Arbitrage

AURUM

Arbitrage deep dive

12-month review to October 2021

Inside this report:

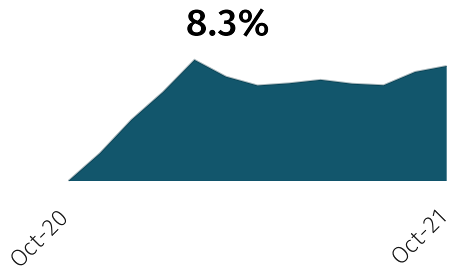
In summary

Arbitrage strategies posted strong performance in the 12 months to October 2021, returning 8.3% net of fees. Yet the master strategy only ranks second to last of the eight hedge fund master strategies Aurum monitors. Hedge funds have performed incredibly strongly during the period after spreads normalised from the March 2020 blow-out and equity markets rallied strongly.

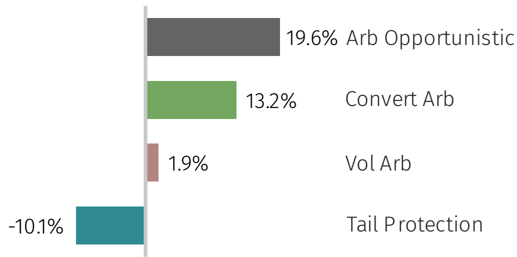
> **Arbitrage is the most diverse strategy group monitored, with incredibly large dispersion between the best and worst performing sub-strategies.**

**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/

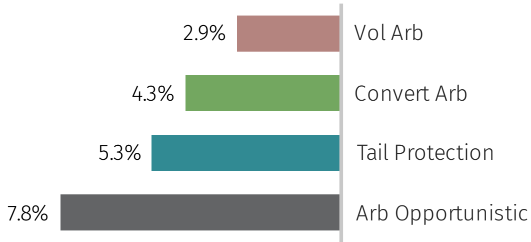
MASTER STRATEGY NET RETURN (1 YR)



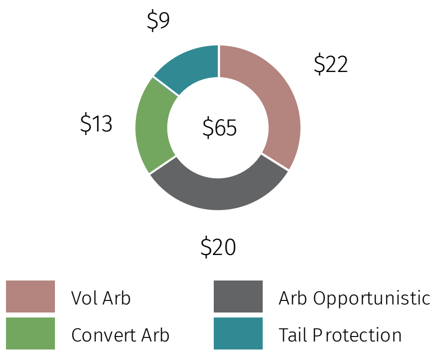
SUB-STRATEGY NET RETURN (1 YR)



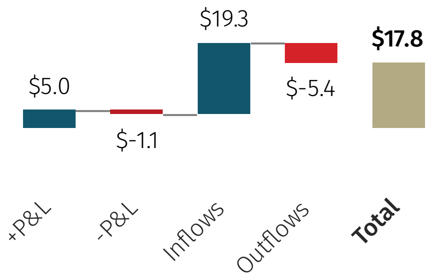
STANDARD DEVIATION (1 YR)



AUM ($BN)



AUM CHANGE $BN (1 YR)



Asset growth

Arbitrage is the smallest strategy group that Aurum covers, accounting for just $65bn in AUM across 107 funds. However, these figures do not tell the whole story as arbitrage strategies tend to be a material component in many multi-strategy funds. Consequently, the true amount of hedge fund AUM in arbitrage strategies is significantly higher.

Arbitrage funds have seen some very notable positive inflows over the period: nearly $13bn of new capital (net) was allocated to the strategy. Combined with positive net P&L generated of nearly $4bn, the AUM of funds in the arbitrage strategy grouping has grown by a quarter from last year. Strategy assets grew rapidly from March 2020, both through performance and flows. All four sub-strategies attracted net inflows in the past 12 months.

Returns by sub-strategy

Arbitrage is the most diverse strategy group monitored, with incredibly large dispersion between the best and worst performing sub-strategies. Arb opportunistic strategies were able to take advantage of the elevated market volatility at the beginning of the period and subsequent opportunity set it presented to post a great year, returning on average and net of fees nearly 20%. As discussed below, most of this gain was concentrated in the end of 2020 and first two months of 2021.

> **Arb opportunistic strategies were able to take advantage of the market volatility, and subsequent opportunity set it presented, to post a great year, returning on average and net of fees nearly 20%.**

On the other hand, tail protection strategies, in-line with their 'downside protection' mandate, understandably struggled in the subsequent strong market rally, returning on average just worse than -10%. Thus, a greater than 30% spread at just the inter sub-strategy headline level.

Convertible arbitrage (convert arb) strategies were also able to take advantage of the same opportunity set, returning 13.2%. Volatility arbitrage (vol arb) returns were muted at a headline level at just shy of 2% for the 12-month period. The sub-strategy monetised only some of the dislocations from the elevated market volatility at the beginning of the period, but then notably struggled as markets rallied and volatility normalised.

NET RETURN OF MASTER AND SUB-STRATEGIES (1 YR)

	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	YTD	1 YR
Arbitrage	**2.0%**	**2.4%**	**1.9%**	**2.2%**	**-1.1%**	**-0.6%**	**0.1%**	**0.2%**	**-0.3%**	**-0.1%**	**0.9%**	**0.4%**	**3.7%**	**8.3%**
Arb Opportunistic	3.6%	4.9%	4.2%	4.2%	-2.6%	0.2%	0.0%	1.1%	-0.2%	0.2%	1.4%	1.3%	10.0%	19.6%
Convert Arb	3.0%	2.3%	2.7%	2.4%	-0.9%	-0.1%	0.3%	0.3%	0.2%	0.3%	1.0%	1.2%	7.5%	13.2%
Vol Arb	2.0%	0.5%	-0.4%	0.9%	0.5%	-1.2%	0.5%	-0.2%	-0.4%	-0.1%	0.4%	-0.6%	-0.6%	1.9%
Tail Protection	-4.4%	1.1%	1.0%	-0.6%	-1.7%	-2.0%	-0.5%	-1.1%	-0.8%	-1.6%	0.8%	-0.6%	-7.0%	-10.1%
HF Composite*	**4.4%**	**3.3%**	**-0.3%**	**2.1%**	**0.6%**	**2.1%**	**0.7%**	**0.5%**	**0.0%**	**0.9%**	**-0.3%**	**1.0%**	**7.7%**	**16.1%**
Bonds*	**2.0%**	**1.3%**	**-1.1%**	**-1.8%**	**-2.1%**	**1.3%**	**0.5%**	**-0.4%**	**1.3%**	**-0.5%**	**-1.9%**	**-0.3%**	**-4.9%**	**-1.7%**
Equities*	**12.6%**	**4.9%**	**-0.2%**	**2.6%**	**2.3%**	**4.1%**	**1.3%**	**1.0%**	**0.3%**	**2.3%**	**-4.1%**	**4.6%**	**15.1%**	**36.0%**

Consistency of Sharpe

Whilst arbitrage is generally not the highest returning strategy on an absolute basis, it consistently produces a high Sharpe. The strategy delivered a 1.6 Sharpe over the last three years, second only to the strong 2.0 delivered by the multi-strategy category. Again, there was notable divergence by sub-strategy: convert arb and arb opportunistic delivered the highest Sharpe ratios of the sub-strategies: 1.6 and 1.3 respectively, whilst vol arb and tail protection lagged, achieving just 0.4 and -0.1 Sharpe respectively.

> **Whilst arbitrage is generally not the highest returning strategy on an absolute basis, it consistently produces a high Sharpe.**

Source: Aurum Hedge Fund Data Engine.
**HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index. Bonds = S&P Global Developed Aggregate Ex Collateralized Bond (USD). Equities = S&P Global BMI. RFR = Rolling 3 Month USD LIBOR*

Alpha and rolling returns

Of the four sub-strategies, arb opportunistic generated the most alpha dollars both in absolute terms and as a percentage of overall returns. Looking at 12-month rolling return, arb opportunistic yet again stands out as the consistently best performing sub-strategy for the past five years. Only because of March 2020 does the rolling 12-month return dip below zero briefly, but then goes on to hit nearly 40%! It delivers the highest compound annual net return (CAR) on a ten, five, three and one-year view of the four sub-strategies.

Tail protection strategies did what they were advertised to do: the sub-strategy delivered strong performance through the spike in volatility of early 2020, but has experienced negative performance since. This is unsurprising given that volatility levels fell during the period, combined with a rally in risk assets.

A closer look at the best performing sub-strategy

Taking a closer look at the best performing sub-strategy, arb opportunistic, reveals that in aggregate the majority of returns for the period were nearly all generated in the four months from November 2020 to February 2021, delivering 18% on average, whilst equity markets rallied 21%.

This appears to be the latter part of a period of strength for the sub-strategy, which started following the March 2020 market drawdown. In the period April 2020 through February 2021, the sub-strategy posted nine out of ten of its best monthly returns of the past five years, and six months with returns above2%.

> **In the period April 2020 through February 2021, arb opportunistic posted nine out of ten of its best monthly returns of the past five years, and six months with returns above 2%.**

For a strategy that runs tight market neutrality in general, one cannot point to the strong market rally as a reason for such outstanding performance, but rather the rich opportunity set following the March 2020 market dislocations. Indeed, that seems to be validated further by the sub-strategy's negative/muted returns in March and April 2021, where markets rallied strongly.

Convertible arbitrage

Convertible arbitrage also posted a respectable performance for the period returning over13%, and like the arb opportunistic sub-strategy, generated the bulk of the year's returns in the same four-month period through to February 2021.

The strength of the four-month period of November 2020 to February 2021 for arb opportunistic and convert arb strategies is even more apparent in the monthly dispersion box plots (Page 11), which show that nearly all funds observed in those sub-strategies had positive performance in those four months, and as a whole for the period.

