

Quant Deep Dive

12-month review to August 2021

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In summary

Whilst over the 12 months to August, quant funds saw positive performance, it has remained a challenging environment on a relative basis when benchmarked to the rest of the hedge fund universe as observed by Aurum Hedge Fund Data Engine, only macro funds have performed worse than Quant over the period.

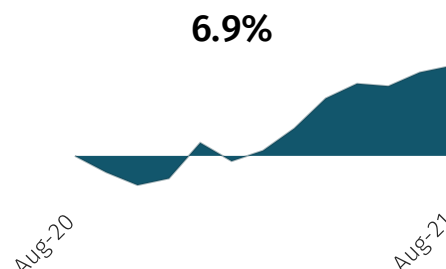
Over the same time period equities have continued their exceptionally strong run of performance while bonds were flat.

Although there are broad themes at the strategy and sub-strategy level, it should be noted that there remains some extremely high levels of performance dispersion between the top and bottom 10% of performing funds within the quant strategy.

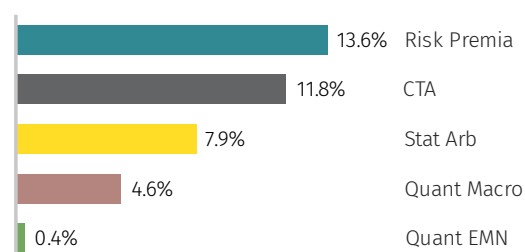
This measure of dispersion remains at elevated levels as at the report date, comparable in magnitude to Q1 2020 and prior to that the summer of 2015.

*HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index. All figures and charts use asset weighted returns unless otherwise stated. All Hedge Fund data is sourced from Aurum Hedge Fund Data Engine. For definitions on how the Strategies and Sub-Strategies are defined please refer to <https://www.aurum.com/hedge-fund-strategy-definitions/>, and for information on index methodology, weighting and composition please refer to <https://www.aurum.com/aurum-strategy-engine/>

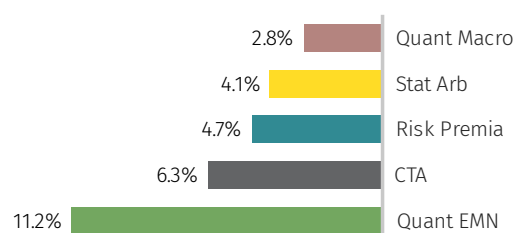
MASTER STRATEGY NET RETURN (1 YR)



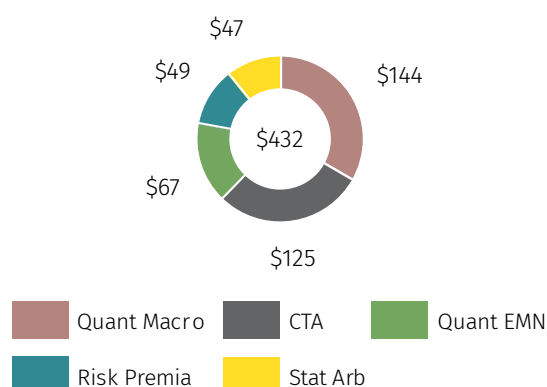
SUB-STRATEGY NET RETURN (1 YR)



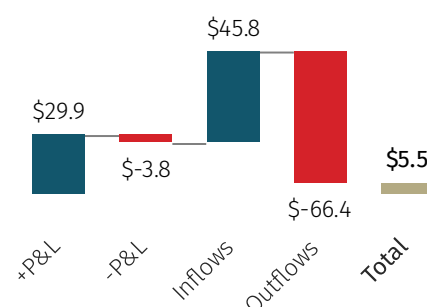
STANDARD DEVIATION (1 YR)



AUM (\$BN)



AUM CHANGE \$BN (1 YR)



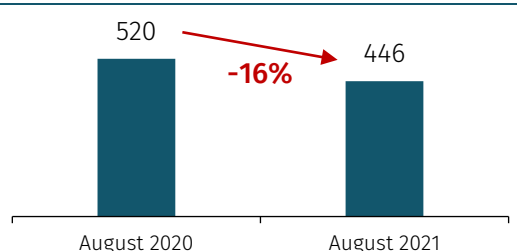
Highlights

Whilst over the 12 months to August quant funds saw positive net performance (+6.9%), it has remained a challenging environment on a relative basis when benchmarked to the rest of the Aurum hedge fund data engine universe; only macro funds have performed worse than quant in the last 12 months. Over the same time period equities* have continued their exceptionally strong run of performance and returned over 28%, while bonds* were flat.

Only macro funds have performed worse than quant funds in the last 12 months.

At the sub-strategy level, risk premia and CTAs outperformed, while quant equity market neutral (QEMN) and quant macro underperformed. The quant master strategy assets under management (AUM) as observed by Aurum Hedge Fund Data Engine grew marginally by \$5.5bn to \$432bn; the rise was due to net positive P&L produced by the strategy (+\$25.8bn), but was offset by corresponding net investor outflows (-\$20.6bn). At the sub-strategy level QEMN saw by far the largest outflows (-\$12bn). Quant strategies accounted for 13.7% of the hedge fund universe as covered by the Aurum Hedge Fund Data Engine database as of the end of August 2021, which represents a small decrease (-0.3%) from 12 months ago, where it stood at 14.0%.

CHANGE IN FUND COUNT (1YR)



The number of reporting quant funds fell 16% from 520 to 446. The biggest fall in reporting funds was in the risk premia strategy (-22%) and the CTA strategy (-14%).

Quant sub-strategies

The quant master strategy can be split into 5 further sub-components to enable more granular analysis. This covers everything from statistical arbitrage (Stat arb), which has more of a bias to shorter-term, more technically driven funds, to quant macro, which can include some very large funds, trading liquid macro instruments in large size with a bias towards longer average holding periods. With such diversity in underlying quant approaches, one would always expect there to be significant performance dispersion within the quant strategy.

During the period under review all of the quant sub-strategies underperformed the broader hedge fund universe, with the HF Composite Index returning 14.4%.

NET RETURN OF MASTER AND SUB STRATEGIES (1 YR)

	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	YTD	1 YR
Quant	-1.3%	-1.0%	0.5%	2.8%	-1.4%	0.8%	1.7%	2.3%	1.1%	-0.2%	1.0%	0.5%	5.8%	6.9%
Risk Premia	-0.5%	-1.7%	2.3%	2.5%	0.9%	0.0%	2.7%	1.6%	1.9%	0.5%	2.2%	0.7%	10.9%	13.6%
CTA	-1.7%	-0.9%	1.5%	4.5%	-0.9%	2.6%	1.3%	2.6%	2.0%	-0.6%	0.8%	0.2%	8.2%	11.8%
Stat Arb	0.1%	0.1%	0.2%	2.6%	-1.2%	0.2%	2.0%	2.2%	-0.8%	0.8%	1.0%	0.3%	4.7%	7.9%
Quant Macro	-0.7%	0.1%	1.8%	1.4%	-0.5%	-0.1%	0.8%	1.3%	0.3%	0.2%	-0.6%	0.5%	1.9%	4.6%
Quant EMN	-2.6%	-3.0%	-3.7%	2.7%	-5.2%	0.3%	3.3%	3.8%	2.0%	-1.6%	4.3%	0.8%	7.5%	0.4%
HF Composite*	-0.5%	-0.2%	4.4%	3.3%	-0.3%	2.1%	0.7%	2.2%	0.7%	0.5%	0.0%	0.9%	6.8%	14.4%
Bonds*	-0.4%	-0.2%	2.0%	1.3%	-1.1%	-1.8%	-2.1%	1.3%	0.5%	-0.4%	1.3%	-0.5%	-2.8%	0.0%
Equities*	-3.2%	-2.2%	12.6%	4.9%	-0.2%	2.6%	2.3%	4.1%	1.3%	1.0%	0.3%	2.3%	14.7%	28.2%

Quant performance over the longer term

Observing the quant strategy over the longer term does not make for happy reading. Quant sits rooted to the bottom of the relative absolute strategy performance tables on a 3, 5 and 10 year period (as seen in [page 6](#)). The story does not significantly improve for quant when looking at risk-adjusted metrics either. Over the last 3 years quant has barely delivered a positive sharpe ratio (+0.04), putting it at the bottom of all the hedge fund strategies observed by Aurum Hedge Fund Data Engine.

Sub-strategy performance

After a torrid period stretching back several years, risk premia strategies benefitted from a more stable market environment, with their 12-month rolling performance improving from -10.4% on August 2020 to +13.6% for August 2021 as of the report date. As one would expect, our analysis suggests that a considerable proportion of these returns are attributable to beta; in fact since January 2013, our analysis suggests that 'alpha' is significantly negative (as seen on [page 9](#)).

All the other quant sub-strategies saw their 12-month rolling performance over the period move from negative to positive performance over the course of the year, however, QEMN strategies were barely exhibiting positive performance (rolling 12m return of 0.4%) and – like risk premia – have underperformed for a long period of time, with both returning between 5.5-6.0% total net return over the five-year period. The long-term underperformance of risk premia is interesting given it has often been seen as a cheaper alternative to traditional hedge funds over the last few years.

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Equity Stat Arb: the 'Alpha Outperformer'

Equity stat arb stands out as the most consistent of the quant sub-strategies, far outperforming the other sub-strategies over a five-year period. In the 12 months period the absolute net return of 7.9% marginally outperforms relative to the broader quant strategy and has the highest median return across all the sub-strategies. When viewed on a risk adjusted basis stat arb is a significant outperformer, returning a sharpe ratio of 1.21 over three years ([page 6](#)) while other sub-strategies were flat to negative. Stat arb is the only quant sub-strategy as observed by Aurum Hedge Fund Data Engine that has consistently exhibited a low beta to both equities and bonds and – importantly – the vast majority of the returns generated appear to be attributable to alpha. Stat Arb also has the highest average fees relative to the other sub-strategies – in the case of quant, 'cheaper does not necessarily = better!'

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This should be a significant consideration from an allocator perspective if looking to reduce the amount of beta exposure in a portfolio. Aurum has noted the considerable increase in hedge fund strategy returns attributable to 'beta', particularly since the market-lows of March 2020. Hedge fund industry deep dive – H1 2021.

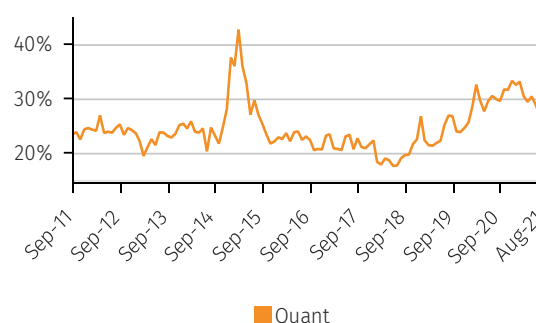
CTAs have typically exhibited an ability to generate alpha over the long-term, however overall returns have been muted for a number of years and there has been considerable negative performance that may be attributable to beta. Quant Macro has exhibited little P&L from beta, but there has been significant volatility in alpha. QEMN exhibited consistent (but low) alpha generation for many years, however, the sub-strategy saw massive alpha reduction since Q1 2020.

Dispersion

Although there are broad themes at the strategy and sub-strategy level, it should be noted that there remains some extremely high levels of performance dispersion between the top and bottom 10% of performing funds in the quant strategy. This measure of dispersion remains at elevated levels as at the report date, comparable in magnitude to Q1 2020 and prior to that the summer of 2015. Dispersion spiked in the quant strategy in Q1 2020, but then hit recent highs in Q1 2021 (driven by the massive underlying market volatility), with QEMN exhibited a dispersion of over 37.5% at one point; Stat Arb, Risk Premia, and CTAs were not far behind (all at or over 35% dispersion).

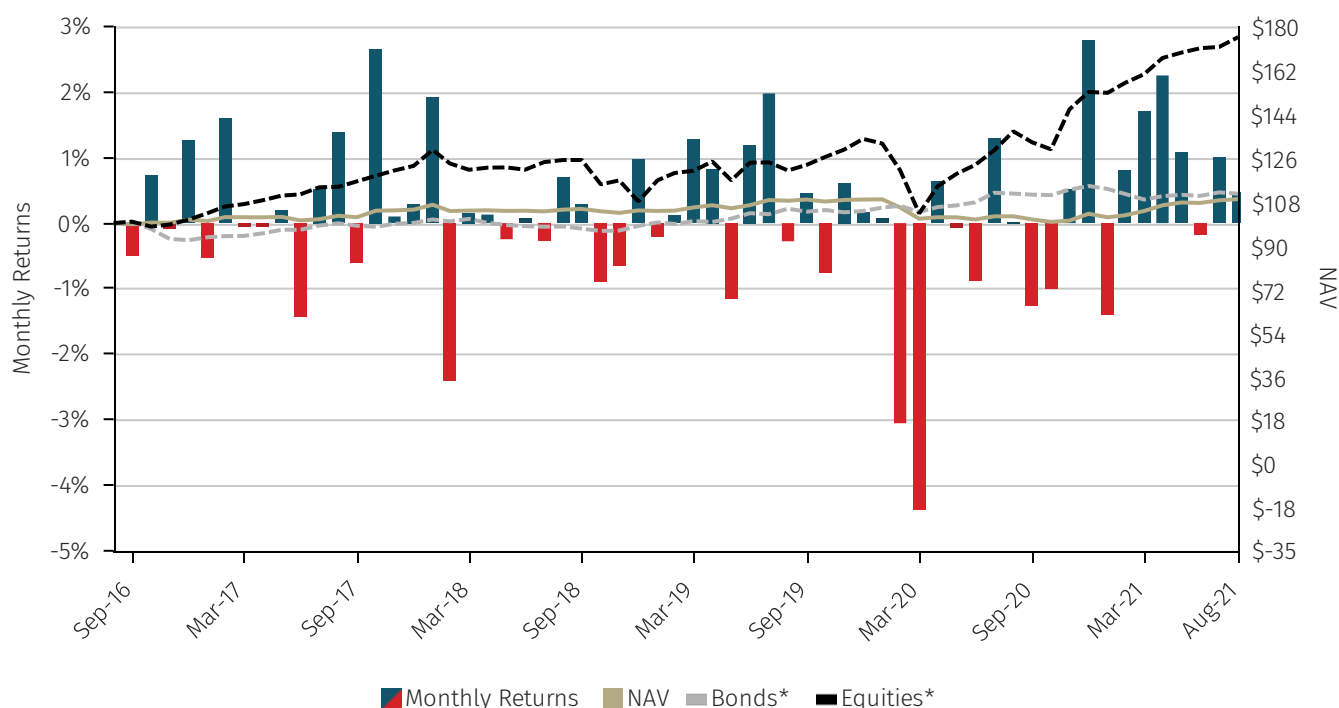
Whilst it has been highlighted that – as a sub-strategy – Stat Arb has been 'consistent', when viewed over the last 12 months one notes the very large performance dispersion, with the top 10% of funds delivering over 25% net returns and the bottom 10% of funds down nearly 5%. A similar picture can be seen across all of the sub-strategies, highlighting the importance of fund-selection from an allocator's perspective.

