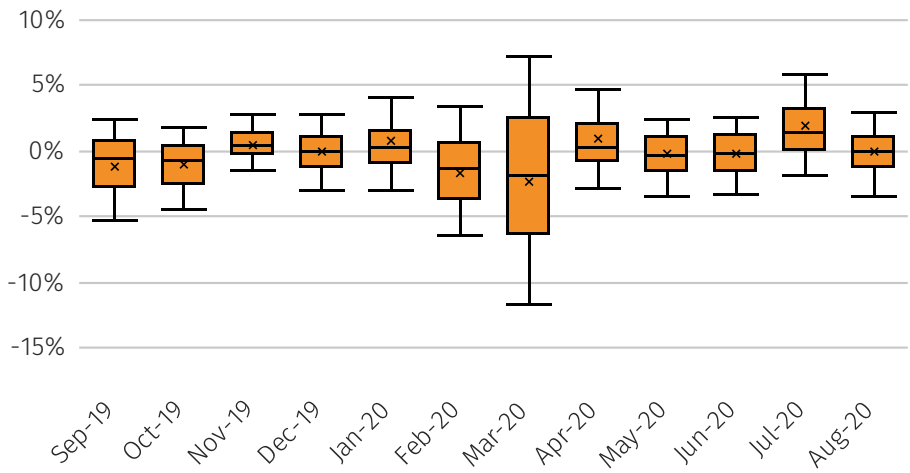


Monthly Performance Dispersion

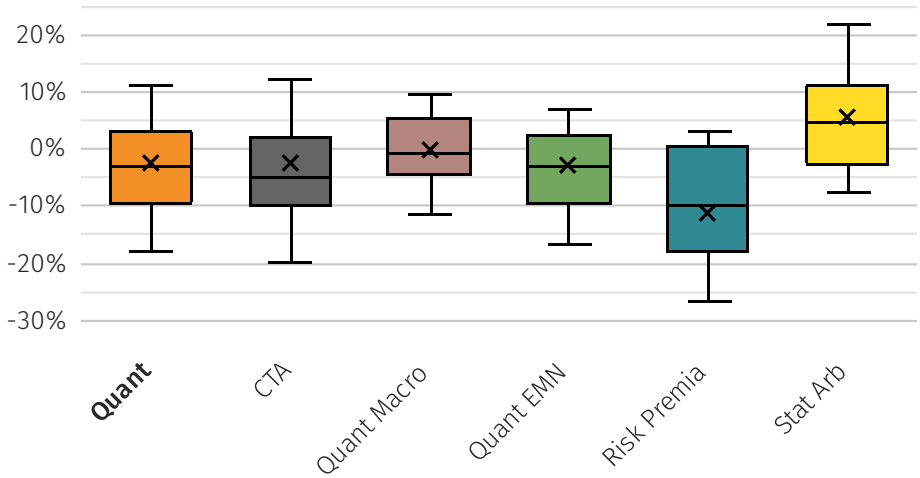


Equally weighted returns

MASTER STRATEGY NET RETURN DISTRIBUTION

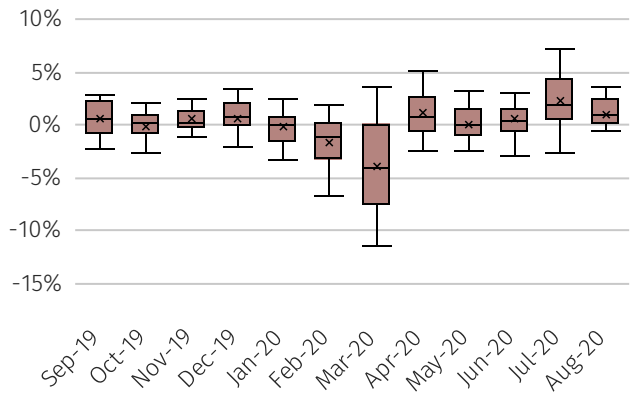


SUB-STRATEGY NET RETURN (1 YR)