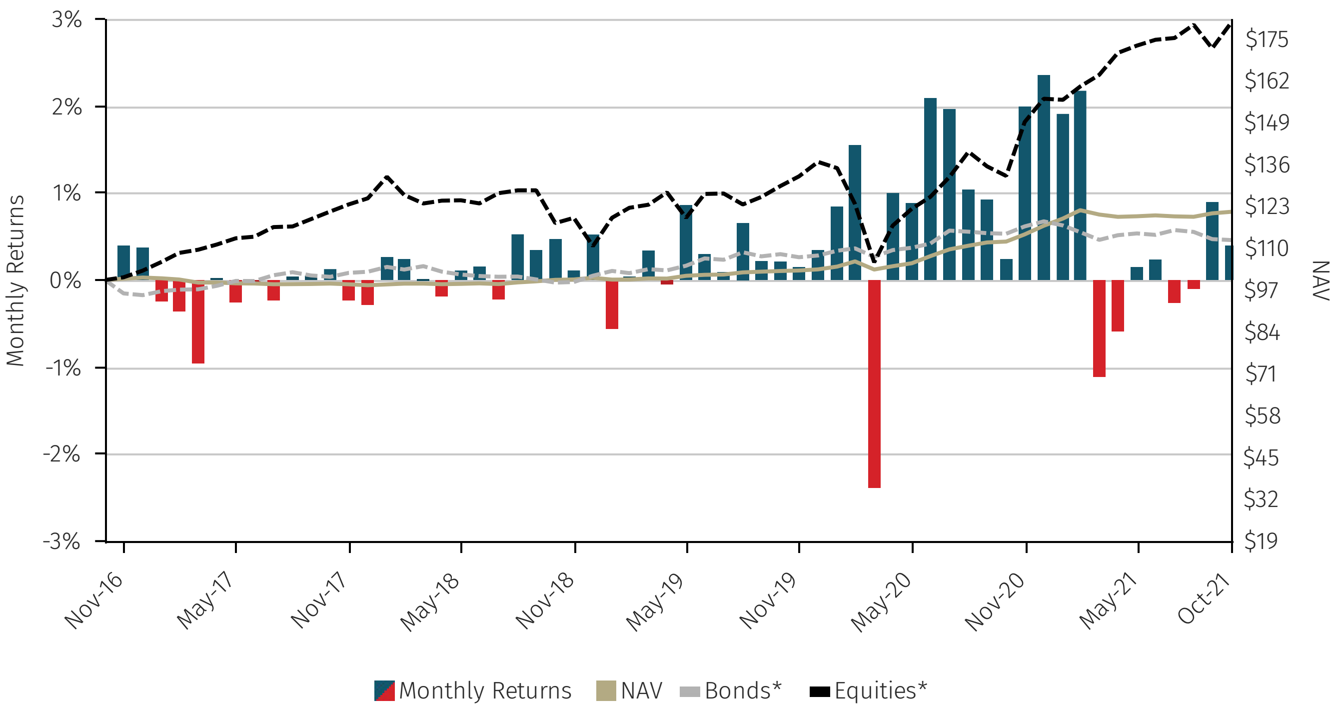
Manager selection

Not all managers were able to equally capitalise on the opportunity set of the past year. In fact, the performance dispersion (difference between the 90th and 10th percentile performance) was double the ten-year average in the convert arbitrage and arb opportunistic sub-strategies.

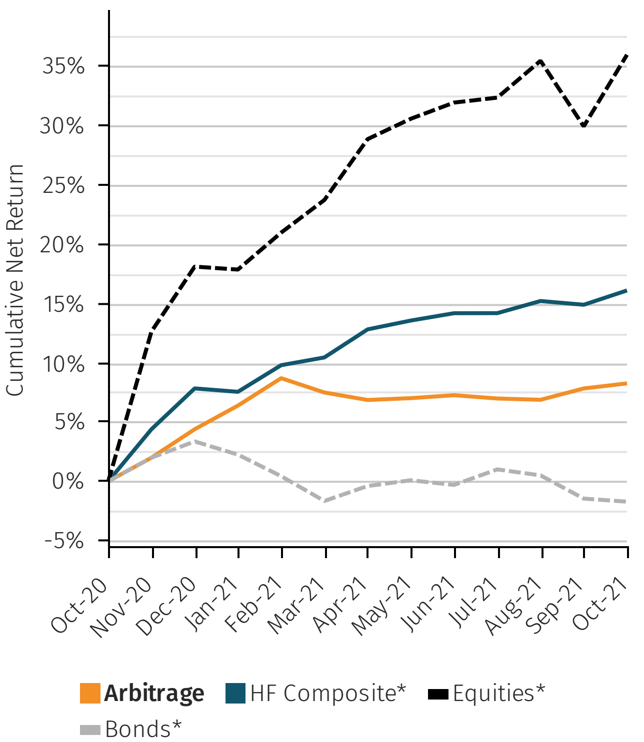
Manager selection will have played an even greater role in realised returns for investors in these sub strategies. Interestingly selecting which tail protection fund to own would've been crucial during the 2020 market sell-off and subsequent rebound: the percentage differential in performance between the 90th and 10th percentile was a staggering 80%!

Master strategy performance

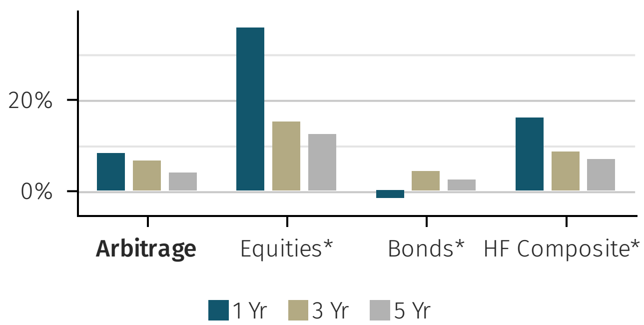
NET MONTHLY RETURN (5 YR)



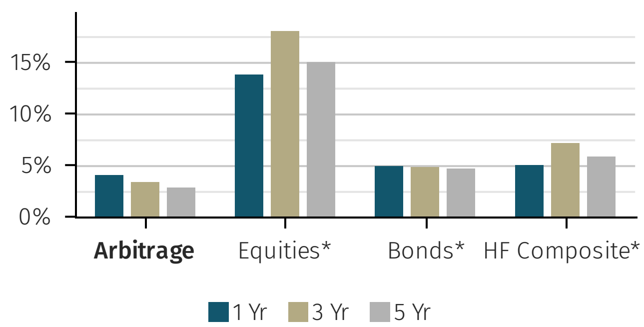
COMPARATIVE RETURN VS HF COMPOSITE (1 YR)



NET RETURN (ANNUALISED)

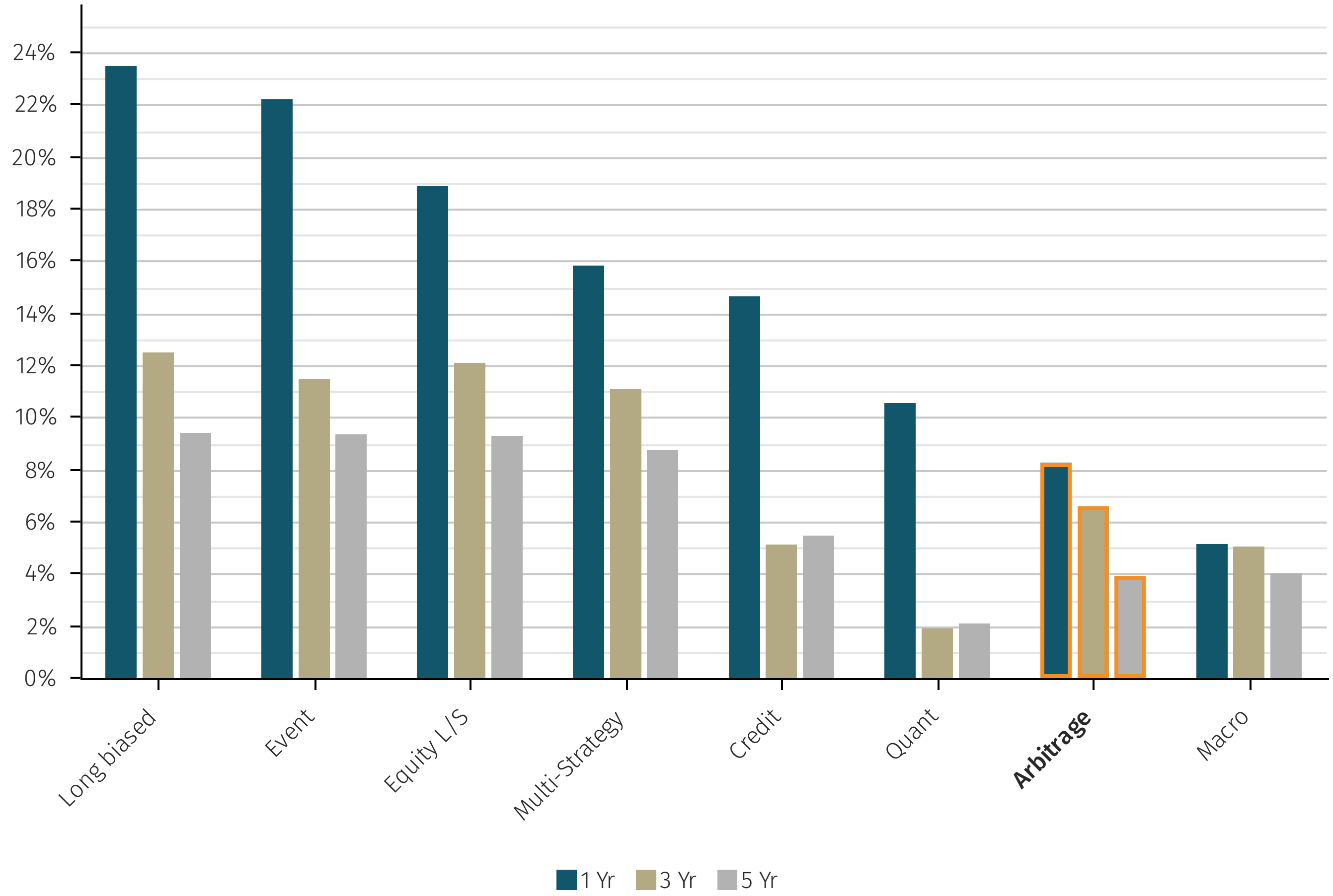


VOLATILITY (VOL) (ANNUALISED)



*HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index. Equities = S&P Global BMI. Bonds = S&P Global Developed Aggregate Ex Collateralized Bond (USD). Source: Aurum Hedge Fund Data Engine.