10th – 90th PERCENTILE 12M ROLLING PERFORMANCE SPREAD

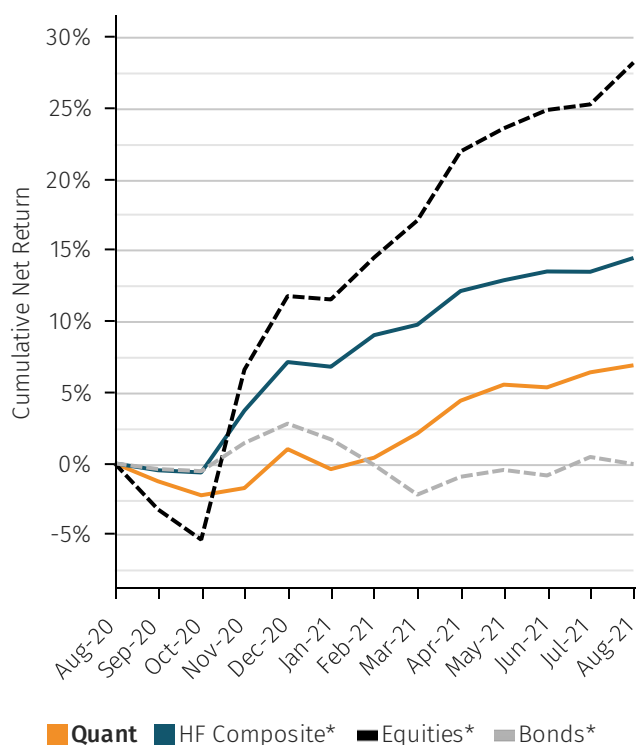


Master Strategy Performance

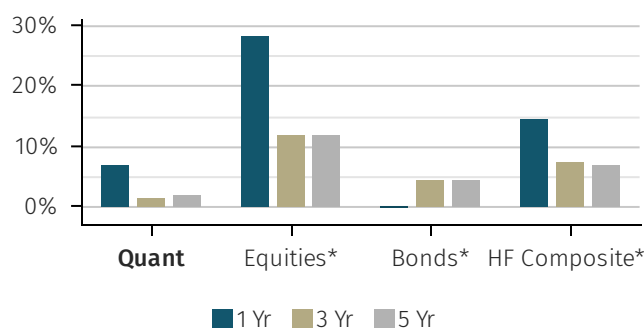
NET MONTHLY RETURN (5 YR)



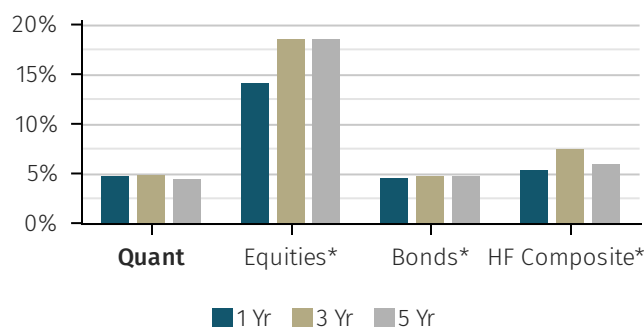
COMPARATIVE RETURN VS HF COMPOSITE (1 YR)



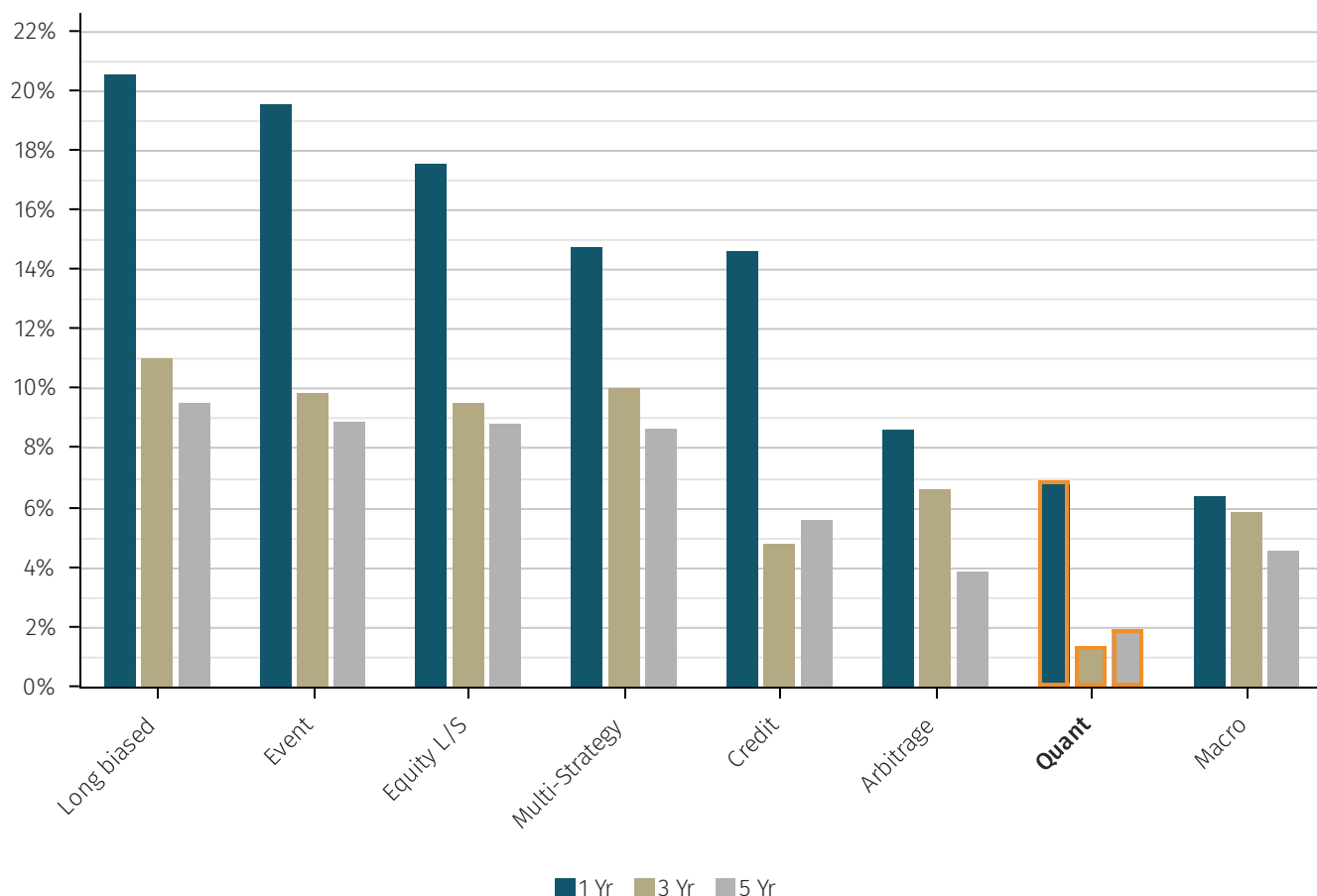
NET RETURN (ANNUALISED)



VOLATILITY (ANNUALISED)