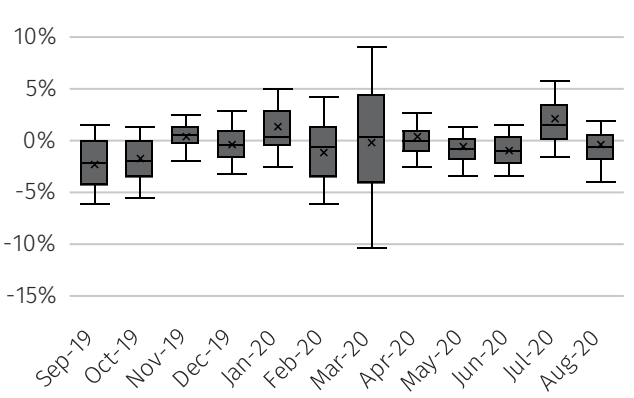


SUB-STRATEGIES NET MONTHLY RETURN DISTRIBUTION

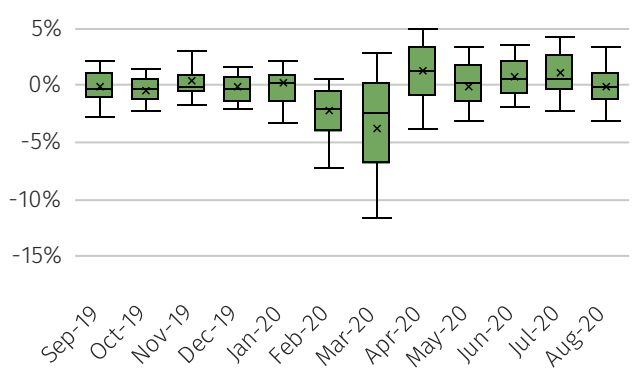
Quant Macro



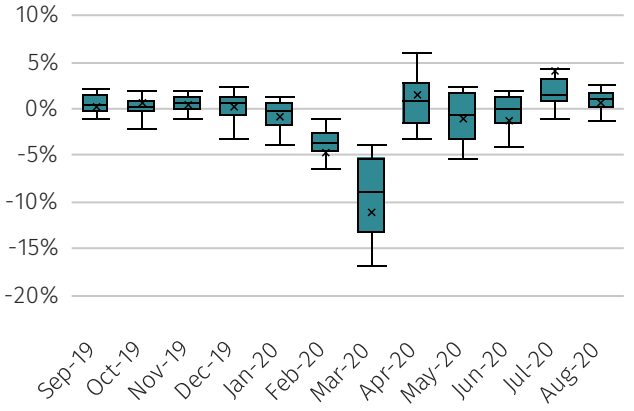
CTA



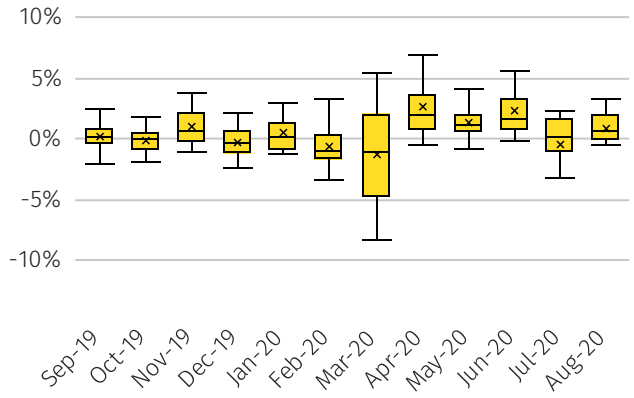
Quant EMN



Risk Premia



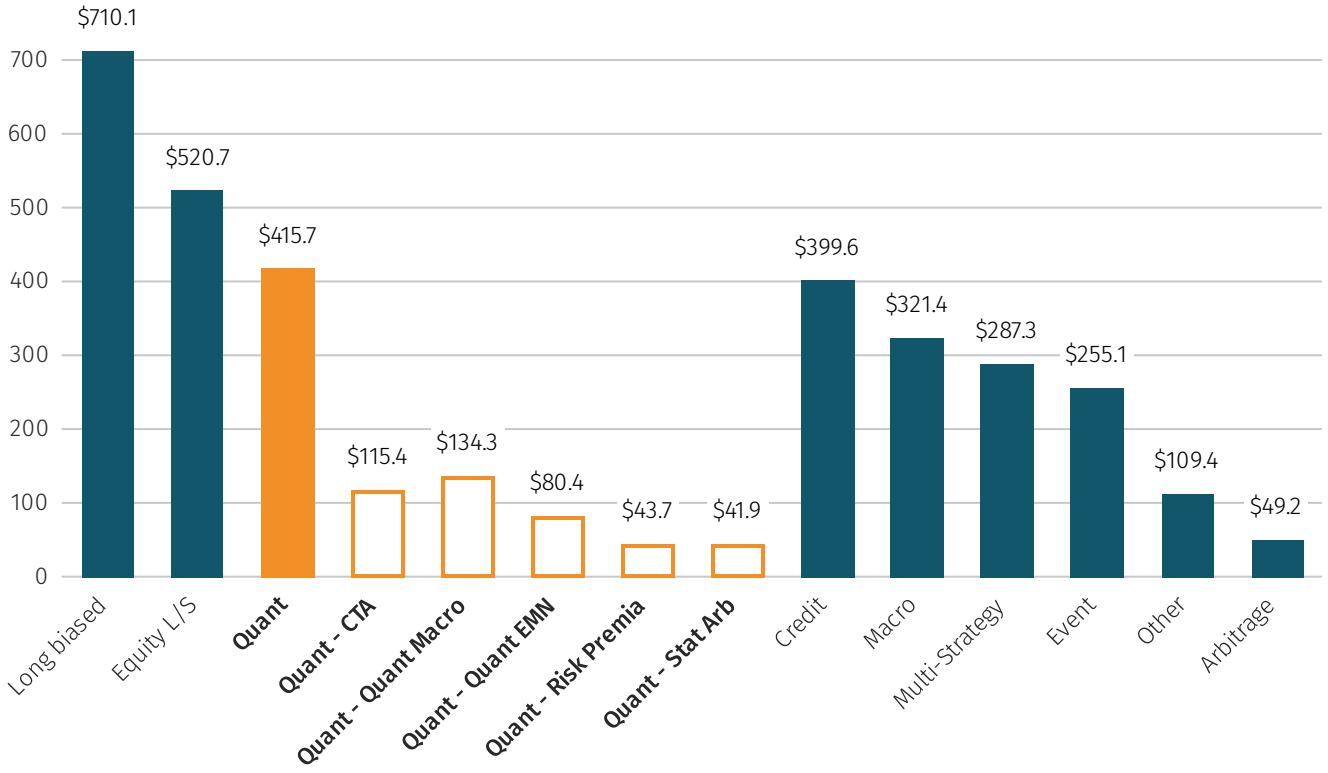
Stat Arb



Master Strategy Overview

Putting the quant universe into context versus other hedge fund strategies.