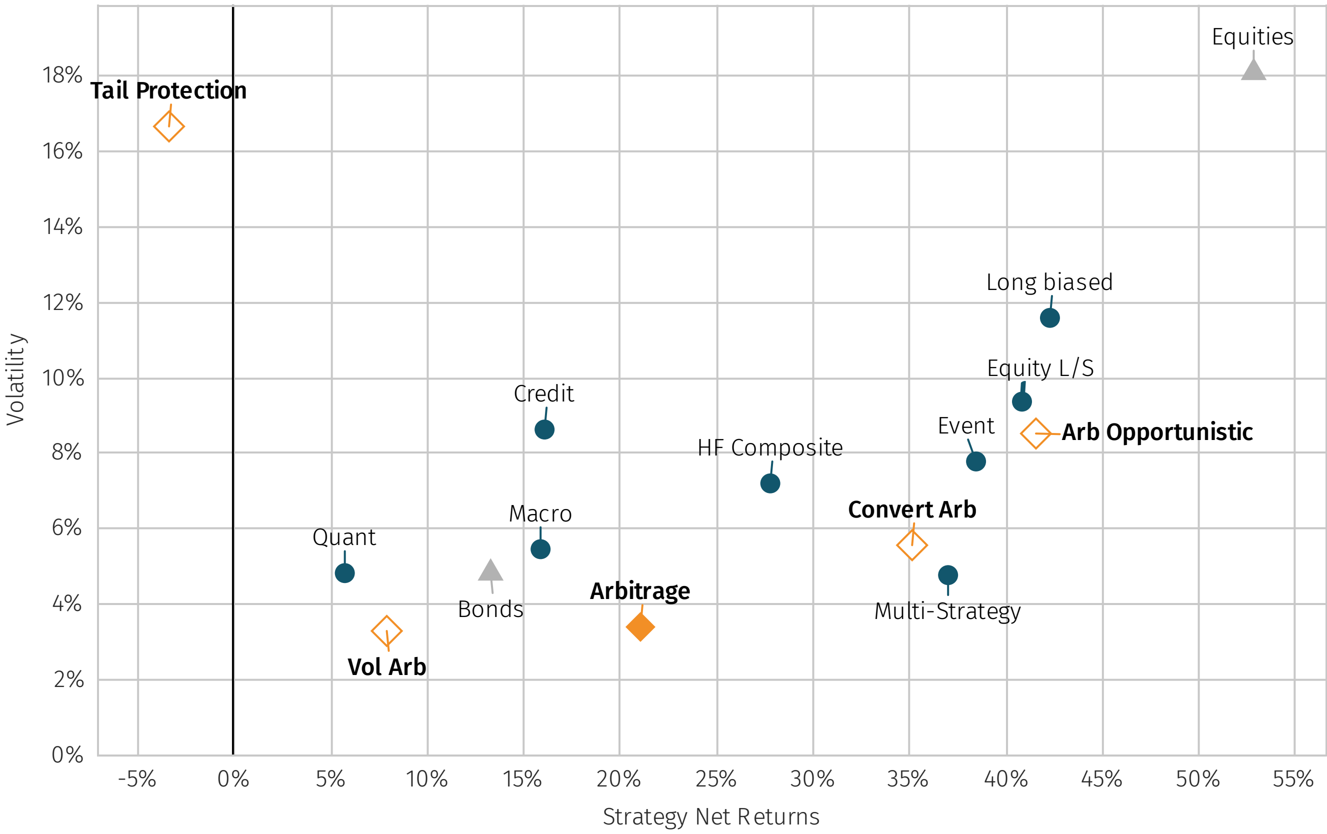
MASTER STRATEGY NET ANNUALISED RETURNS



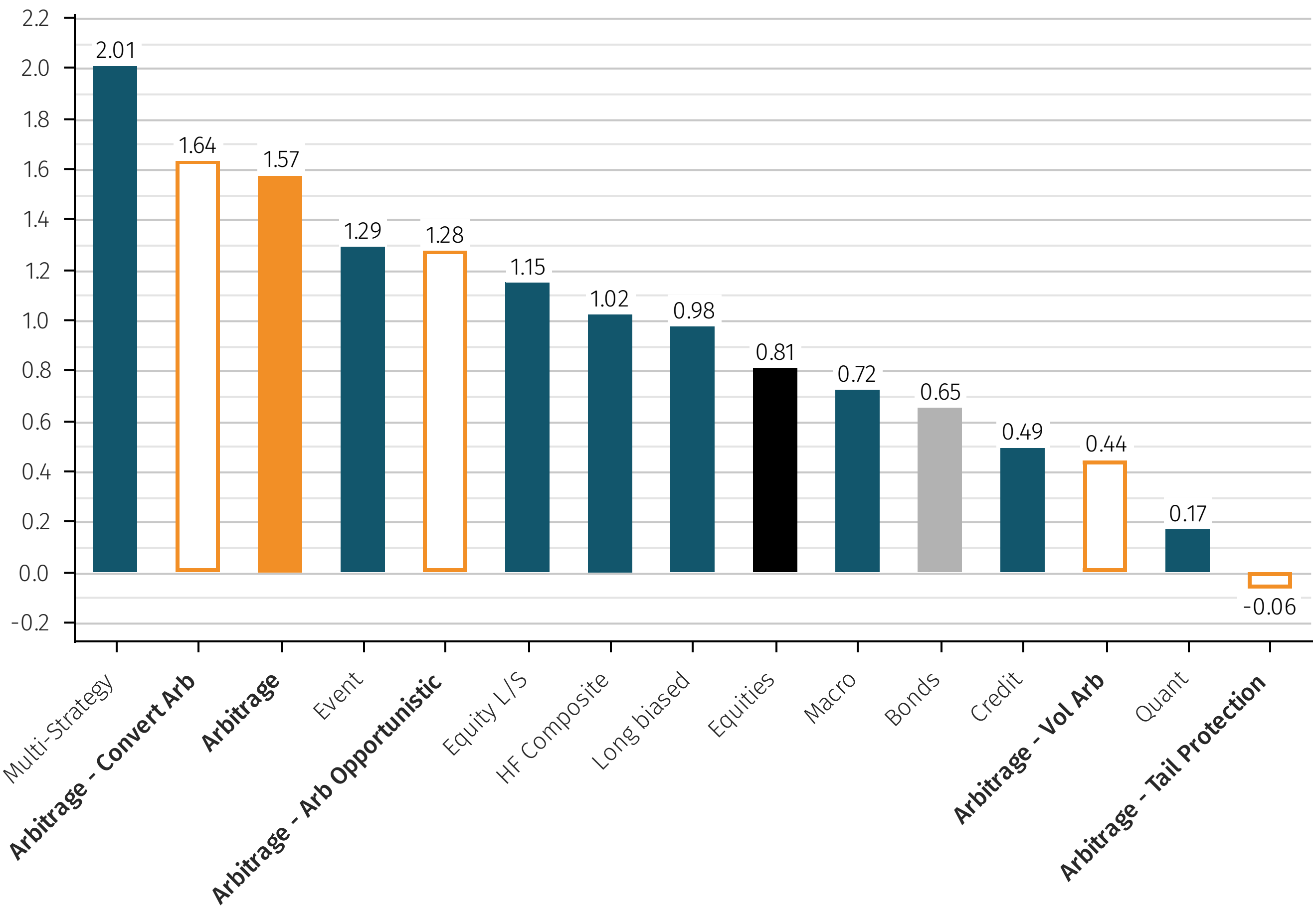
MULTIPLE PERIOD – HIERARCHICAL ANNUALISED NET RETURN

1 YEAR	3 YEAR	5 YEAR	10 YEAR
Long biased 23.5%	**Long biased** 12.5%	**Long biased** 9.4%	**Multi-strategy** 8.1%
Event 22.2%	**Equity l/s** 12.1%	**Event** 9.3%	**Equity l/s** 7.4%
Equity l/s 18.9%	**Event** 11.5%	**Equity l/s** 9.3%	**Event** 7.3%
Multi-strategy 15.8%	**Multi-strategy** 11.1%	**Multi-strategy** 8.7%	**Long biased** 6.9%
Credit 14.6%	**Arbitrage 6.6%**	**Credit** 5.5%	**Credit** 5.8%
Quant 10.6%	**Credit** 5.1%	**Macro** 4.0%	**Macro** 3.3%
Arbitrage 8.3%	**Macro** 5.0%	**Arbitrage 3.9%**	**Quant** 2.5%
Macro 5.1%	**Quant** 1.9%	**Quant** 2.1%	**Arbitrage 2.3%**

STRATEGY NET TOTAL RETURN VS ANNUALISED VOL (3 YR)