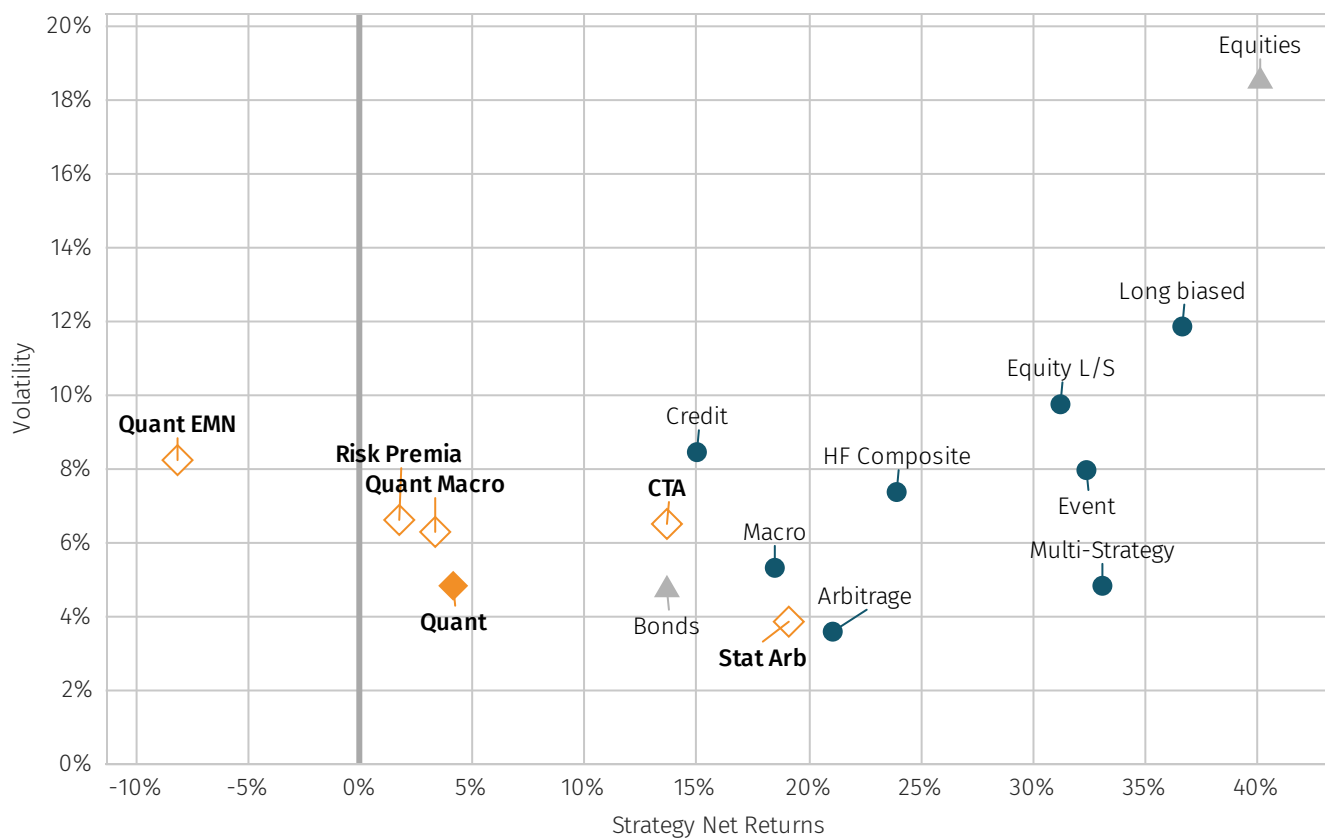
MASTER STRATEGY NET ANNUALISED RETURNS



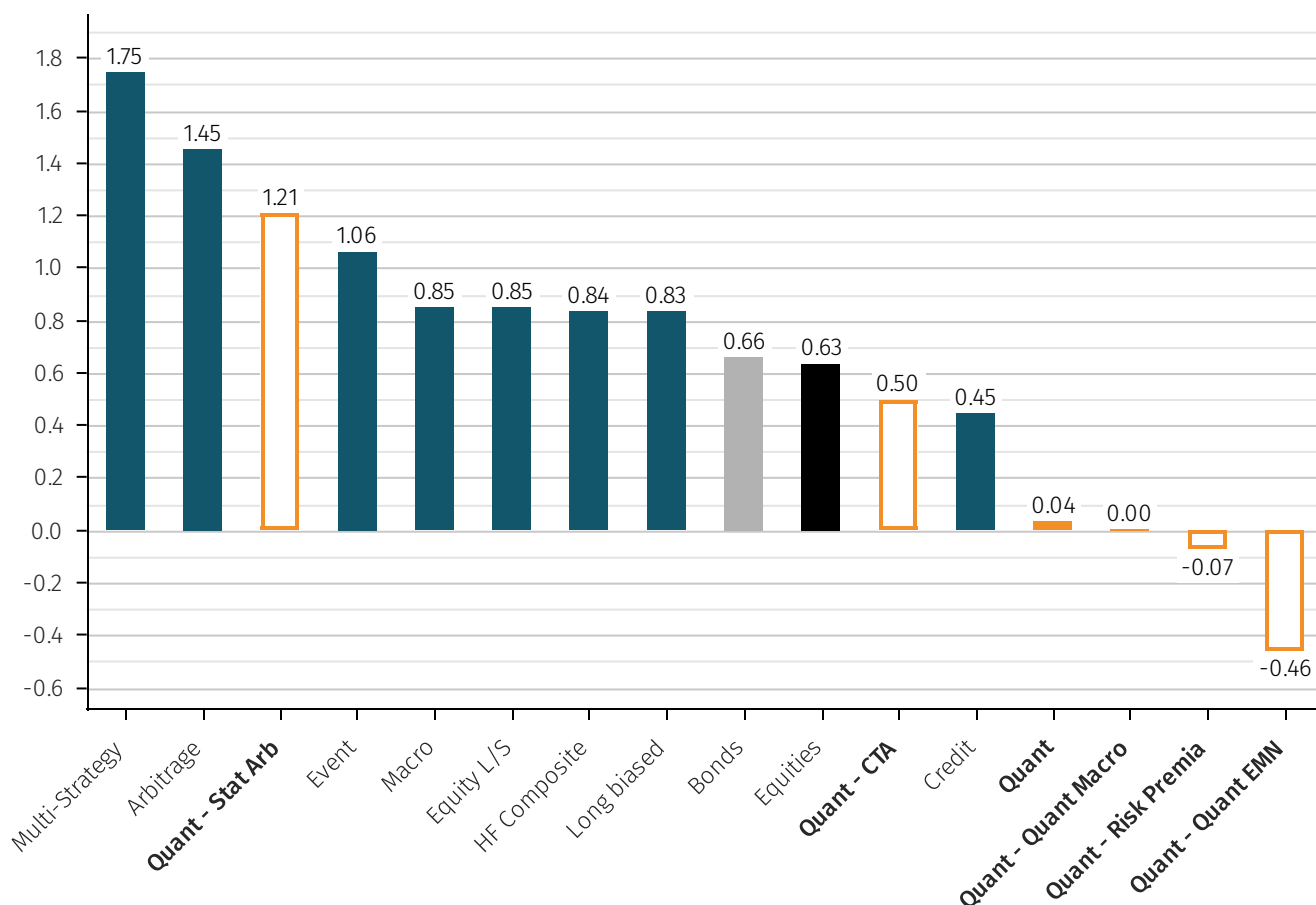
MULTIPLE PERIOD – HIERARCHICAL ANNUALISED NET RETURN

1 YEAR	3 YEAR	5 YEAR	10 YEAR
Long biased 20.5%	Long biased 11.0%	Long biased 9.5%	Multi-Strategy 7.9%
Event 19.5%	Multi-Strategy 10.0%	Event 8.9%	Equity L/S 7.1%
Equity L/S 17.5%	Event 9.8%	Equity L/S 8.8%	Event 6.9%
Multi-Strategy 14.7%	Equity L/S 9.5%	Multi-Strategy 8.6%	Long biased 6.8%
Credit 14.6%	Arbitrage 6.6%	Credit 5.6%	Credit 5.6%
Arbitrage 8.6%	Macro 5.8%	Macro 4.5%	Macro 3.3%
Quant 6.9%	Credit 4.8%	Arbitrage 3.9%	Arbitrage 2.2%
Macro 6.4%	Quant 1.4%	Quant 1.9%	Quant 2.1%

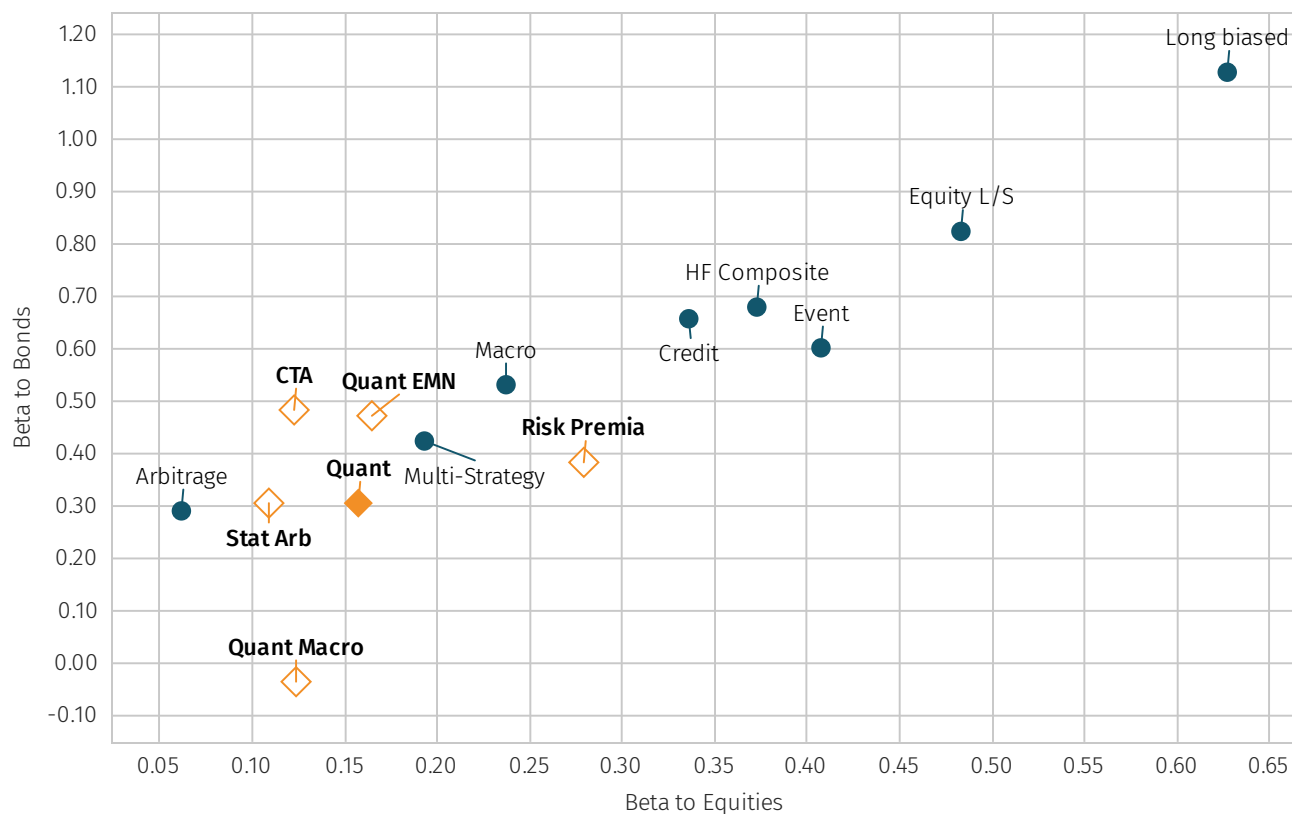
STRATEGY NET TOTAL RETURN VS ANNUALISED VOL (3 YR)



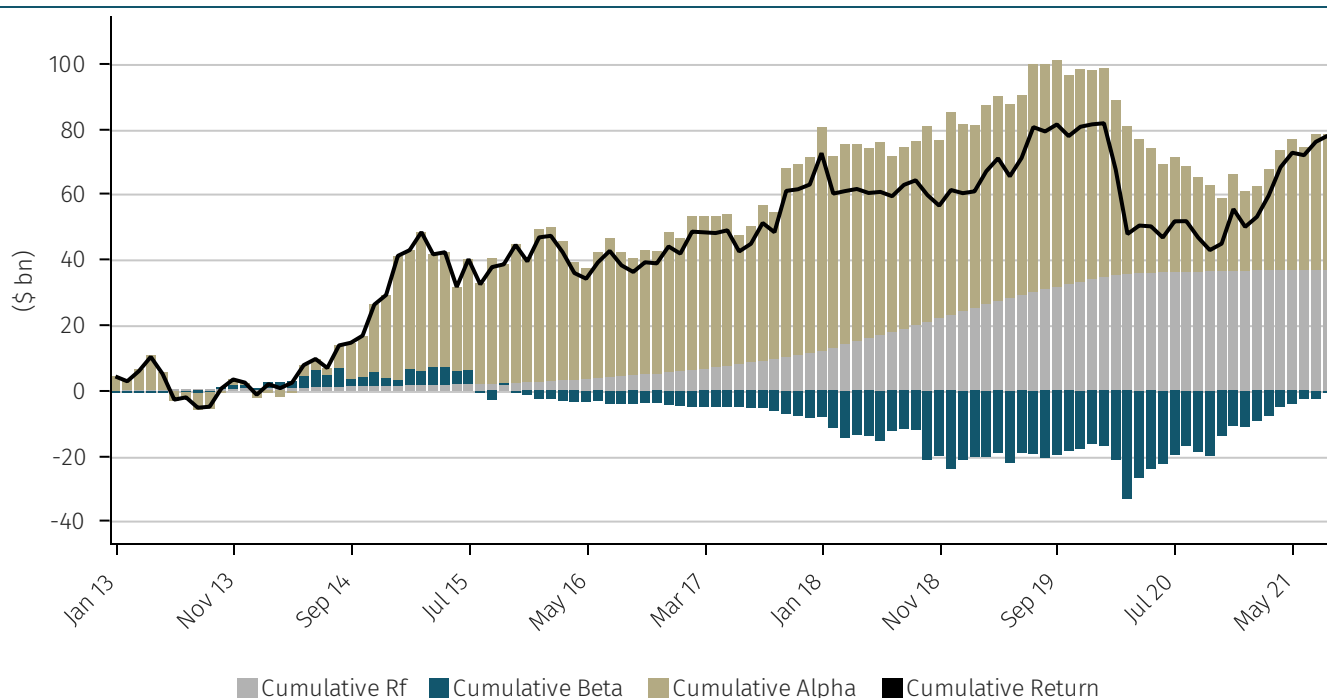
SHARPE RATIO BY HEDGE FUND STRATEGY (3 YR)*



STRATEGY BETA TO BONDS AND BETA TO EQUITIES (3 YR)



MASTER STRATEGY - DECOMPOSING DOLLAR PERF. INTO ALPHA, BETA AND RISK FREE (Rf) COMPONENTS



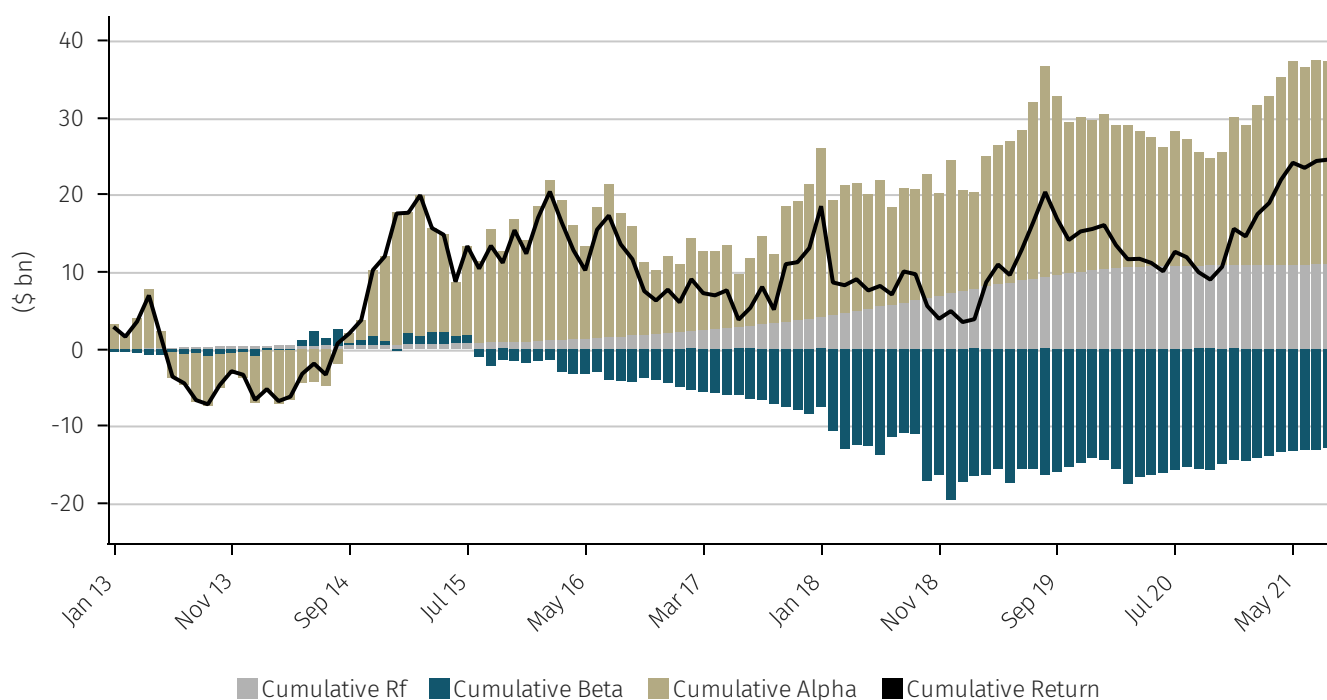
These charts decompose the Hedge Fund Composite dollar returns into beta, alpha and risk free ("Rf") components, as follows: $\text{alpha} = \text{actual return} - \text{Rf} - \text{beta} * (\text{market return} - \text{Rf})$.