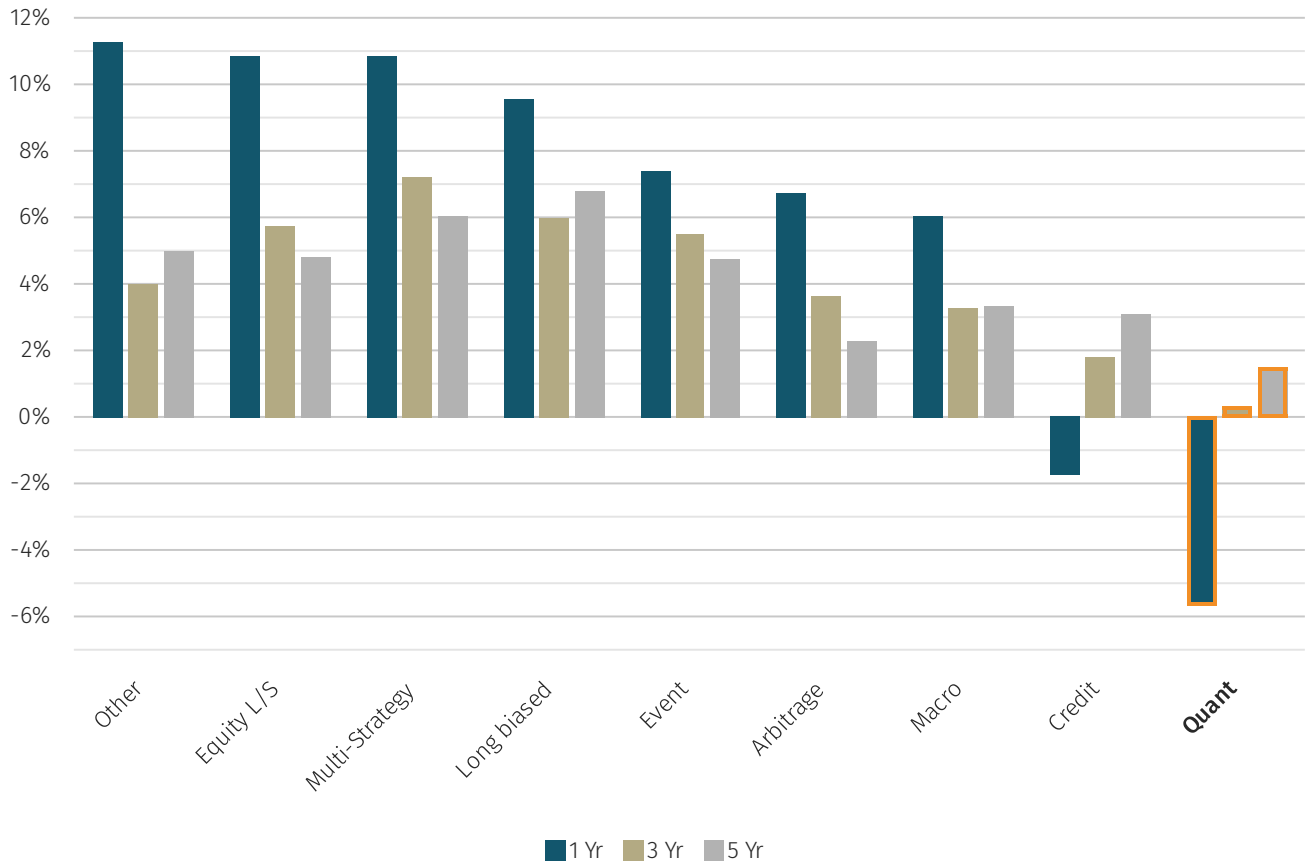
AUM OF MASTER STRATEGY – AUGUST 2020 ($ BN)