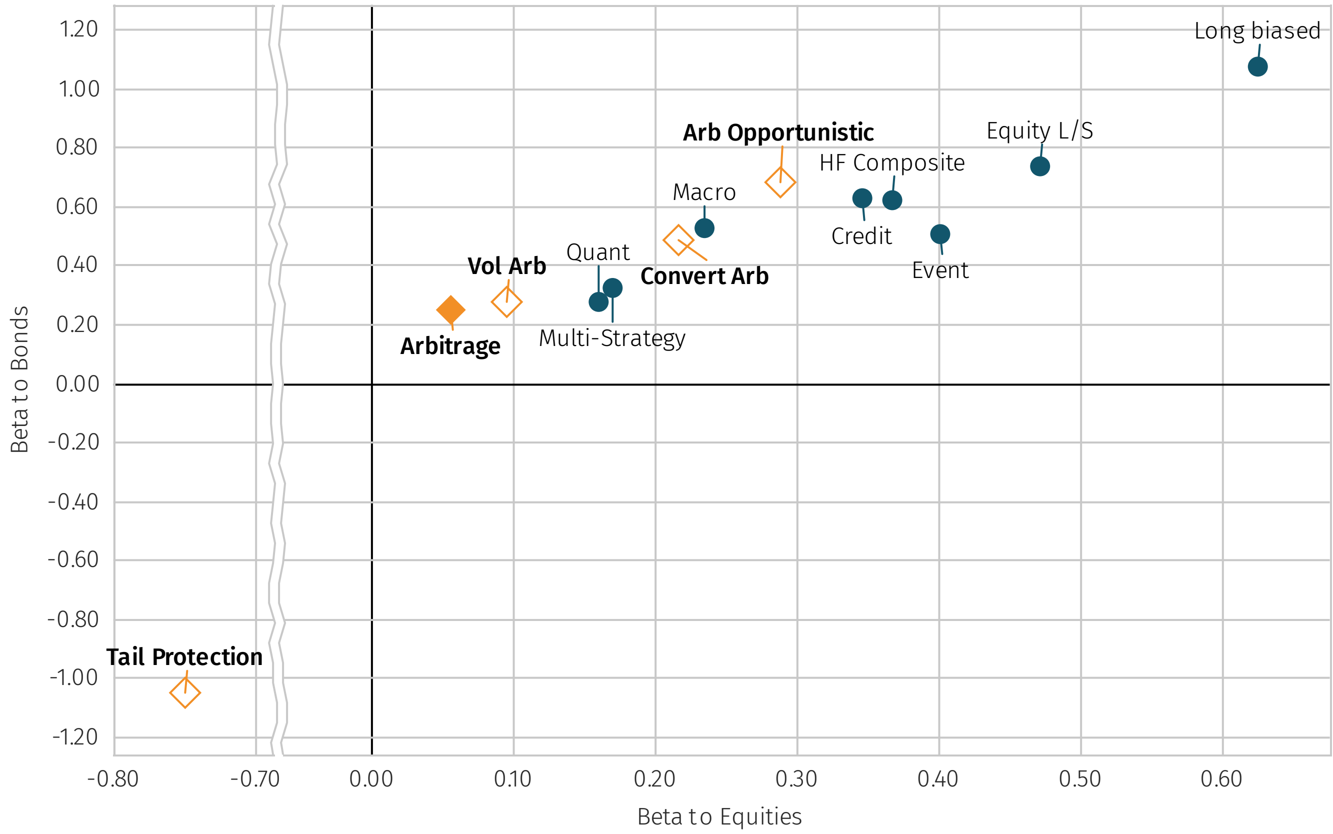


SHARPE RATIO BY HEDGE FUND STRATEGY (3 YR)*

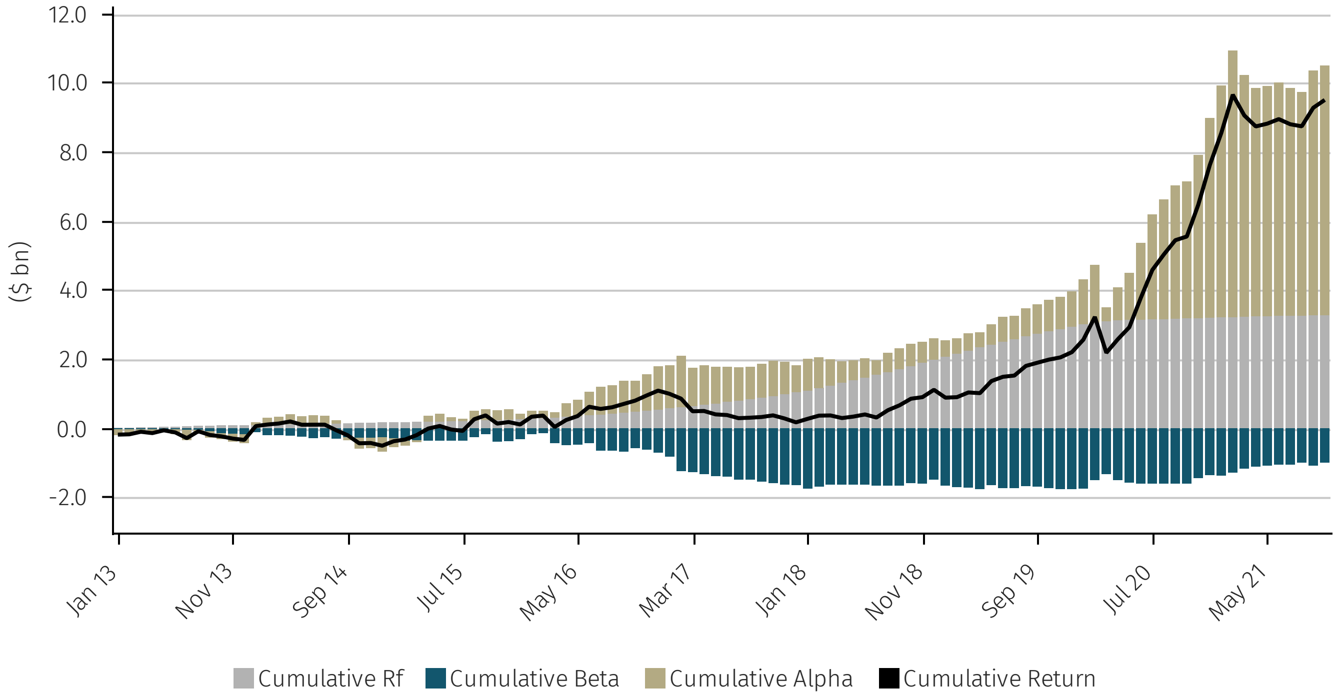


*Source: Aurum Hedge Fund Data Engine, Bloomberg. *Risk Free Rate = period average of 3-month US Libor 0.17%*
**HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index. Equities = S&P Global BMI.*
Bonds = S&P Global Developed Aggregate Ex Collateralized Bond (USD).

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: alpha = actual return – Rf – beta * (market return – Rf).*

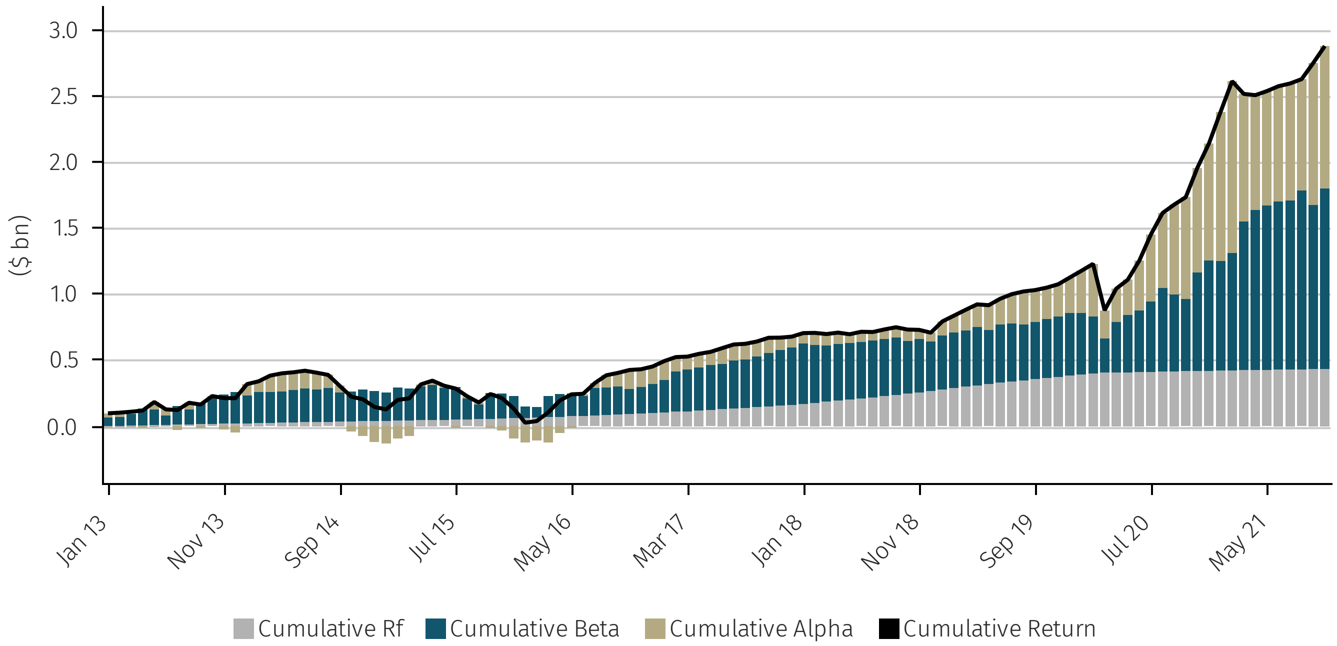
Where Rf is the risk free rate as defined by a rolling 3m USD Libor, where market return is that of S&P Global BMI ('the market index') and where beta has been calculated with respect to each underlying fund observed on a 24m rolling basis to the market index. The monthly alpha, beta and Rf components 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.

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

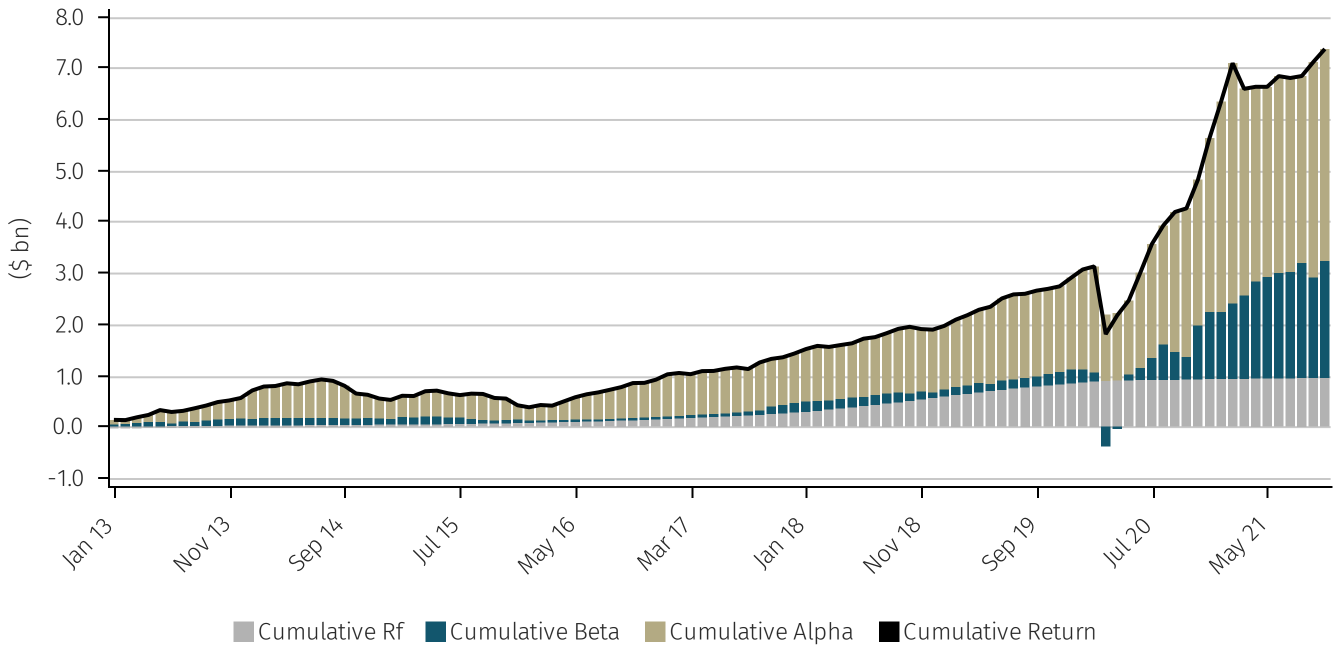
Source: Aurum Hedge Fund Data Engine, Bloomberg.
**HF Composite = Aurum Hedge Fund Data Engine Asset Weighted Composite Index. Equities = S&P Global BMI. Bonds = S&P Global Developed Aggregate Ex Collateralized Bond (USD).*