Where Rf is the risk free rate as defined by a rolling 3m USD Libor, where market return is that of S&P Global BMI ('the market index') and where beta has been calculated with respect to each underlying fund observed on a 24m rolling basis to the market index. The monthly alpha, beta and Rf components are then applied to each underlying fund's dollar performance for a particular month, and then at a master strategy or industry level the individual fund dollar contributions are aggregated up.

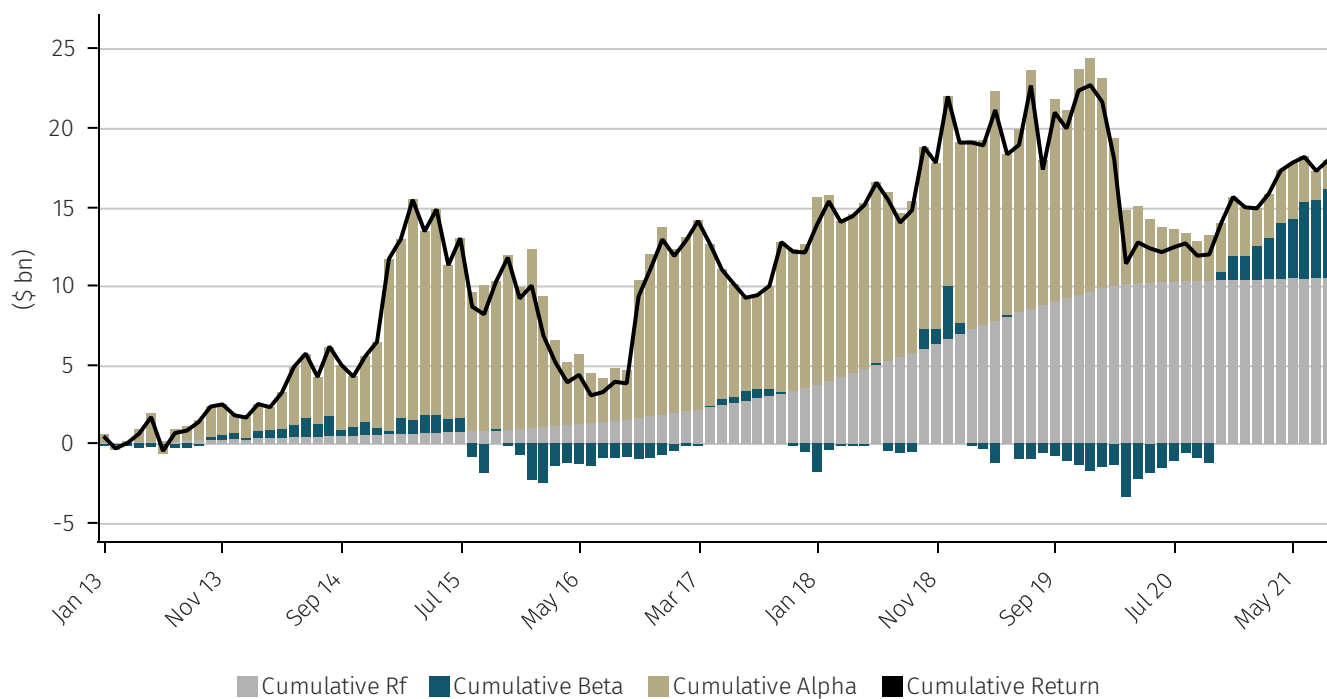
For note, beta can be negative in certain cases, creating negative dollar attributions. These are offset by corresponding positive alpha contributions.