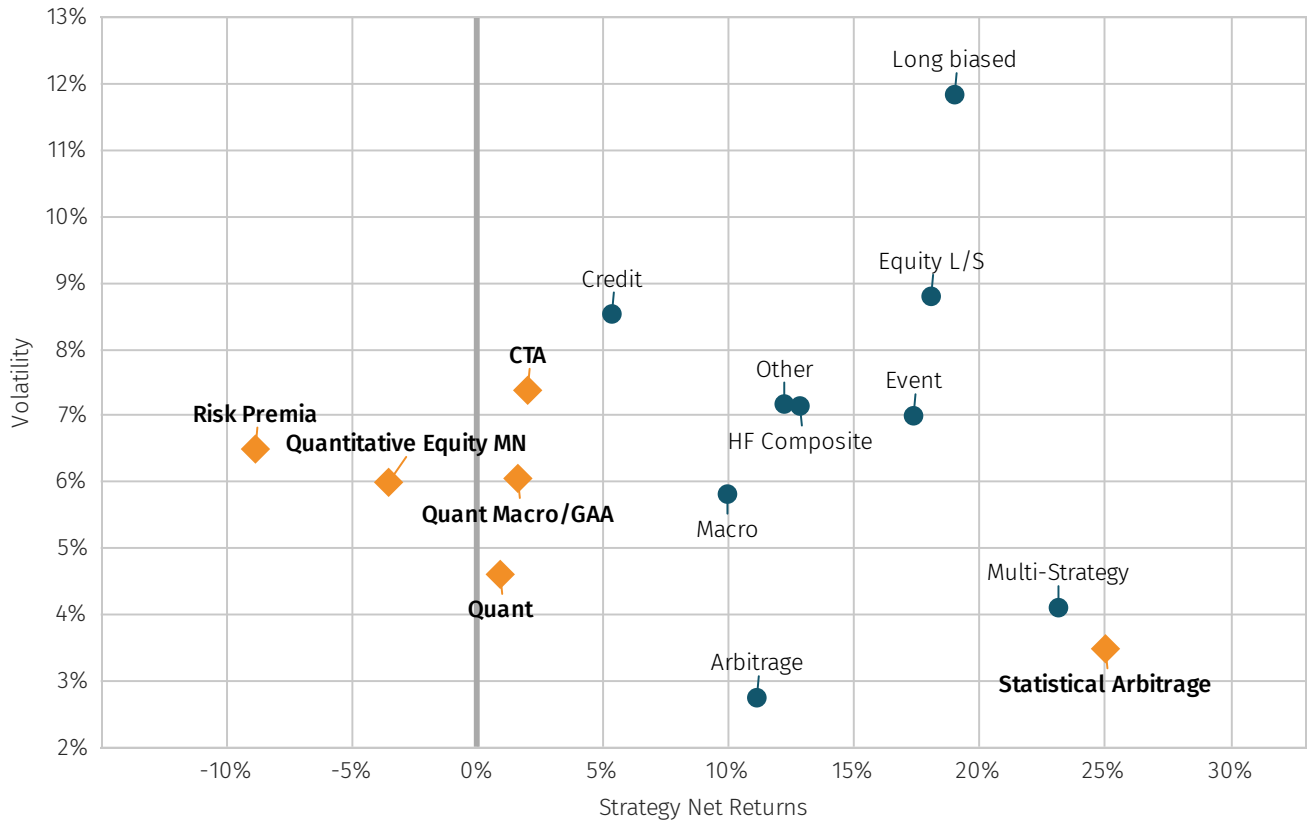
MULTIPLE PERIOD – HIERARCHICAL ANNUALISED NET RETURN

1 YEAR	3 YEAR	5 YEAR	10 YEAR
Equity L/S 10.9%	**Multi-Strategy** 7.2%	**Long biased** 6.8%	**Multi-Strategy** 7.3%
Multi-Strategy 10.8%	**Long biased** 6.0%	**Multi-Strategy** 6.0%	**Long biased** 6.5%
Long biased 9.6%	**Equity L/S** 5.7%	**Equity L/S** 4.8%	**Equity L/S** 6.0%
Event 7.3%	**Event** 5.5%	**Event** 4.7%	**Event** 5.4%
Arbitrage 6.7%	**Arbitrage** 3.6%	**Macro** 3.3%	**Credit** 4.7%
Macro 6.0%	**Macro** 3.2%	**Credit** 3.1%	**Quant** **3.3%**
Credit -1.7%	**Credit** 1.8%	**Arbitrage** 2.2%	**Macro** 3.2%
Quant **-5.7%**	**Quant** **0.3%**	**Quant** **1.5%**	**Arbitrage** 1.6%

MASTER STRATEGY NET ANNUALISED RETURNS

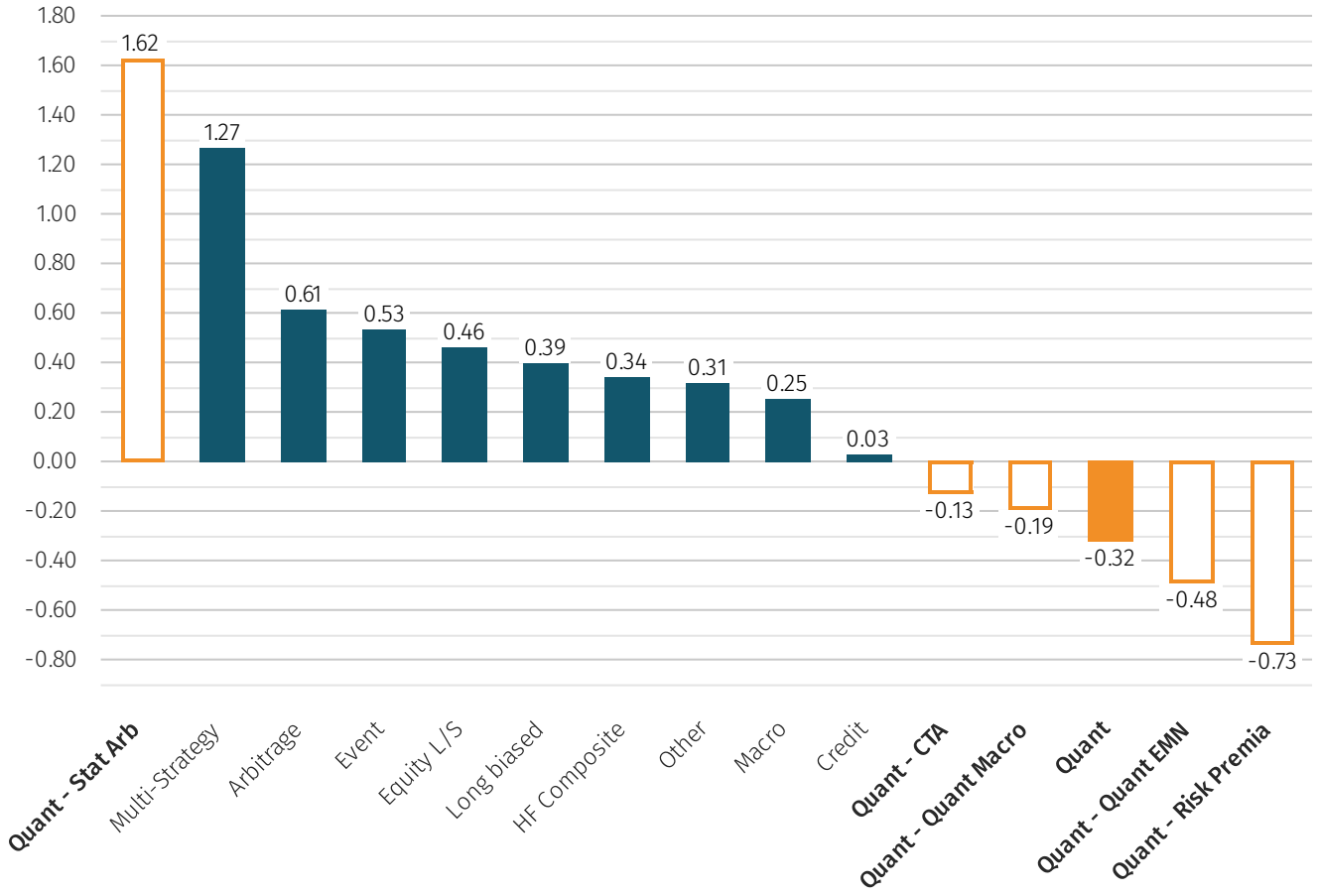


STRATEGY NET TOTAL RETURN VS ANNUALISED VOL (3 YR)