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

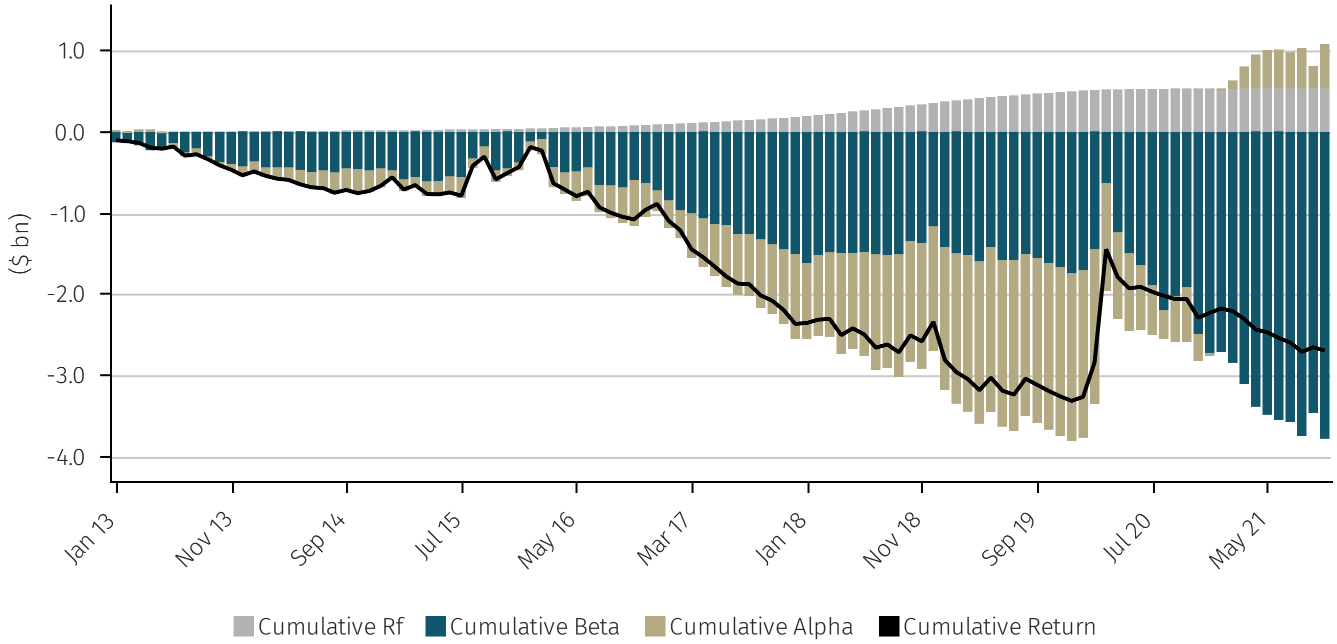
Convert arb



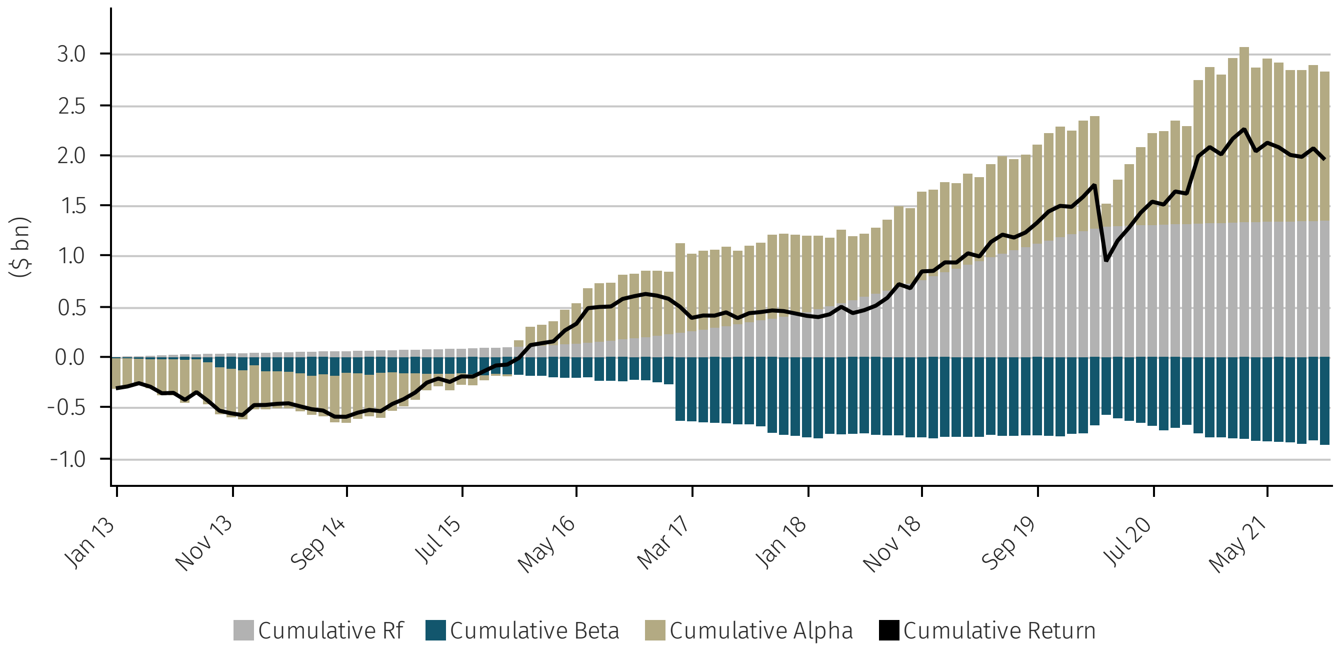
Arb opportunistic



Tail protection

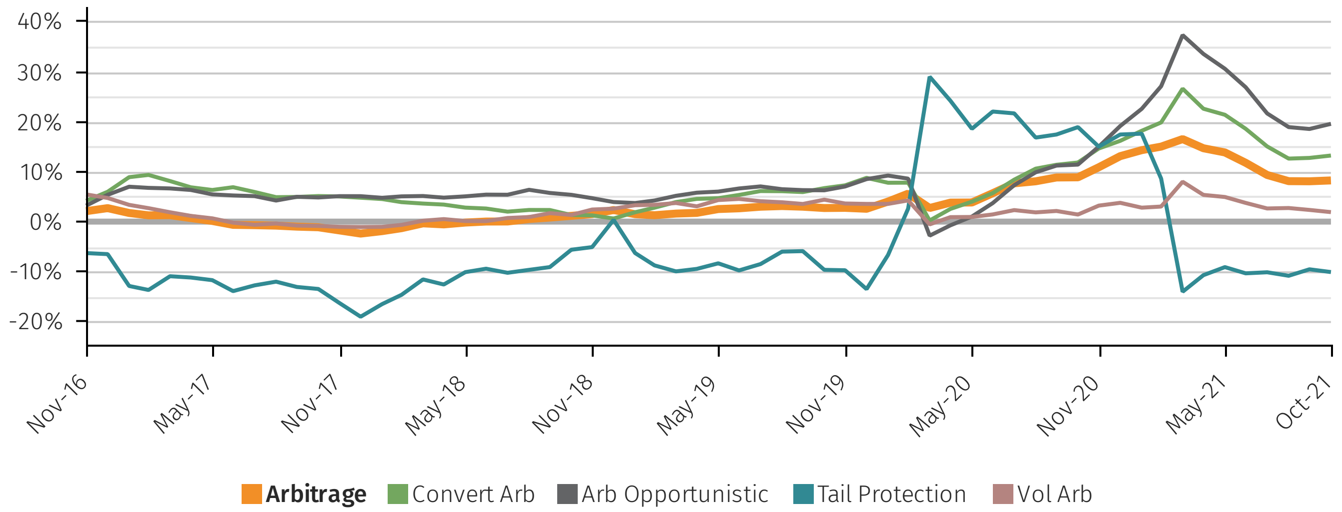


Vol arb

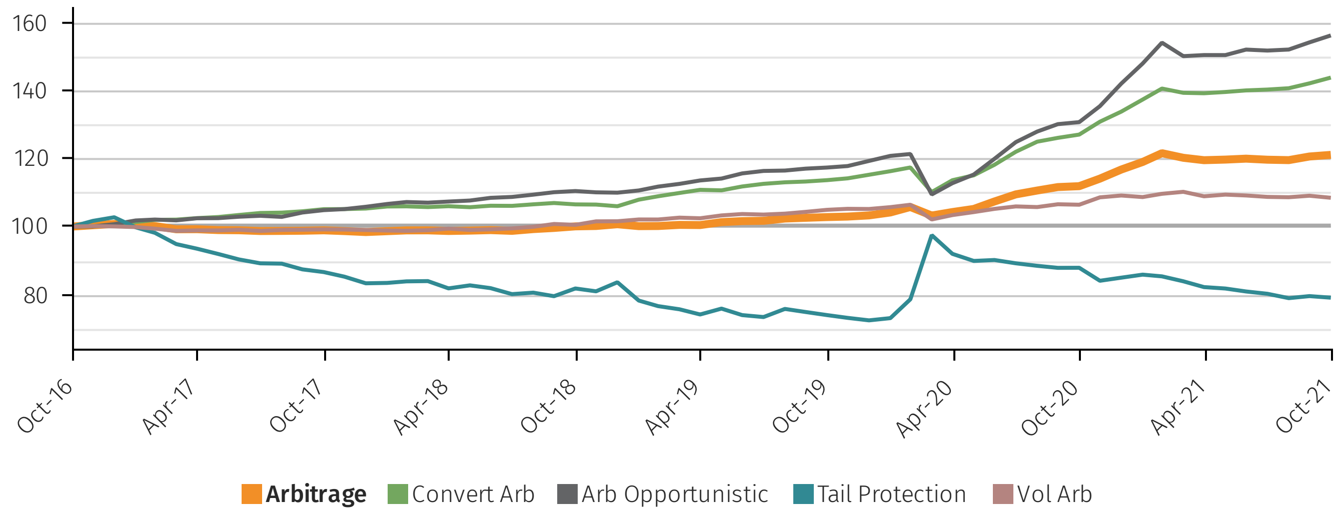


Sub-strategy performance

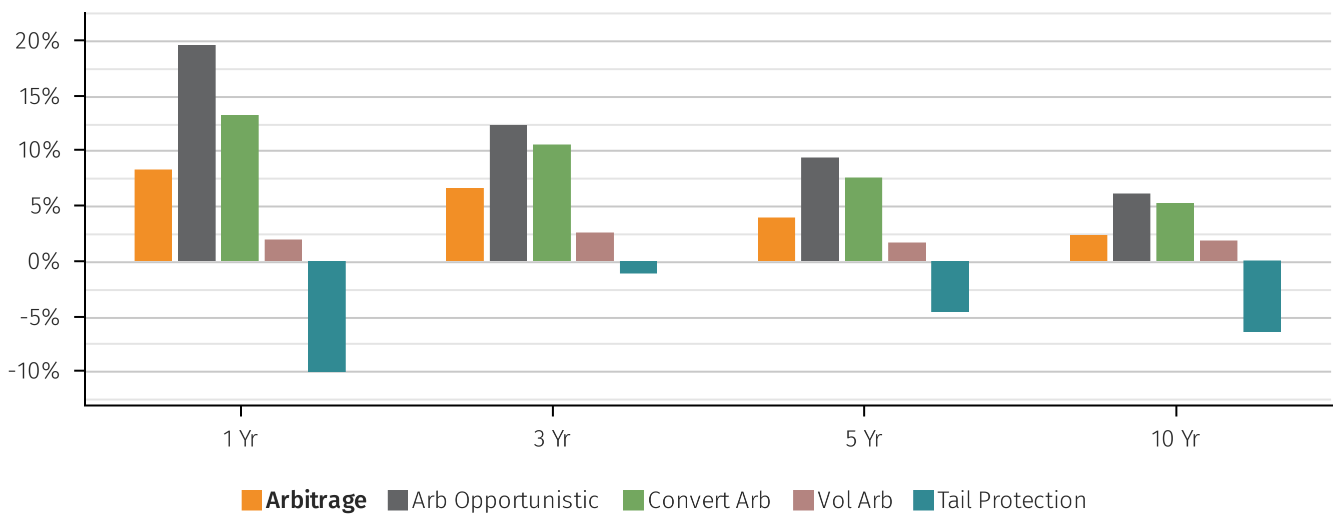
ROLLING 12 MONTH NET RETURN (5 YR)