SUB-STRATEGY - DECOMPOSING DOLLAR PERF. INTO ALPHA, BETA AND RISK FREE (RF) COMPONENTS

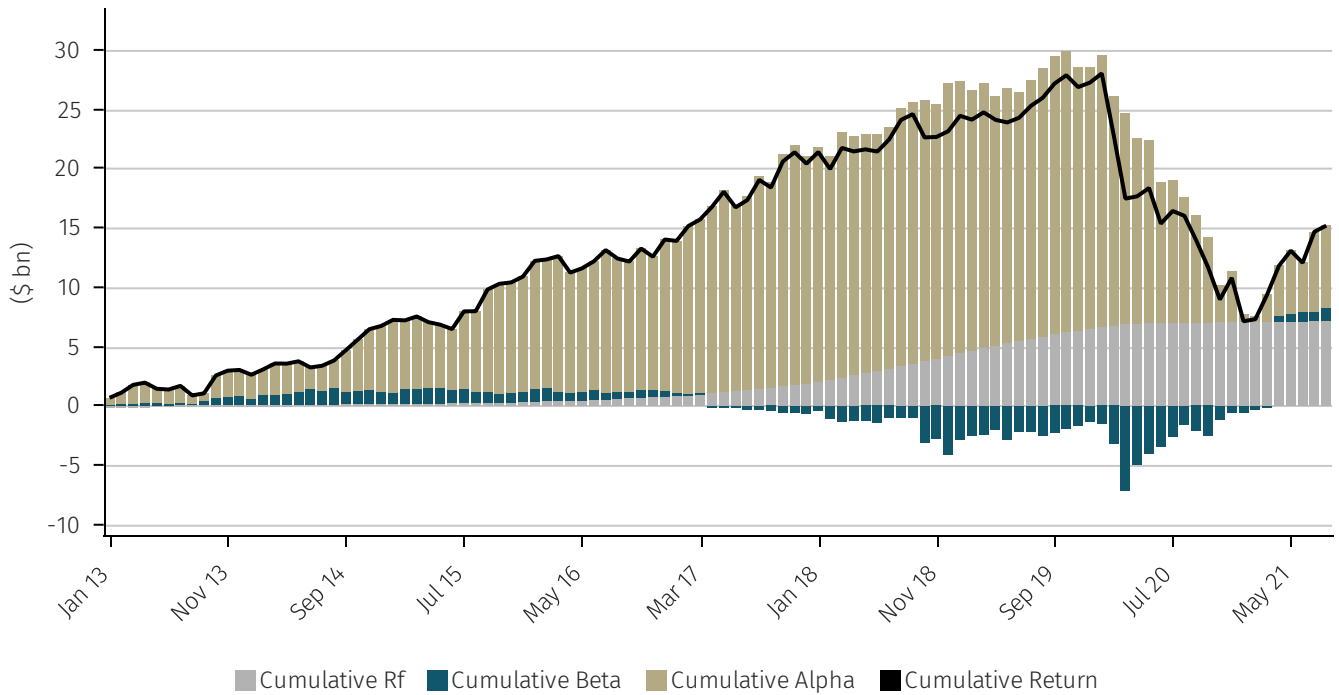
CTA



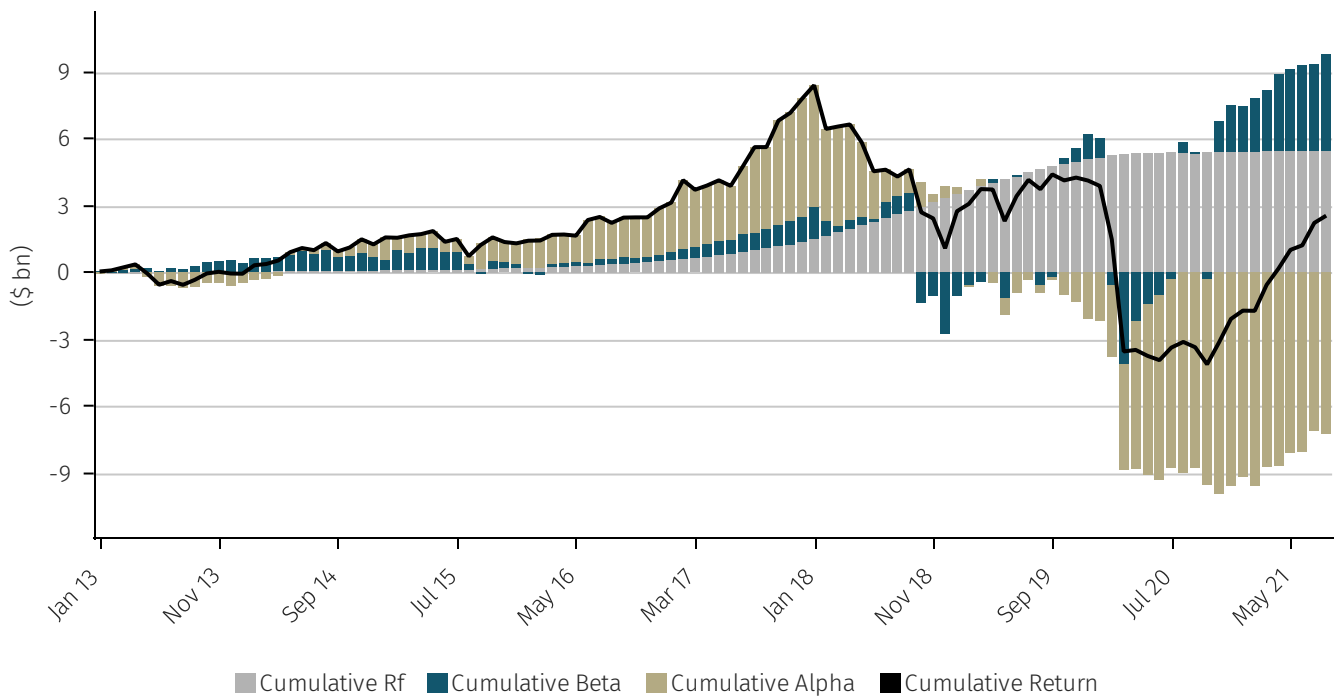
Quant Macro



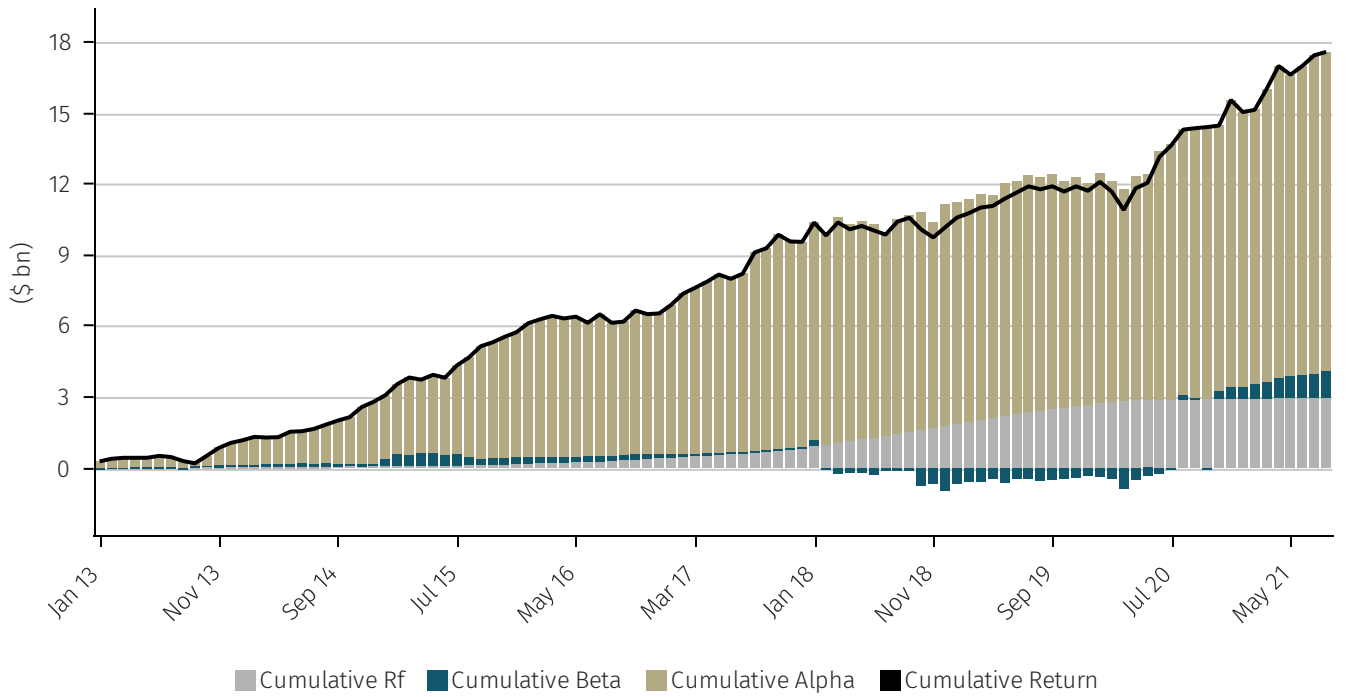
Quant EMN



Risk Premia

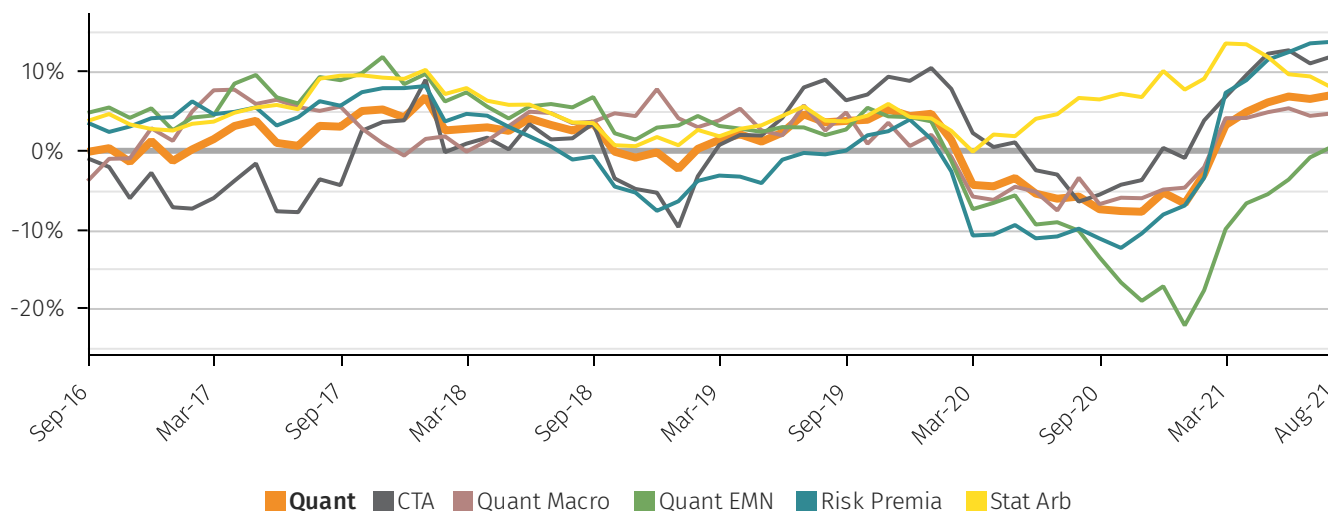


Stat Arb

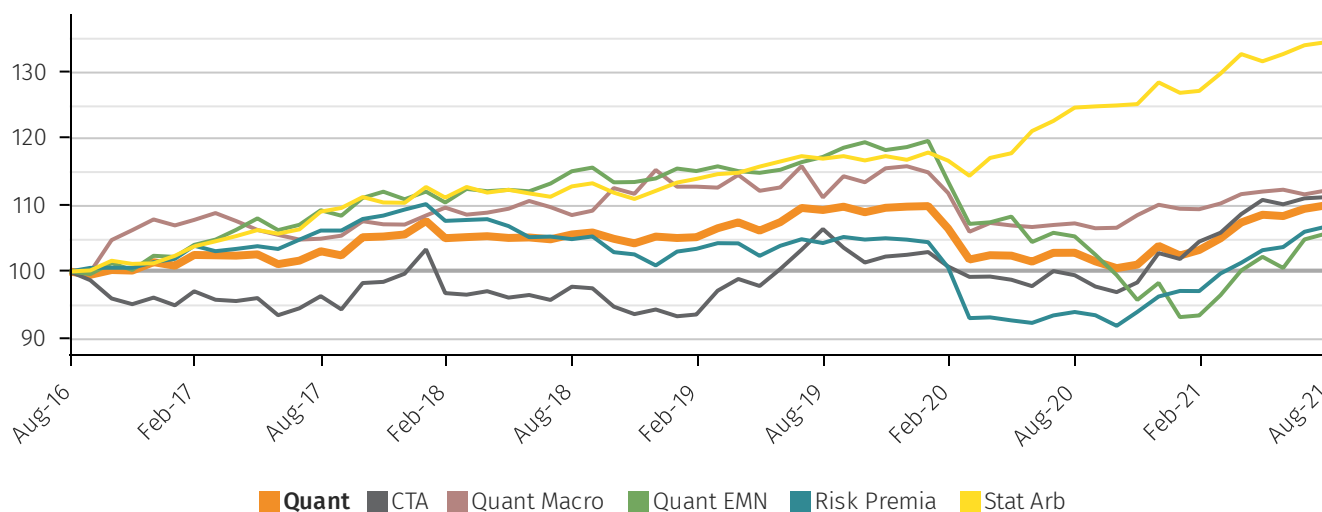


Sub-strategy Performance

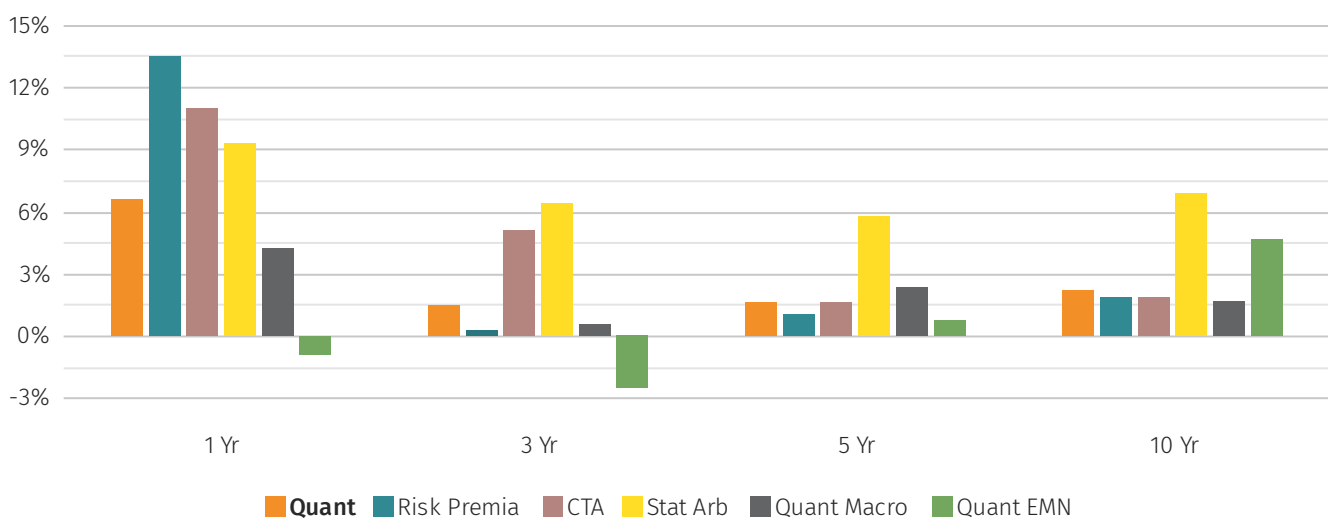
ROLLING 12 MONTH NET RETURN (5 YR)



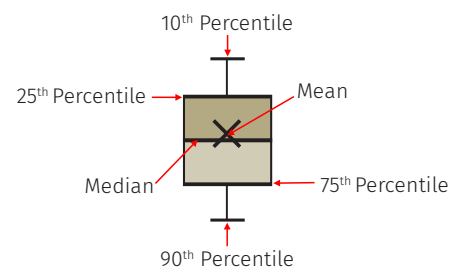
CUMULATIVE NET RETURN (5 YR)



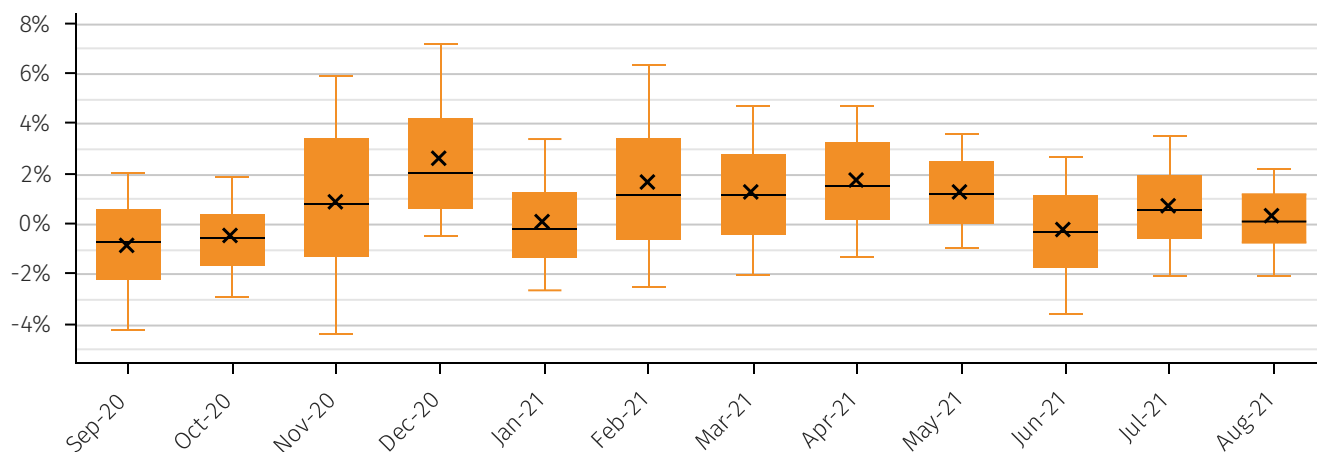
COMPOUND ANNUAL RETURN (ANNUALISED)



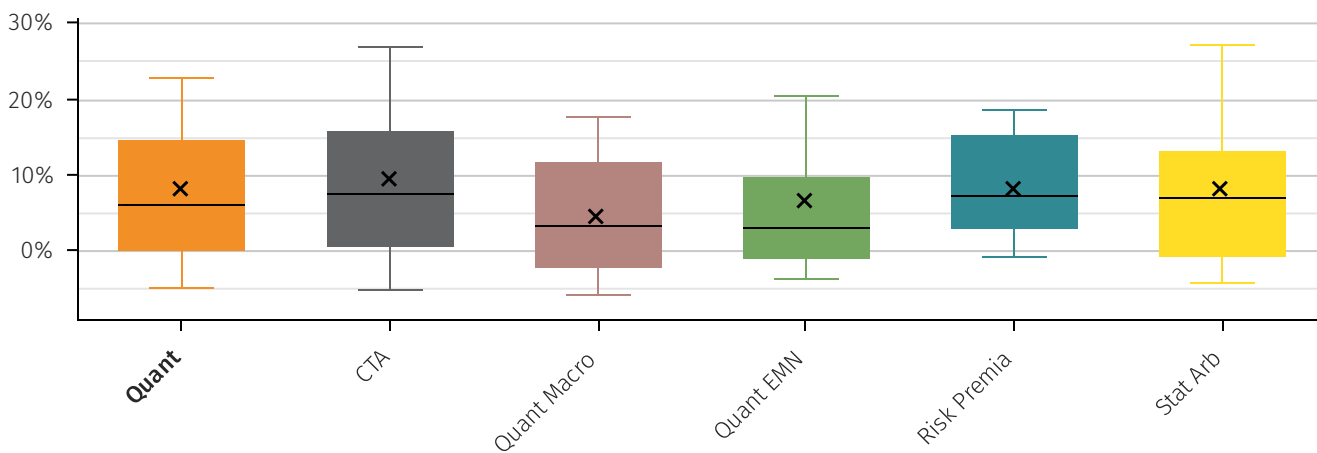
Performance Dispersion



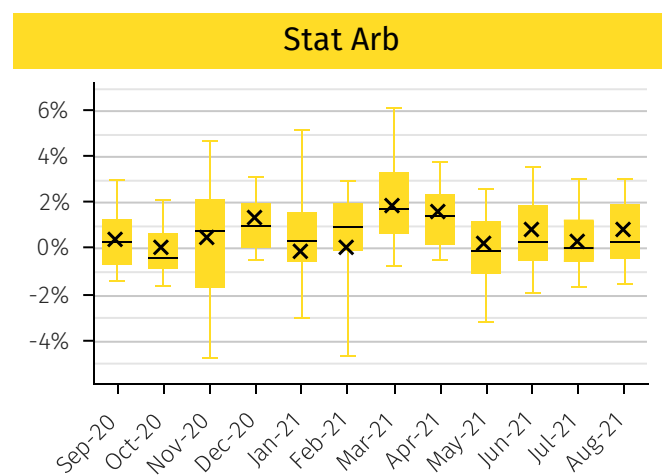
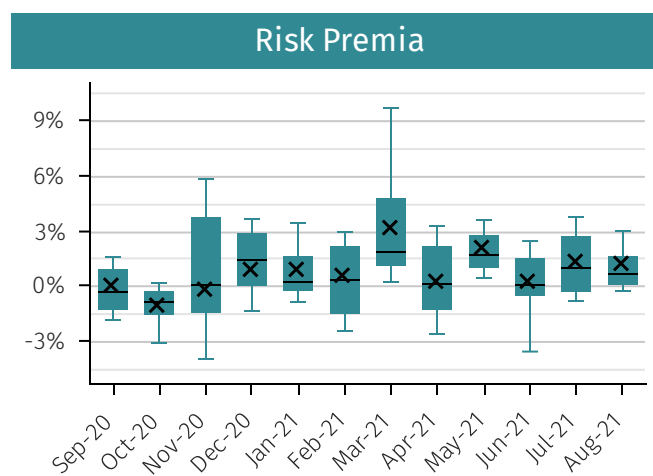
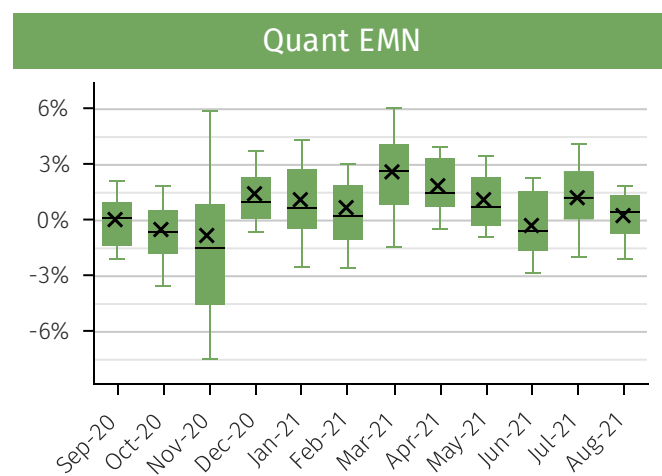
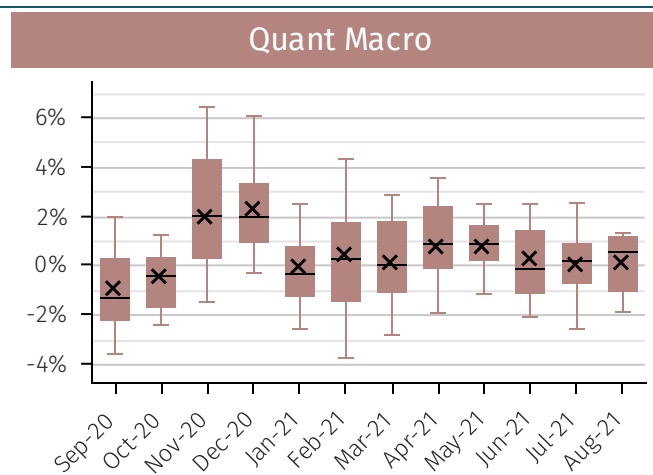
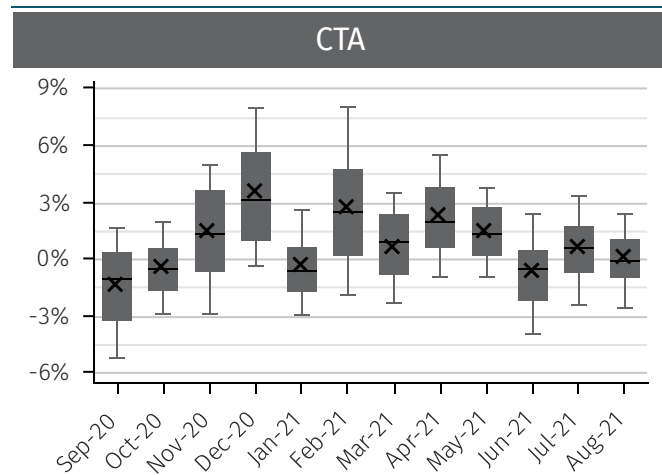
MASTER STRATEGY NET RETURN DISTRIBUTION