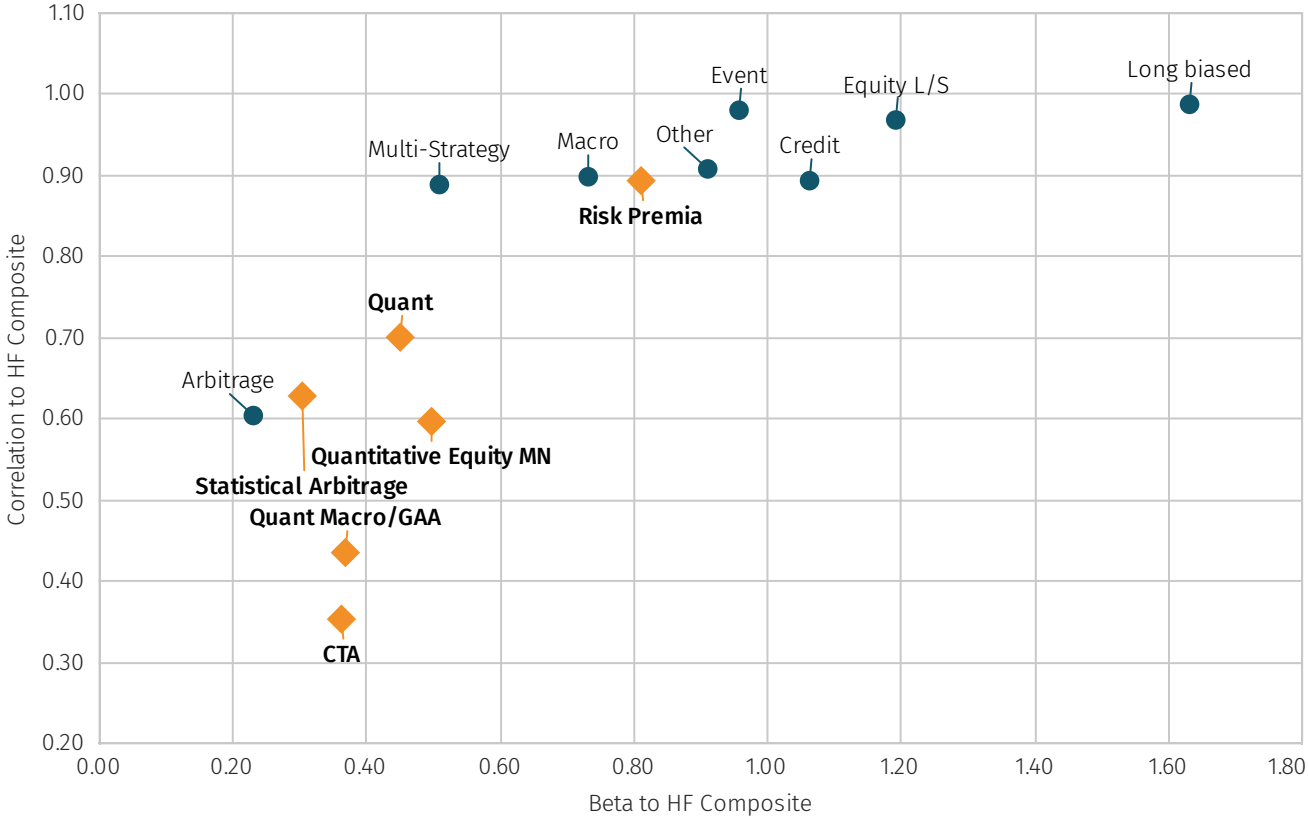


Source: Aurum Hedge Fund Data Engine, Bloomberg.
HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index.

SHARPE RATIO BY HEDGE FUND STRATEGY (3 YR)*



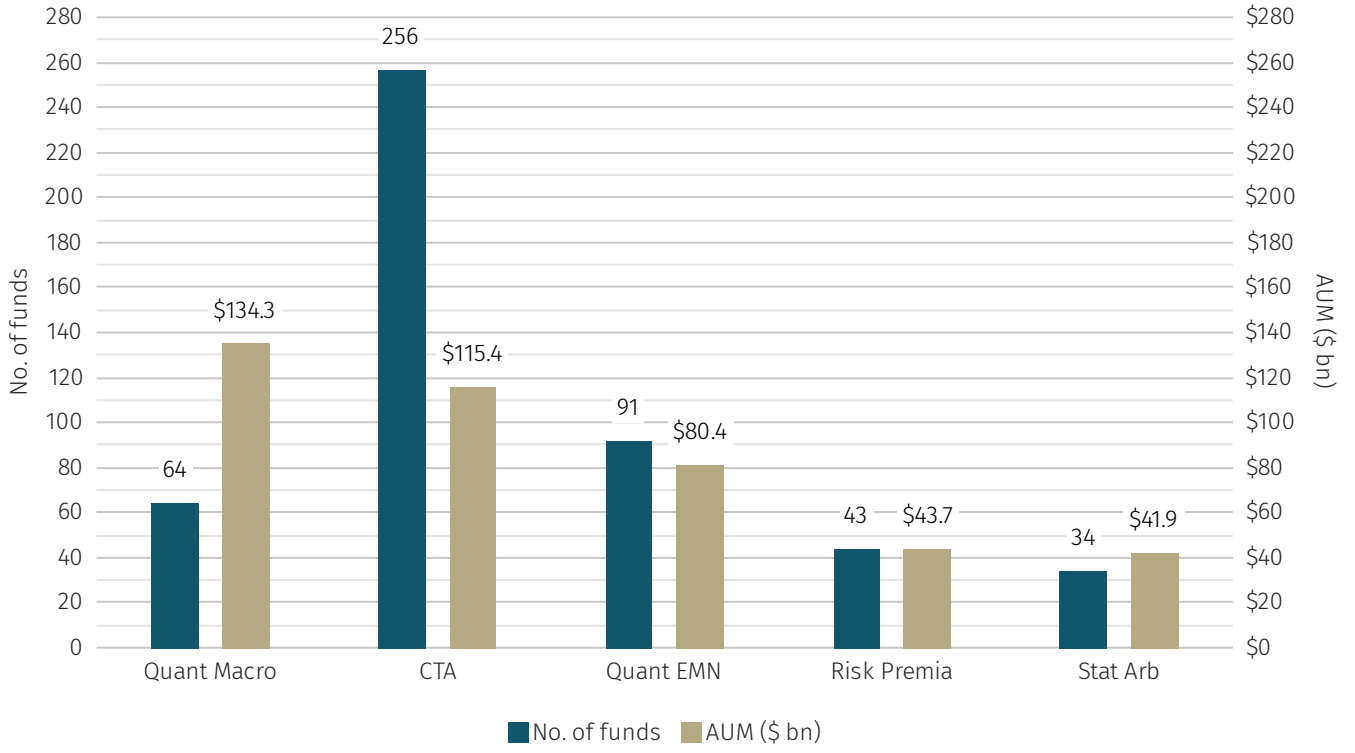
STRATEGY CORRELATION AND BETA TO HF COMPOSITE (3 YR)