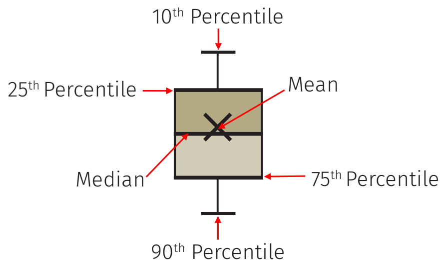
CUMULATIVE NET RETURN (5 YR)



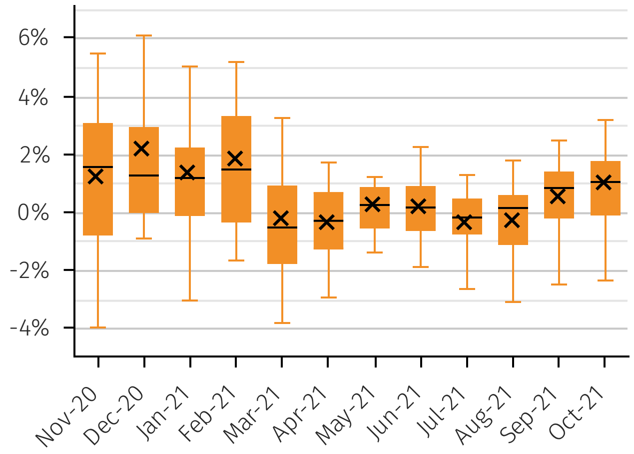
COMPOUND ANNUAL RETURN (ANNUALISED)



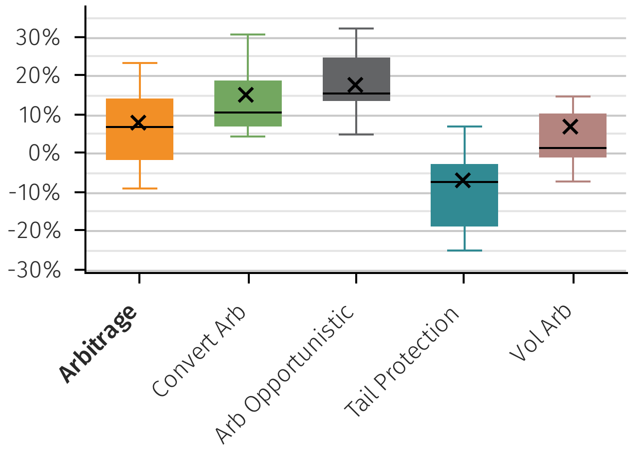
Performance dispersion



MASTER STRATEGY NET RETURN DISTRIBUTION

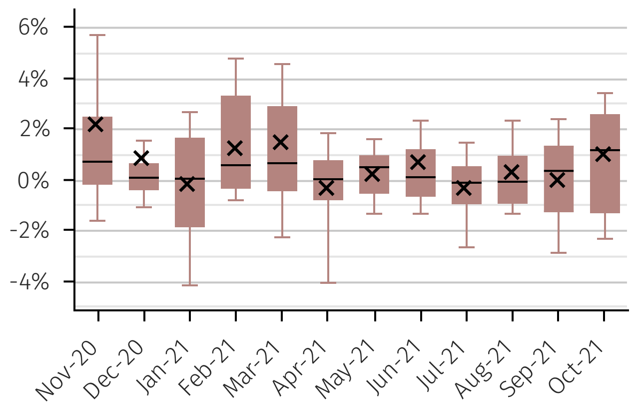


SUB-STRATEGY NET RETURN (1 YR)