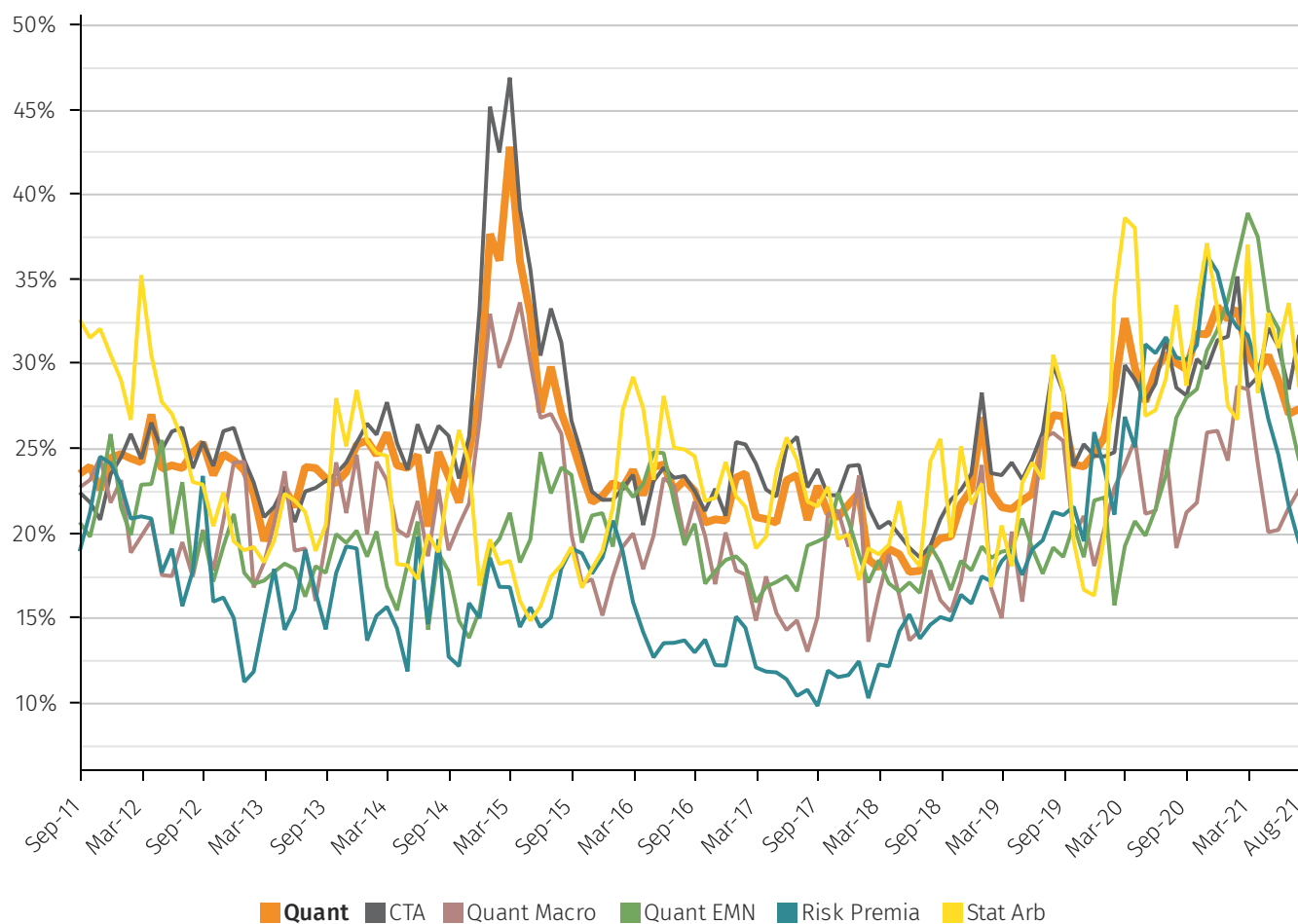
SUB-STRATEGY NET RETURN (1 YR)