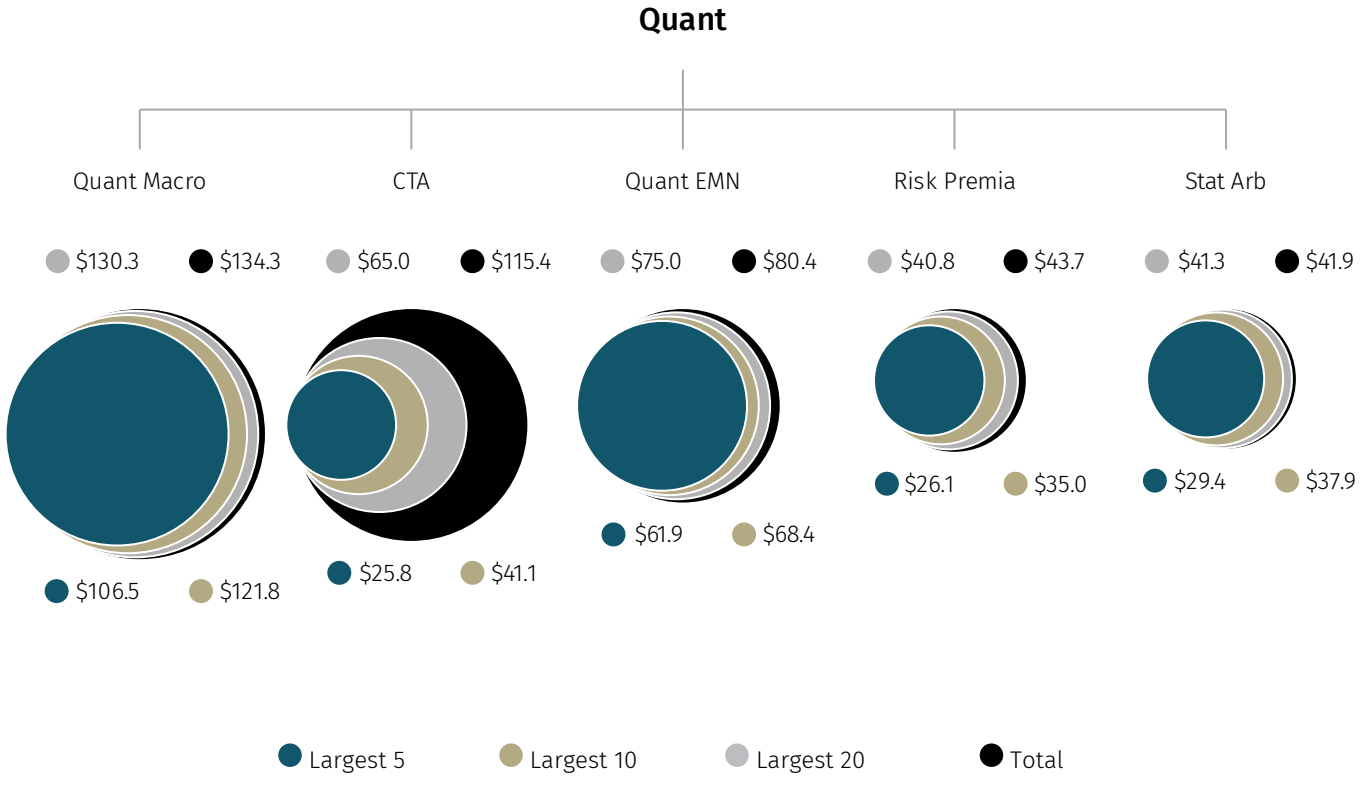
*Source: Aurum Hedge Fund Data Engine, Bloomberg. *Risk Free Rate = period average of 3-month US Libor 1.89%*
HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index.