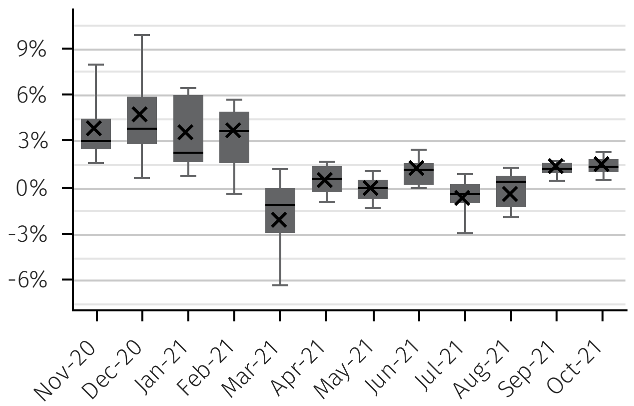


SUB-STRATEGIES NET MONTHLY RETURN DISTRIBUTION

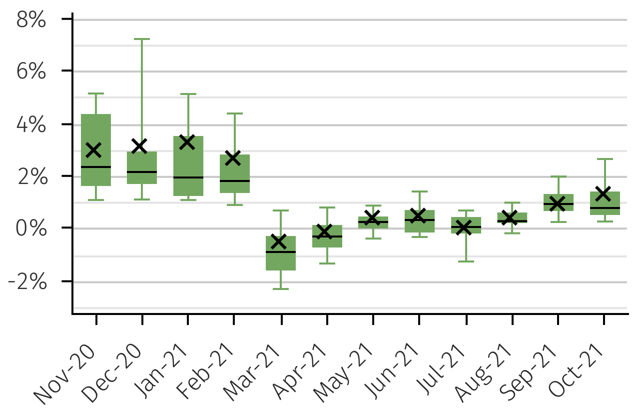
Vol arb



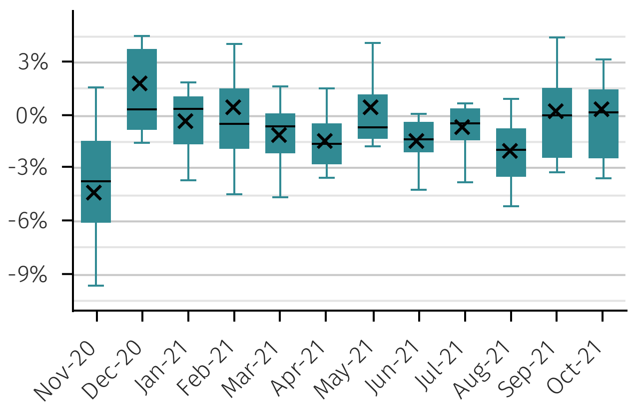
Arb opportunistic



Convert arb

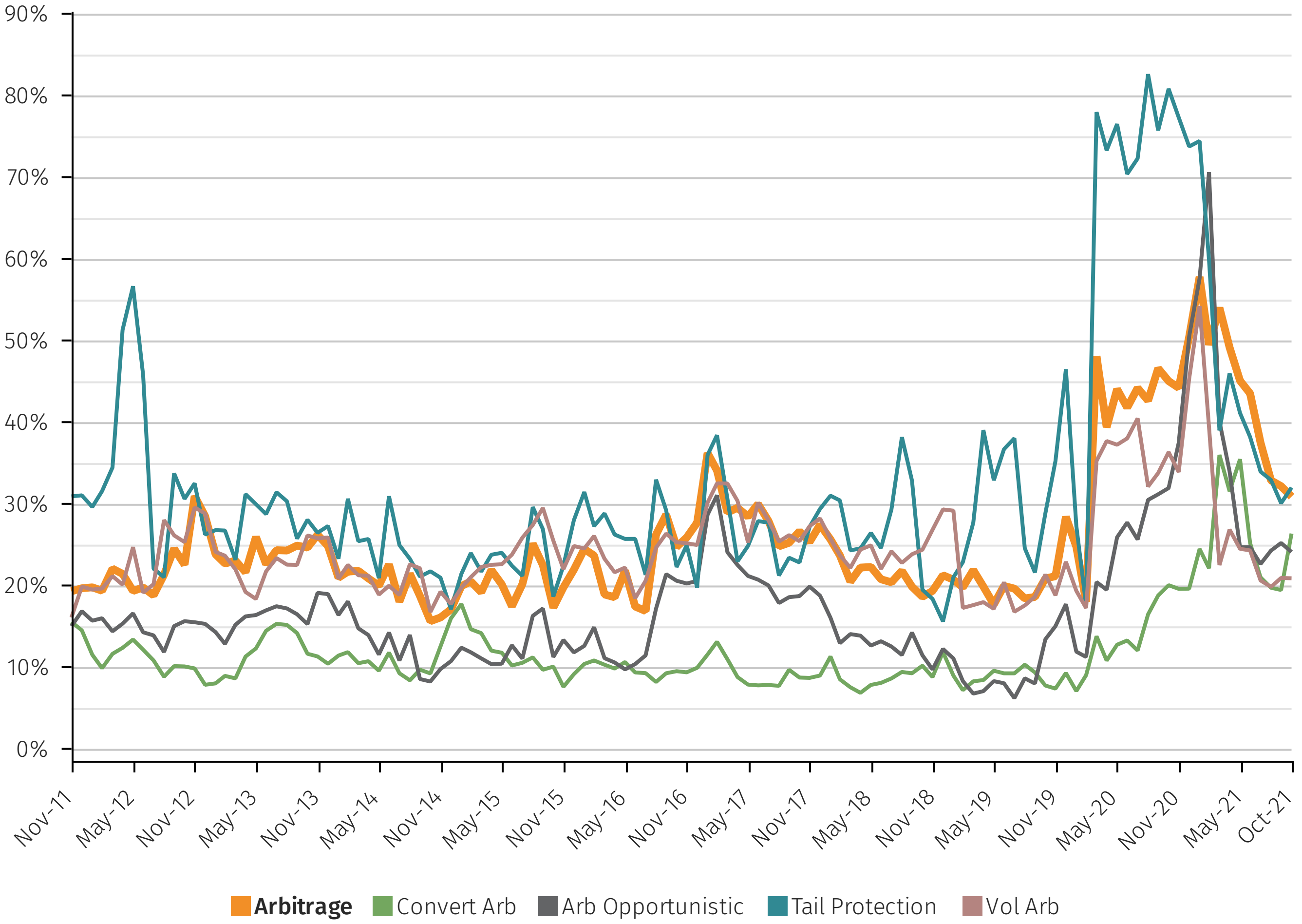


Tail protection



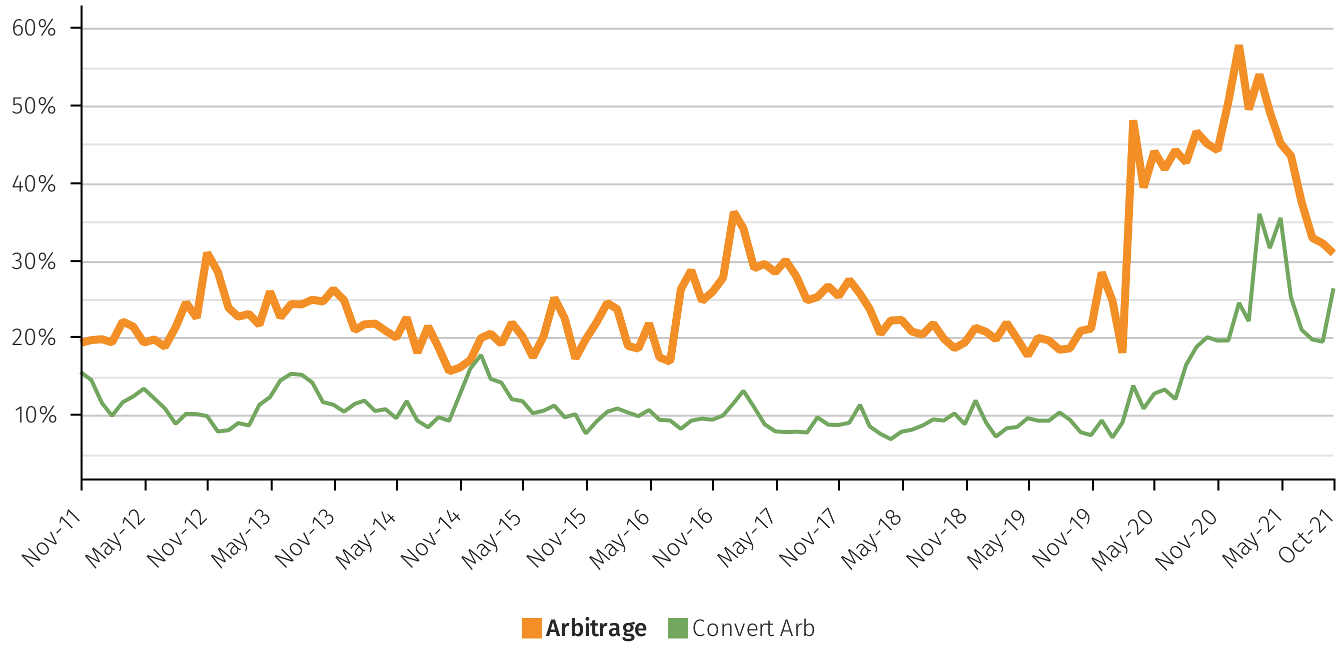
Performance Dispersion uses Equally Weighted Returns. Source: Aurum Hedge Fund Data Engine

10th – 90th PERCENTILE 12M ROLLING PERFORMANCE SPREAD

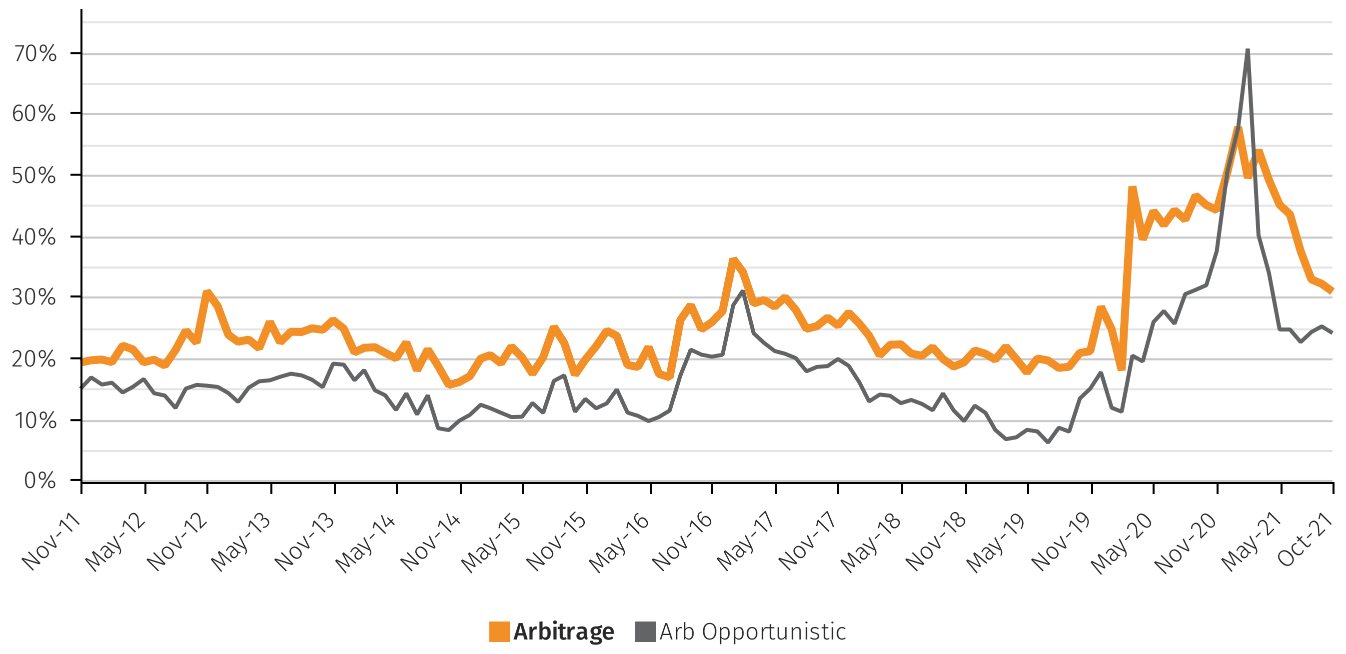


10th – 90th PERCENTILE 12M ROLLING PERFORMANCE SPREAD - SUB STRATEGY VS MASTER STRATEGY

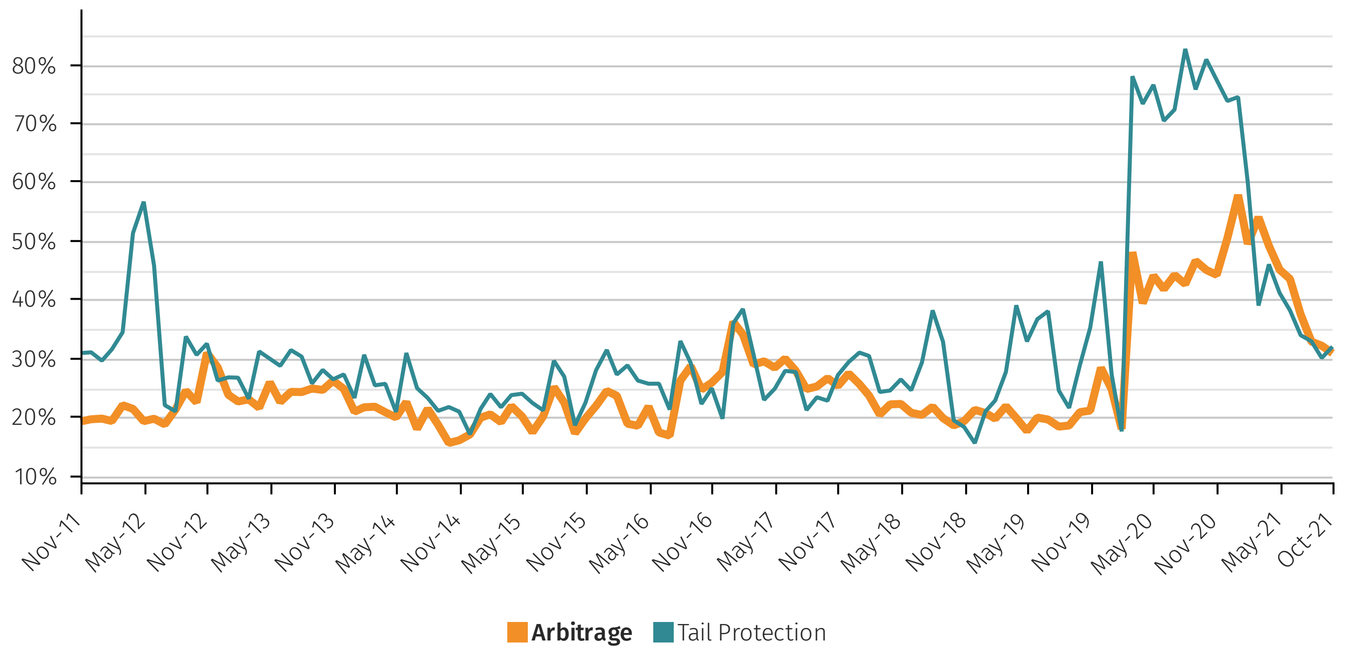
Convert arb



Arb opportunistic

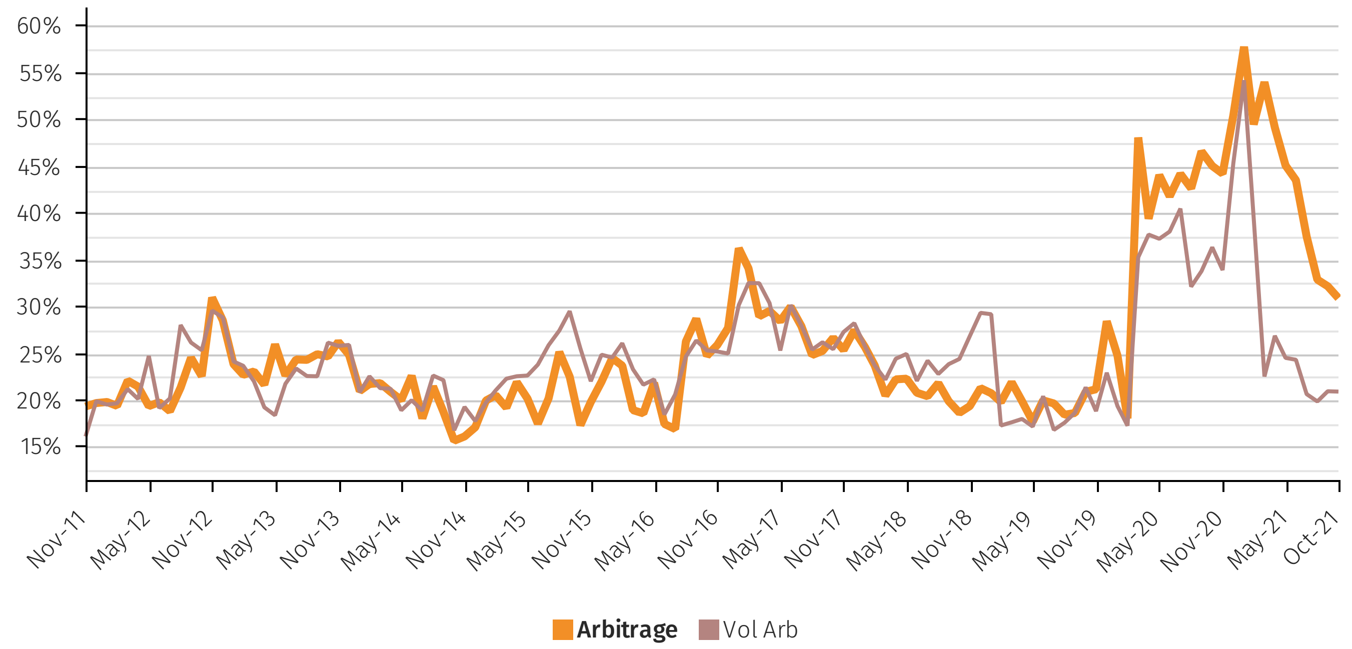


Tail protection



Performance Dispersion uses Equally Weighted Returns. Source: Aurum Hedge Fund Data Engine