SUB-STRATEGIES NET MONTHLY RETURN DISTRIBUTION

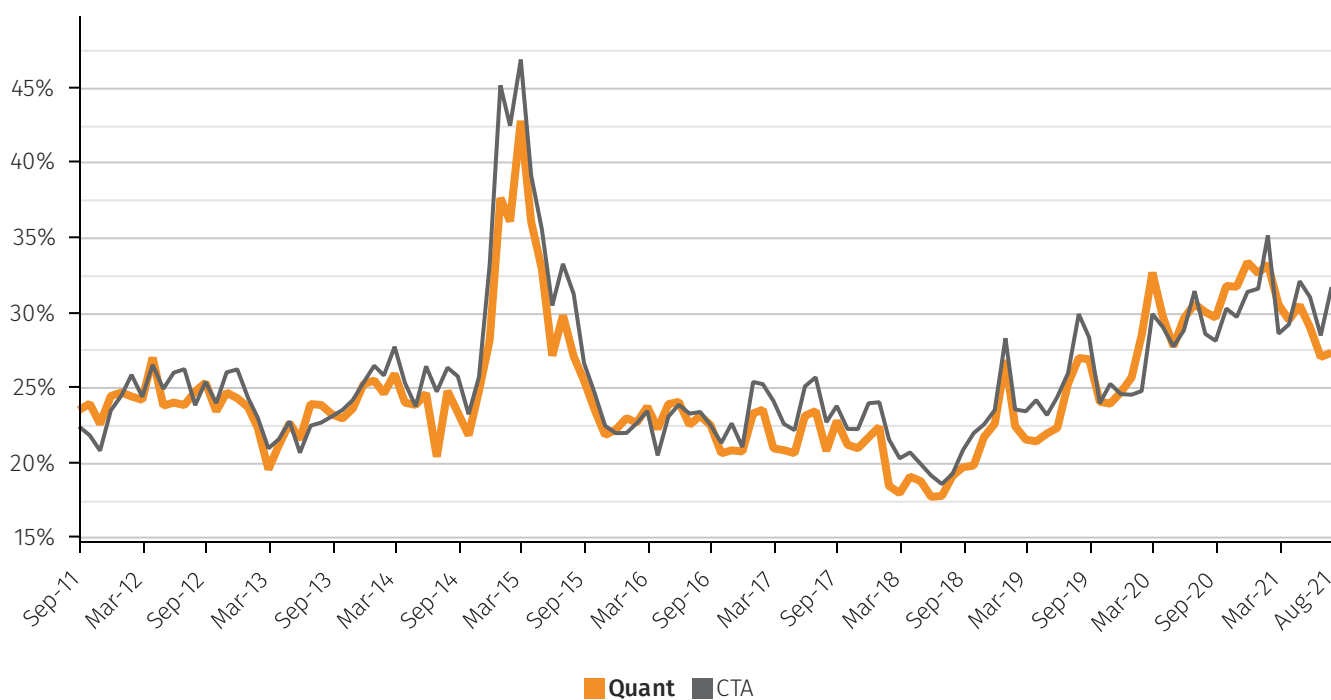


10th – 90th PERCENTILE 12M ROLLING PERFORMANCE SPREAD

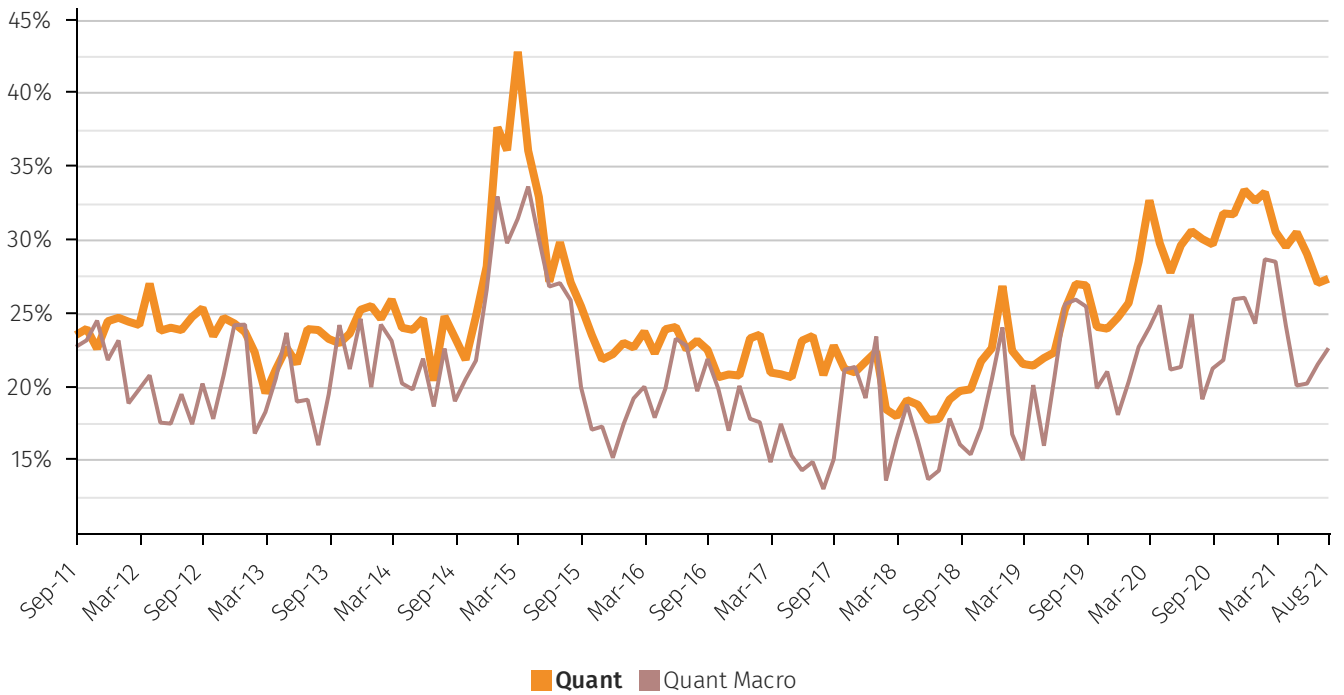


10th – 90th PERCENTILE 12M ROLLING PERFORMANCE SPREAD - SUB STRATEGY VS MASTER STRATEGY

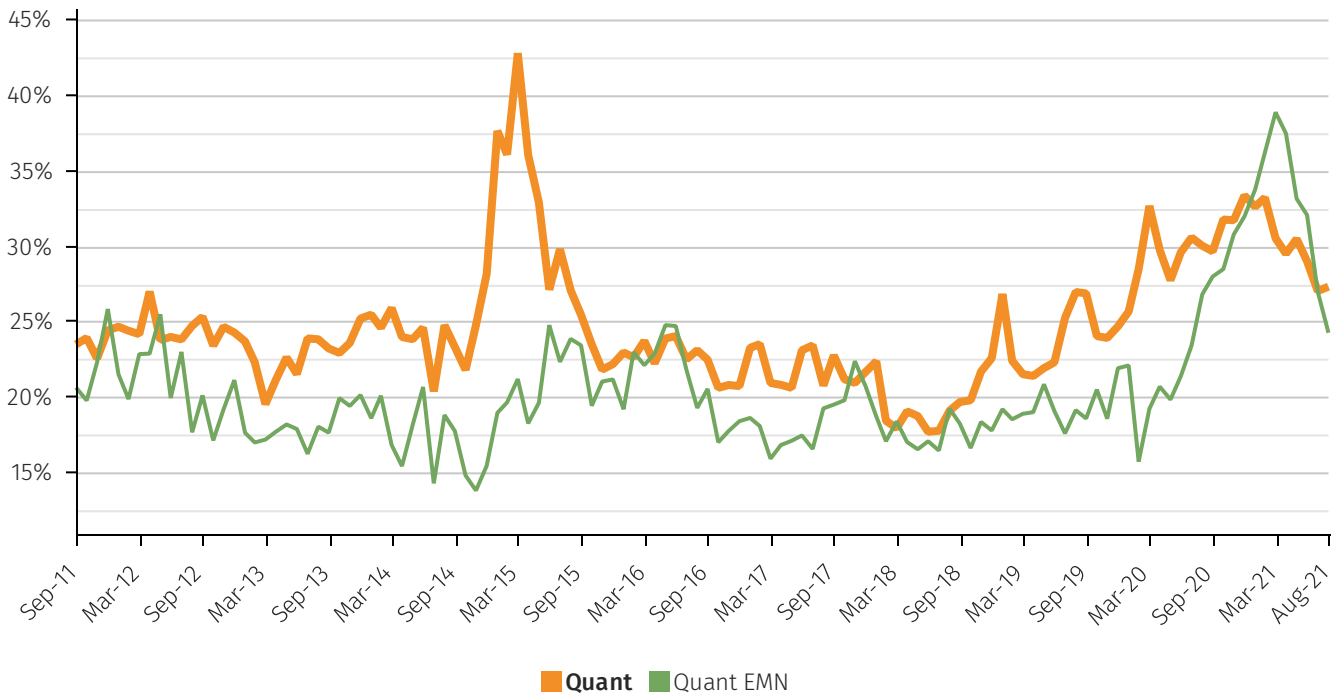
CTA



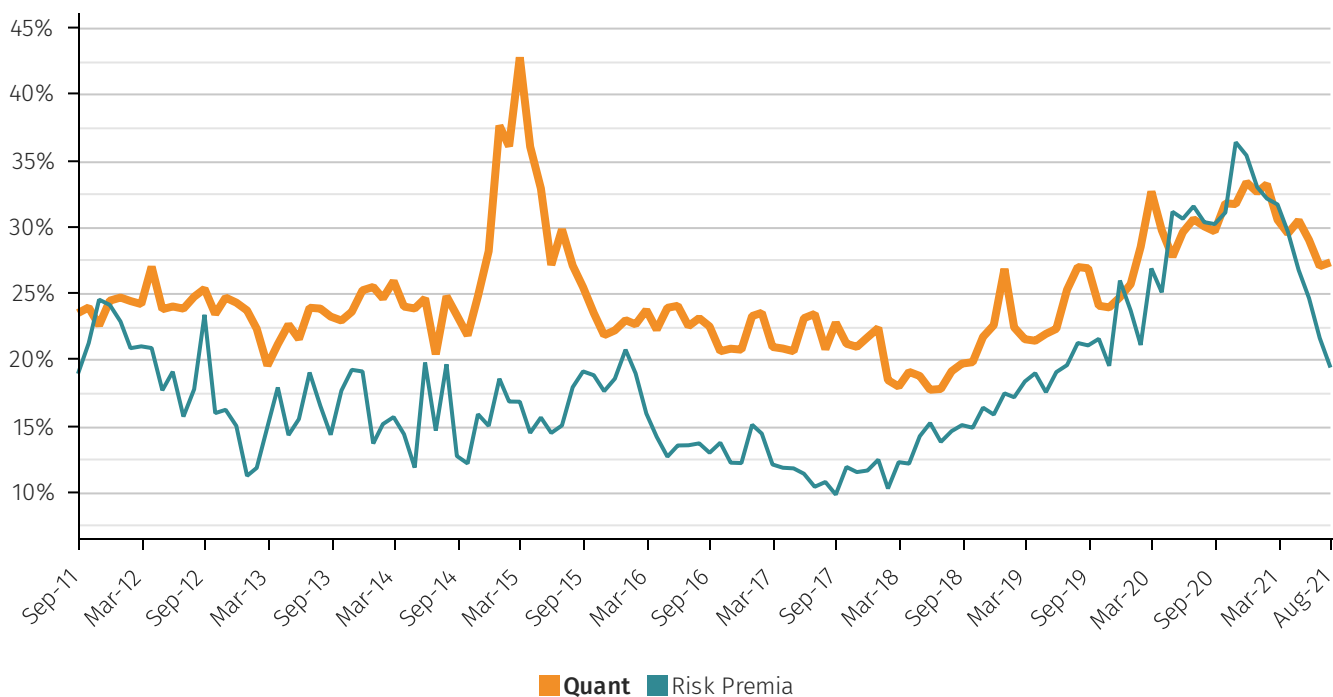
Quant Macro



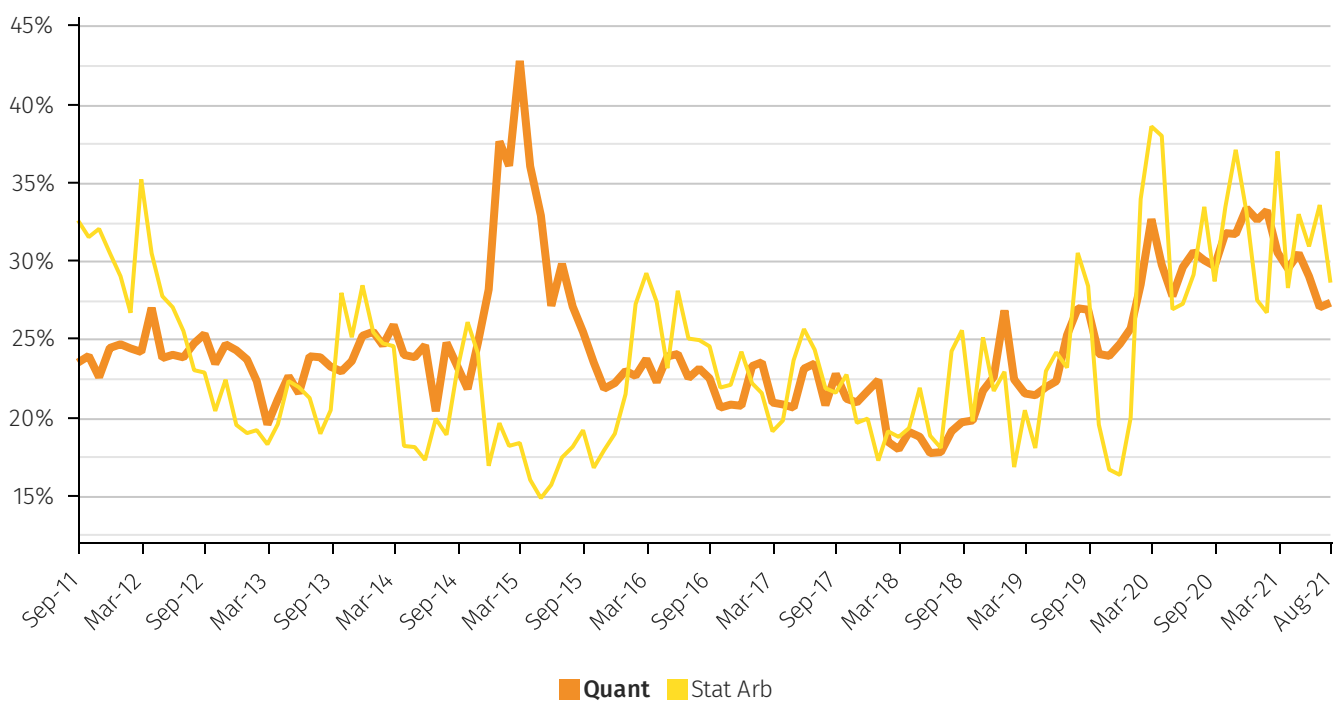
Quant EMN



Risk Premia

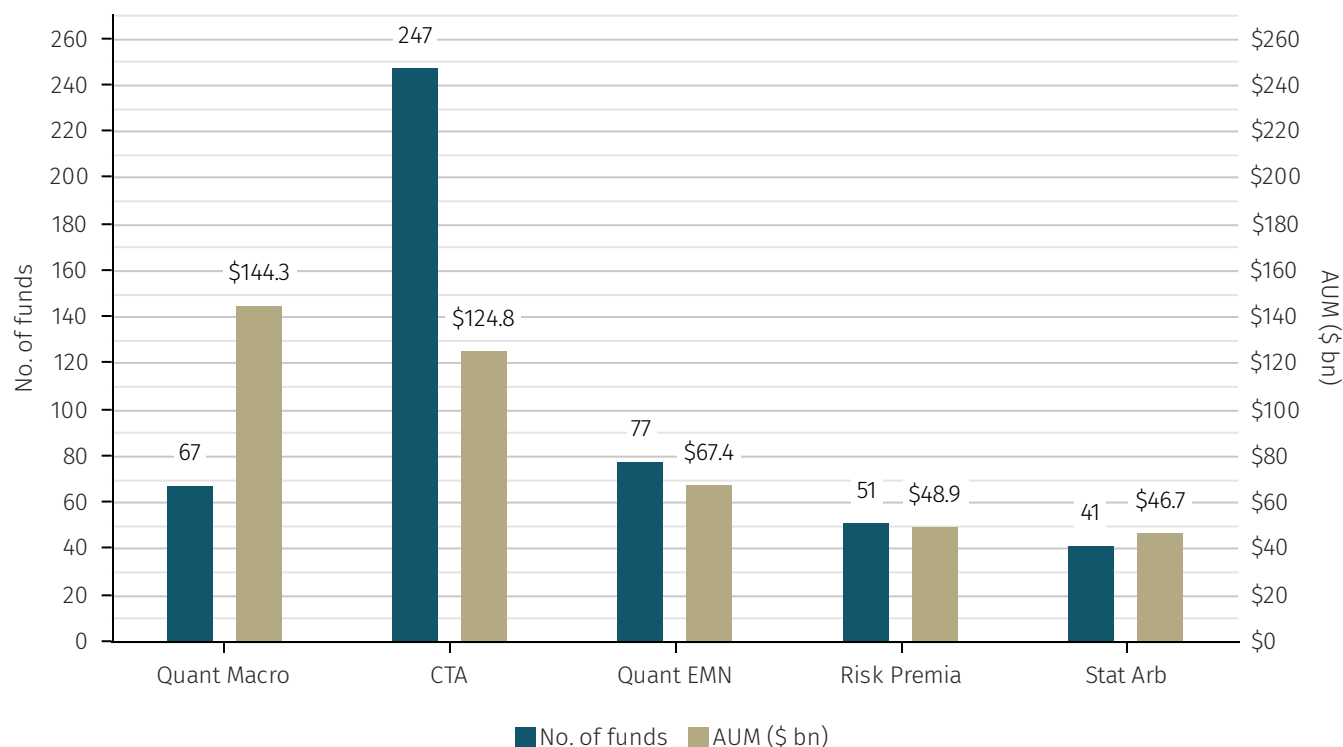


Stat Arb

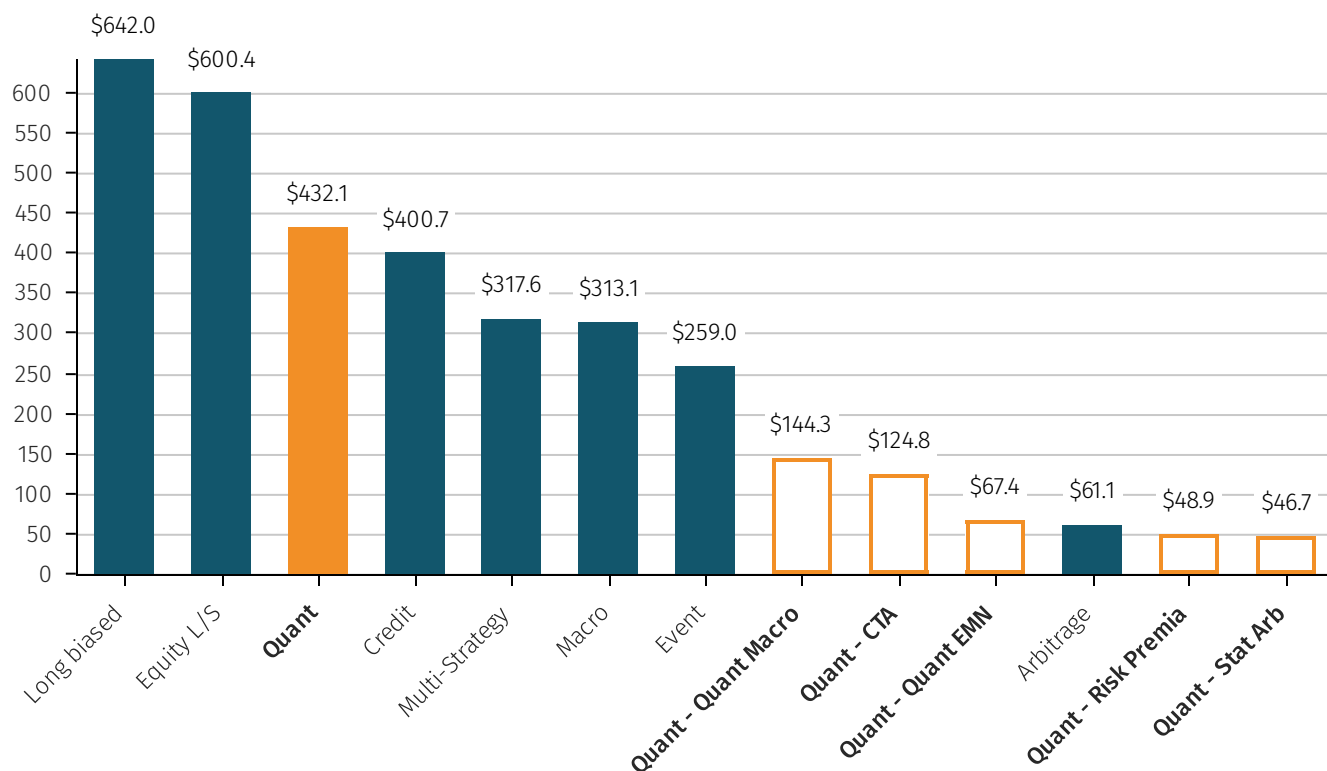


Assets, flows and fees

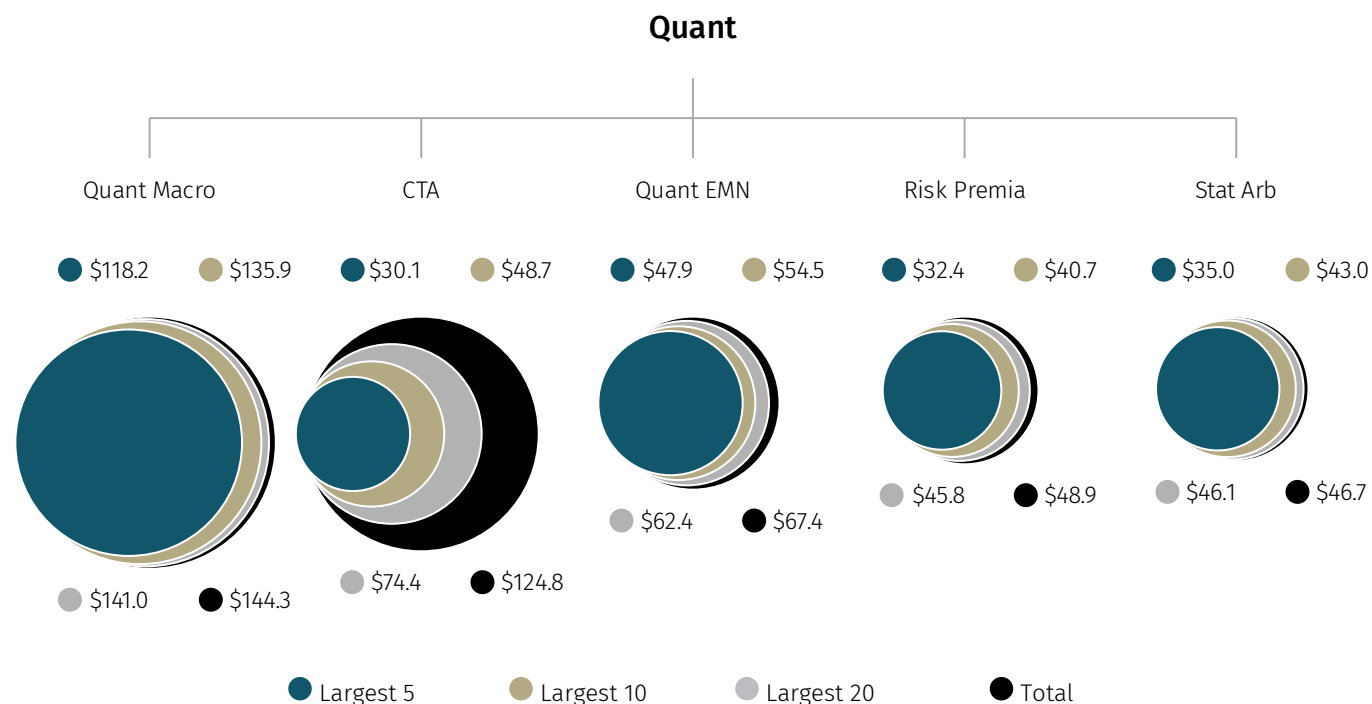
NUMBER OF FUNDS AND AUM BY SUB-STRATEGY



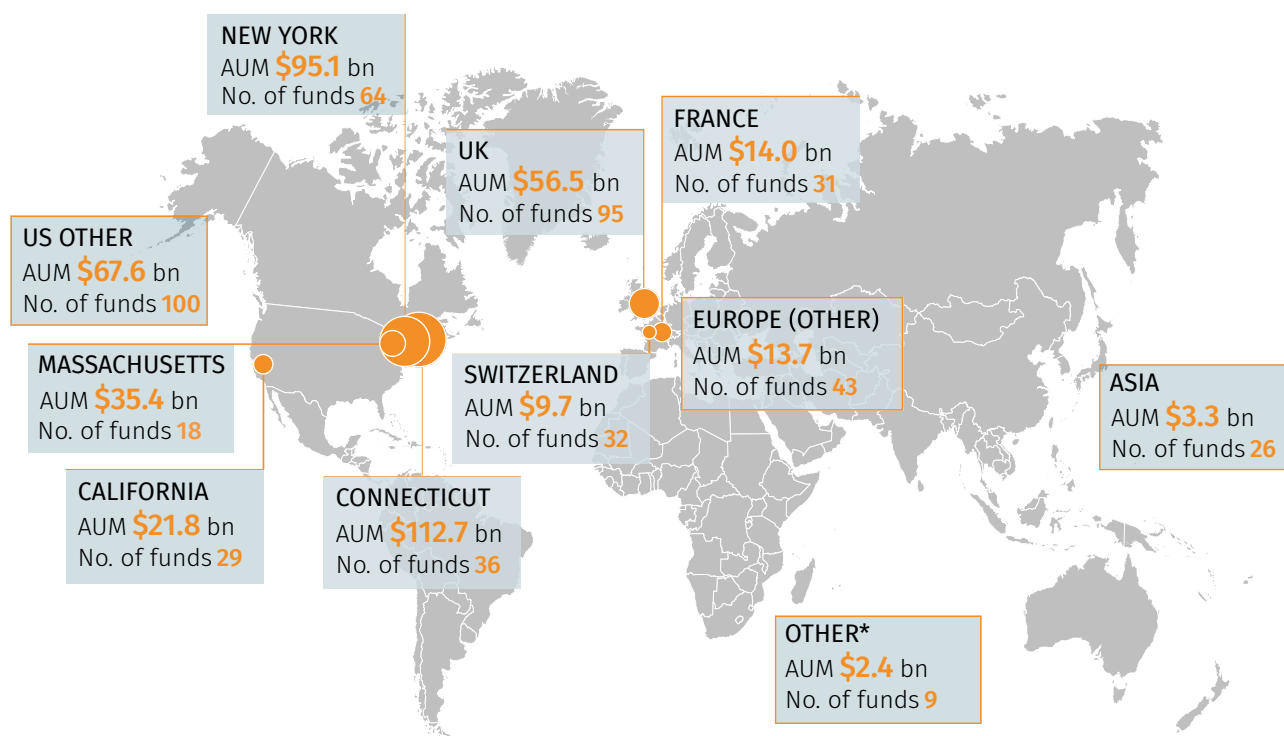
AUM OF MASTER STRATEGY – AUG 2021 (\$ BN)



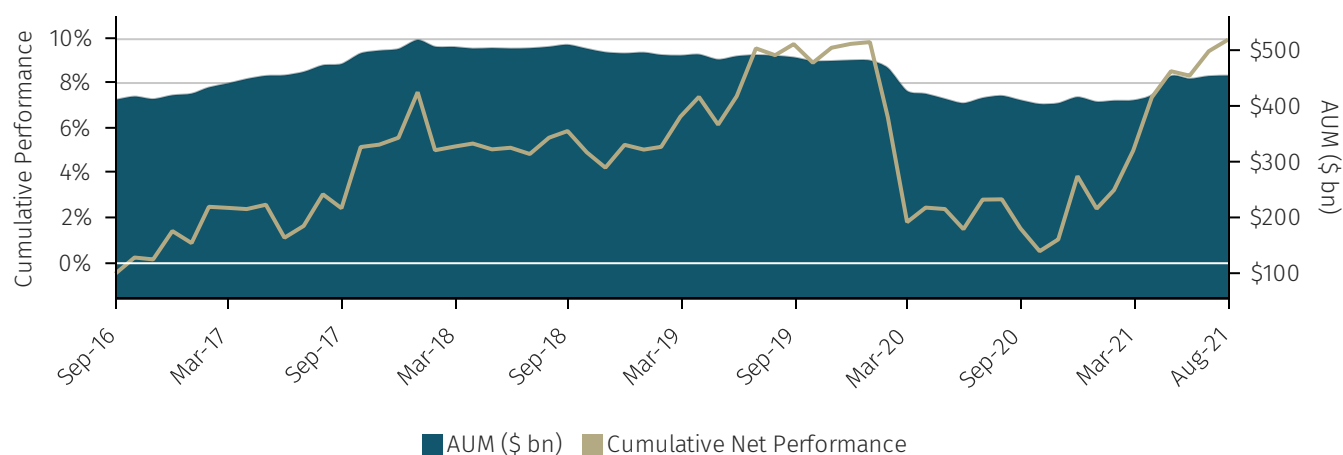
SUB-STRATEGY FUND CONCENTRATION (\$ BN)



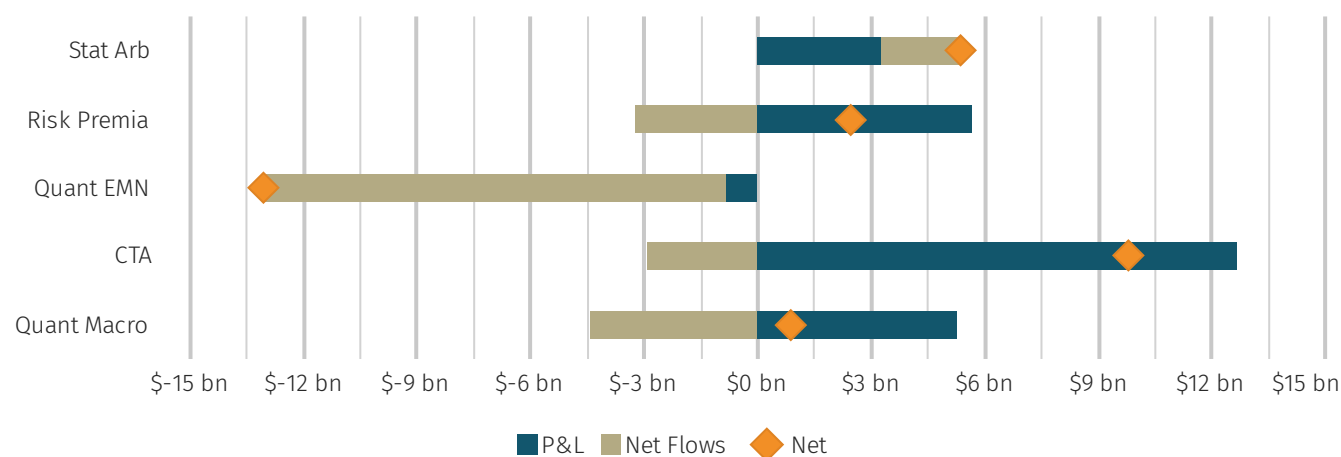
ASSETS UNDER MANAGEMENT BY LOCATION



MASTER STRATEGY ASSETS (5 YR)



12-MONTH CHANGE IN AUM BY SUB-STRATEGY



TERMS AND CONDITIONS

	Median redemption notice (days)	Median redemption frequency	Weighted avg. redemption total (days) ¹	Weighted avg. management fee	Weighted avg. performance fee
Quant	5	Monthly	38	1.49%	17.04%
CTA	4	Weekly	25	1.27%	16.28%