Quant Universe

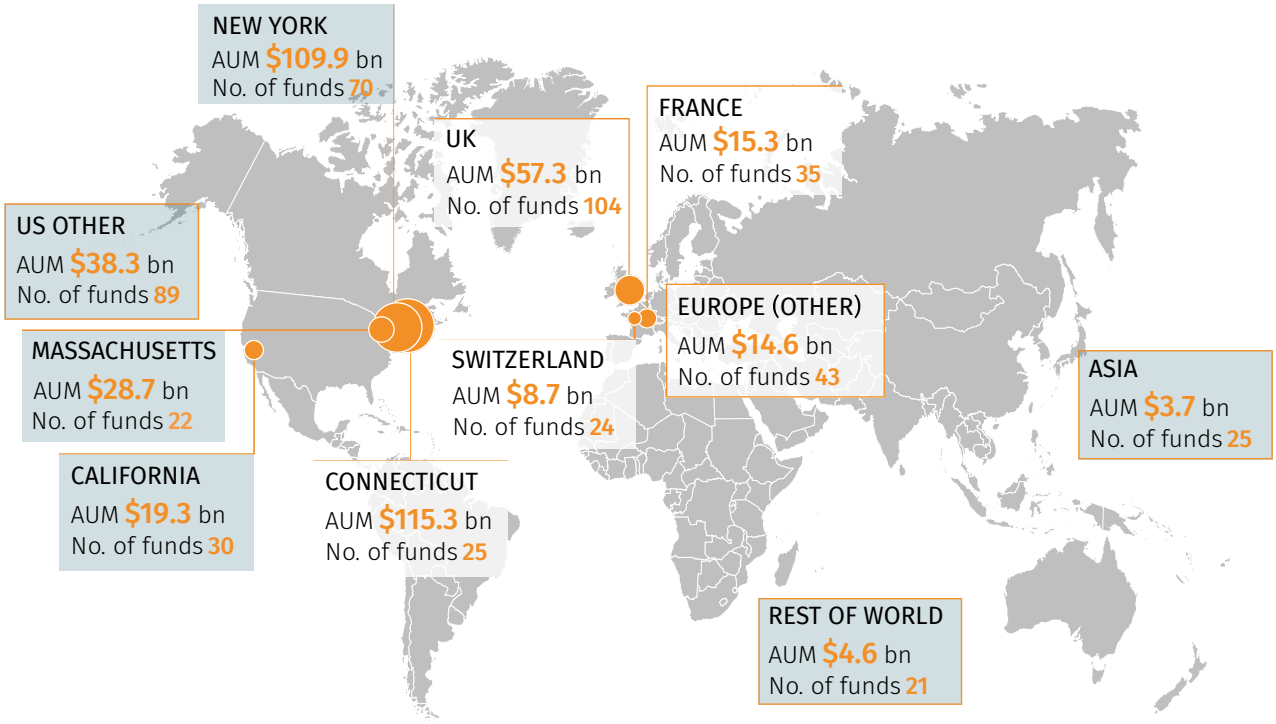
NUMBER OF FUNDS AND AUM BY SUB-STRATEGY



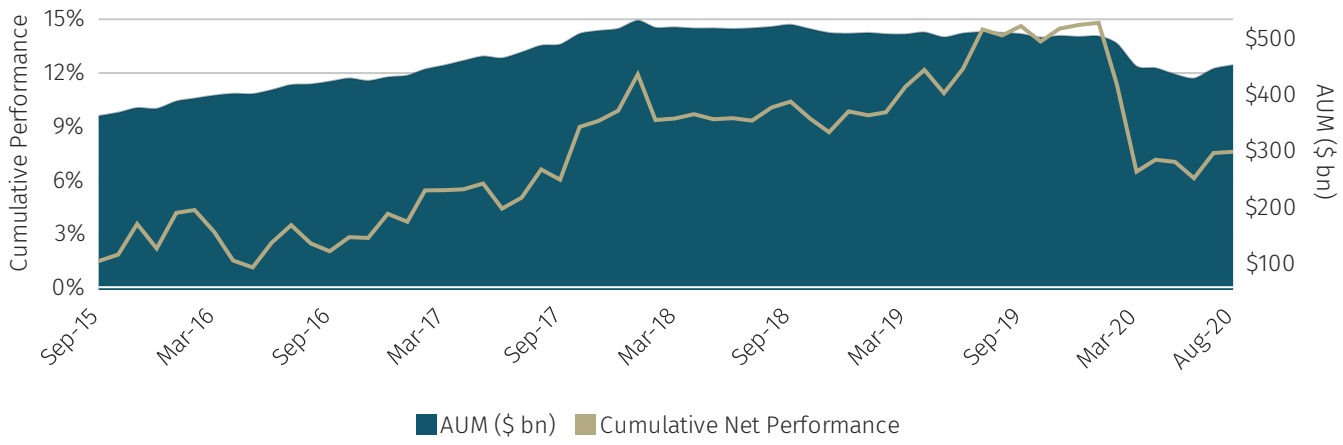
SUB-STRATEGY FUND CONCENTRATION ($ BN)



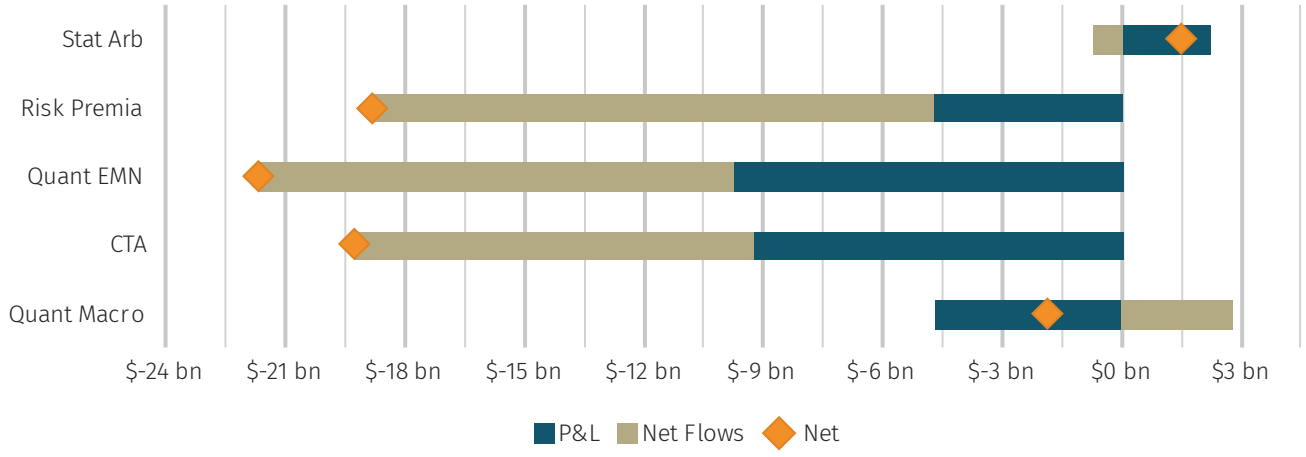
ASSETS UNDER MANAGEMENT BY LOCATION



MASTER STRATEGY ASSETS (5 YR)*



12 MONTH CHANGE IN AUM BY SUB-STRATEGY



** Includes funds which are active but have not reported to Aurum within the last 12 months*
Source: Aurum Hedge Fund Data Engine

TERMS AND CONDITIONS

	Median Redemption Notice (Days)	Median Redemption Frequency	Weighted Avg. Redemption Total (Days)*	Weighted Avg. Management Fee	Weighted Avg. Performance Fee
Quant – MASTER	**5**	**Monthly**	42	**1.40%**	**16.26%**
Quant – CTA	5	Weekly	28	1.27%	15.90%
Quant – Macro / GAA	6	Monthly	33	1.94%	19.87%
Quant – Statistical Arbitrage	30	Monthly	76	1.82%	19.22%
Quant – Quant Equity Market Neutral	21	Monthly	57	0.91%	13.06%
Quant – Risk Premia	5	Daily	30	0.89%	10.01%

**Weighted Avg. Redemption Total (Days) is the weighted Avg. of both redemptions notice days and redemption frequency days.*

Definitions

Quant – CTA:
CTAs (Commodity Trading Advisors) take primarily directional positions in index level or macro instruments, such as futures or FX contracts, in a systematic fashion. Technically, a CTA is a trader of futures contracts as defined by the CFTC and historically, there were many CTAs who were not systematic; such traders are more likely to be classified as 'Global Macro'. CTAs are typically extremely systematised with straight through processing from signal generation to execution. Many, but by no means all, CTAs are trend following (using historical prices to determine predictable 'trending patterns') buying into markets where prices are rising and selling where markets are falling. When rising markets slow down/stop rising, trend-followers typically reduce its position and will eventually reverse its position into a short position, which it will hold until the market starts to rally again. The strategy is known for running with profits and cutting losses. Other models used in CTAs may include carry, seasonality, mean reverting or pattern recognition systems, models driven by fundamental data or non-traditional data sources. Some CTAs can also trade very short-term signals driven by market microstructure anomalies and patterns.

Quant – Macro / GAA:
GAA (Global Asset Allocation) is a systematic approach to Global Macro, with managers taking positions in global markets based on quantitative analysis, taking in information based primarily on economic data, but also incorporating price related information. The strategy is highly data and technology intensive. The positions tend to be relative value based, but they may also take directional positions in instruments such as futures, FX and baskets of equities, ETFs, swaps and other instruments. Signals may be arranged into relative value asset class models, cross asset class models / directional trades. Signals are also often classified under a number of factor headings: value, carry, momentum etc.

Quant – Statistical Arbitrage:
Statistical arbitrage funds typically take price data and its derivatives, such as correlation, volatility and other forms of market data, such as volume and order-book information to determine the existence of patterns. These patterns can help the manager forecast the future return of a stock, often over a relatively short timeframe. Typical signal types are: mean-reversion, momentum and event-driven. Mean-reversion looks to take advantage of the phenomenon of short-term price movements occurring due to supply/demand imbalances then moving back to an equilibrium level. Momentum models look for patterns in price data that suggest that price movements will be more persistent (i.e. trend). Other statistical arbitrage funds will look to incorporate more discrete information into their process from events (e.g. publishing of analyst earnings estimates, news flow, etc.). Whilst statistical arbitrage funds tend to focus more on 'technical' models, some may also incorporate some longer-term models that are driven by fundamental data (e.g. stock value models, growth, etc.), however, if these models are the more dominant driver of risk, then the fund is likely to be classified as Quantitative Equity Market Neutral. Statistical arbitrage funds are typically run with a very low level of beta and are market neutral, however, this may not always be the case, with some funds able to take significant directional risk; however, given the higher frequency trading nature of such funds, they are not expected to have significant correlation to markets over time.

Quant – Quant Equity Market Neutral:
Traditional QEMN strategies take fundamental data, such as analyst earnings estimates, balance sheet information and cash flow statement statistics, and systematically rank/score stocks against these metrics in varying proportions. The weights of the scores of the different fundamental data sources may be fixed or dynamic. Managers may construct a portfolio using an optimisation process or by applying simpler rules combined with risk constraints so as to create a portfolio that is dollar and/or beta neutral, and typically with minimal sector exposure. Traditional QEMN portfolios consists of exposure to: Value (looking for stocks mispriced relative to their fundamental value, e.g. based on P/E, P/B, cash flow, etc.); Quality (looking at metrics such as levels of debt, stability of earnings growth, balance sheet strength); momentum (looking at past returns over a pre-set timeframe ranging from days to months); however, these are common factors that are relatively easy to exploit/replicate - hence the proliferation of risk-premia products that operate in this space.

Quant – Risk Premia:
Hedge fund risk premia products typically seek to capture the fundamental insights of a class of hedge fund strategies (hedge fund risk premia / Alternative Risk Premia) along with a meaningful proportion of the expected returns those strategies can earn - using a dynamic but clearly defined process. Funds typically have exposure to a well-diversified portfolio of hedge-fund premia. Premia can cover everything from equity premia (Equity market neutral - trading across value, quality, growth and momentum factors, as well as EM premia), macro premia (e.g. trend following, or EM premia), to arbitrage strategies (e.g. risk arbitrage - holding a portfolio of merger targets diversified by sector and deal type; convertible arbitrage, etc.). The strategies are typically very well understood, backed up by academic research and implemented systematically.

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