Quantitative Equity MN	30	Monthly	47	1.94%	19.57%
Quant Macro/GAA	7	Monthly	34	1.31%	14.69%
Risk Premia	2	Daily	27	0.68%	6.75%
Statistical Arbitrage	30	Monthly	78	2.18%	23.32%

¹Weighted Avg. Redemption Total (Days) is the weighted average of both redemptions notice days and redemption frequency days.

Definitions

Quant

Systematic strategies: Funds trade securities based strictly on the buy/sell decisions of computer algorithms. Quant strategies primarily fall into the following categories: Quantitative Equity Market Neutral, Statistical Arbitrage, Quant macro/GAA (Global Asset Allocation), CTA, and risk-premia.

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.

Bond and equity indices

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AURUM

Aurum Fund Management Ltd.

Aurum House
35 Richmond Road
Hamilton HM08
Bermuda
Telephone: +1 441 292 6952

Website: www.aurum.com
Email: ir@aurumfunds.com

Aurum Funds Limited

Ixworth House
37 Ixworth Place
London
SW3 3QH
Telephone: +44 (0)20 7589 1130

KBA Investments Limited

Orange Point Building, Second Floor,
Dun Karm Street,
Birkirkara By-Pass, Birkirkara, BKR 9037
Malta
Telephone: +27 11 325 4820

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