Vol arb


60%
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Arbitrage
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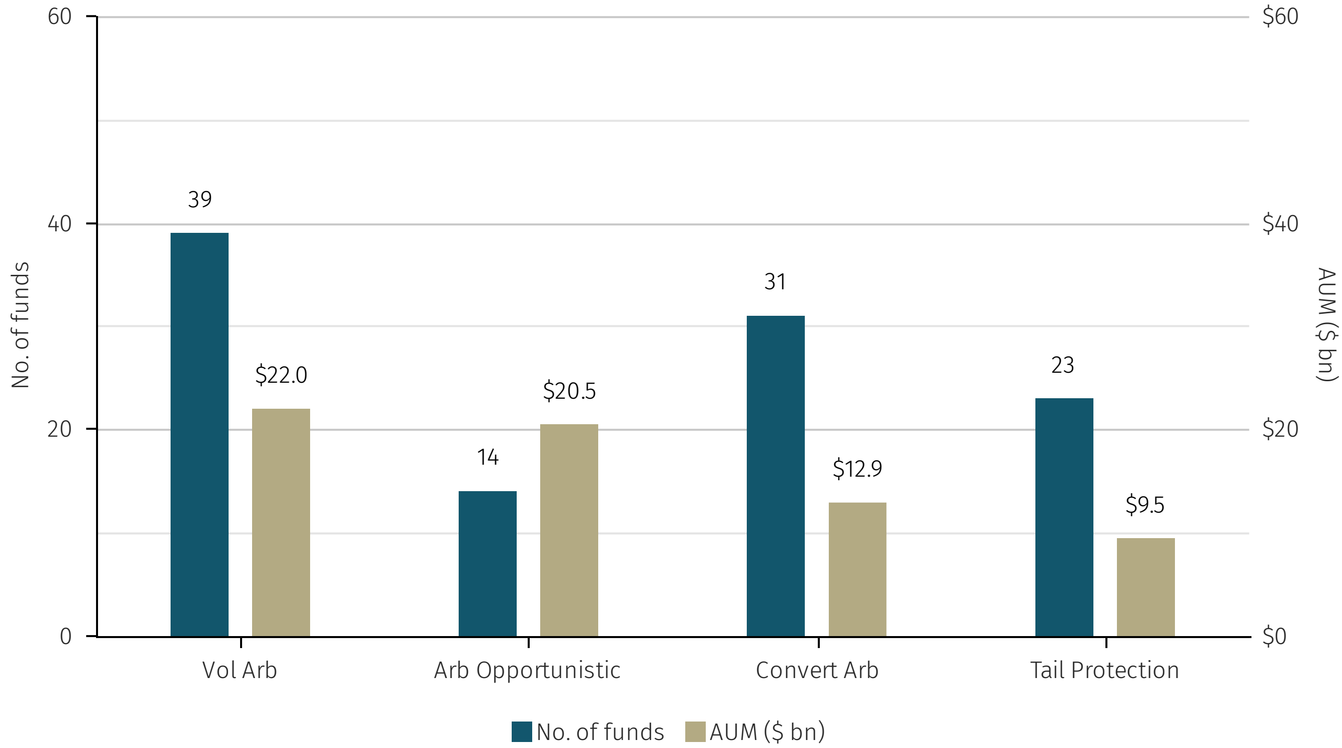
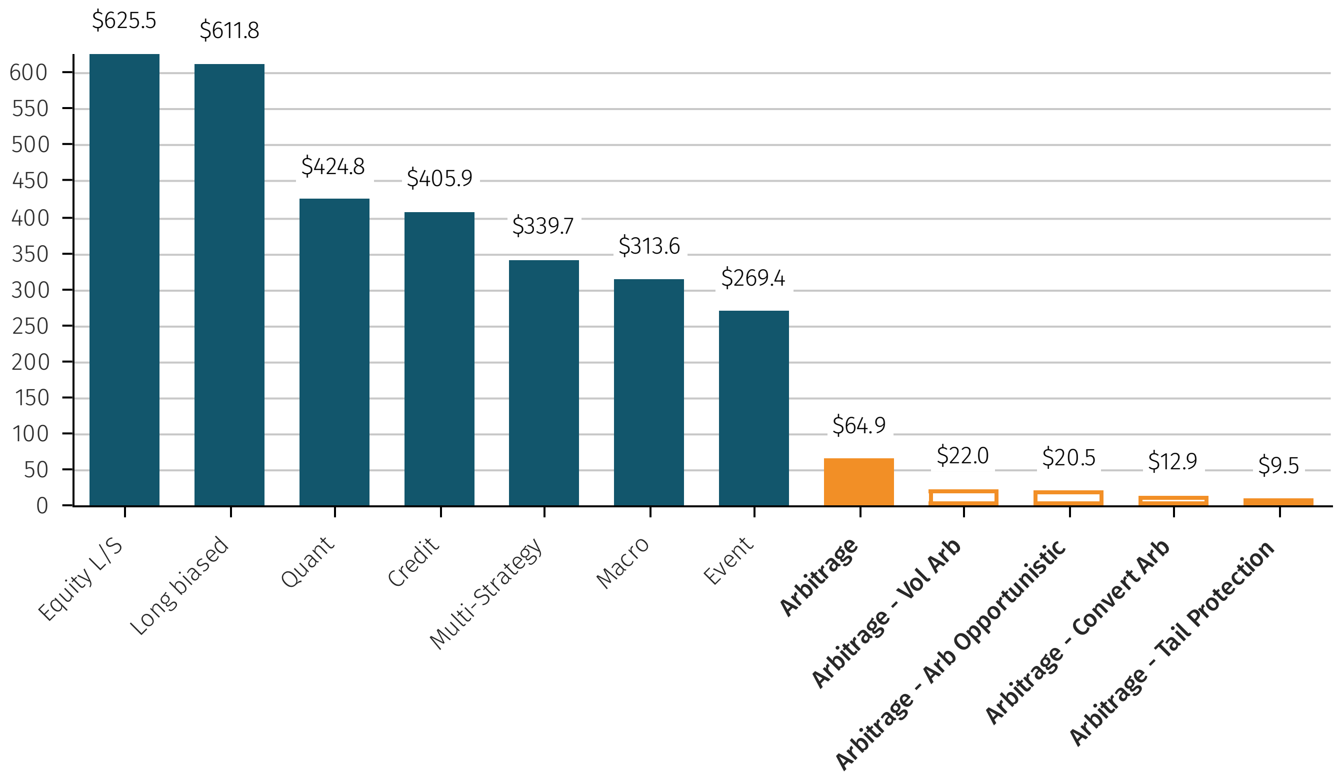
Assets, flows and fees

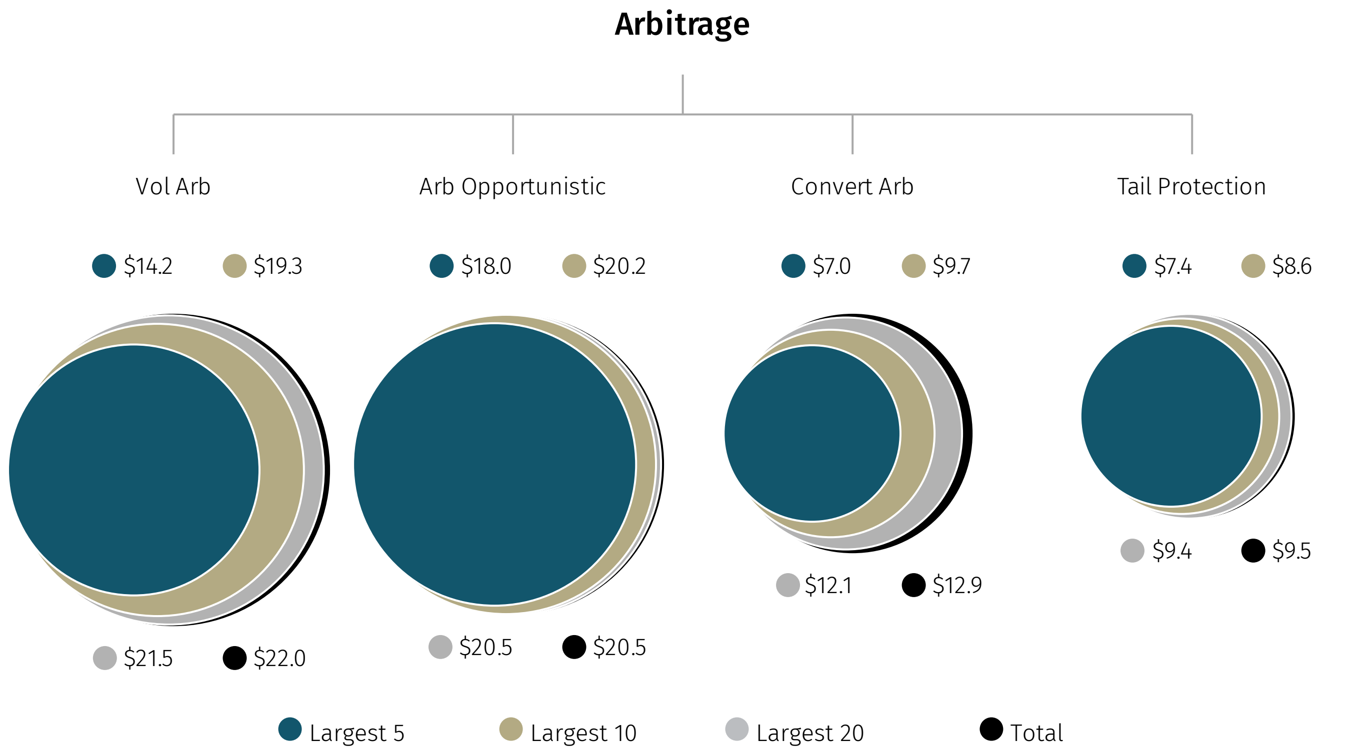
NUMBER OF FUNDS AND AUM BY SUB-STRATEGY



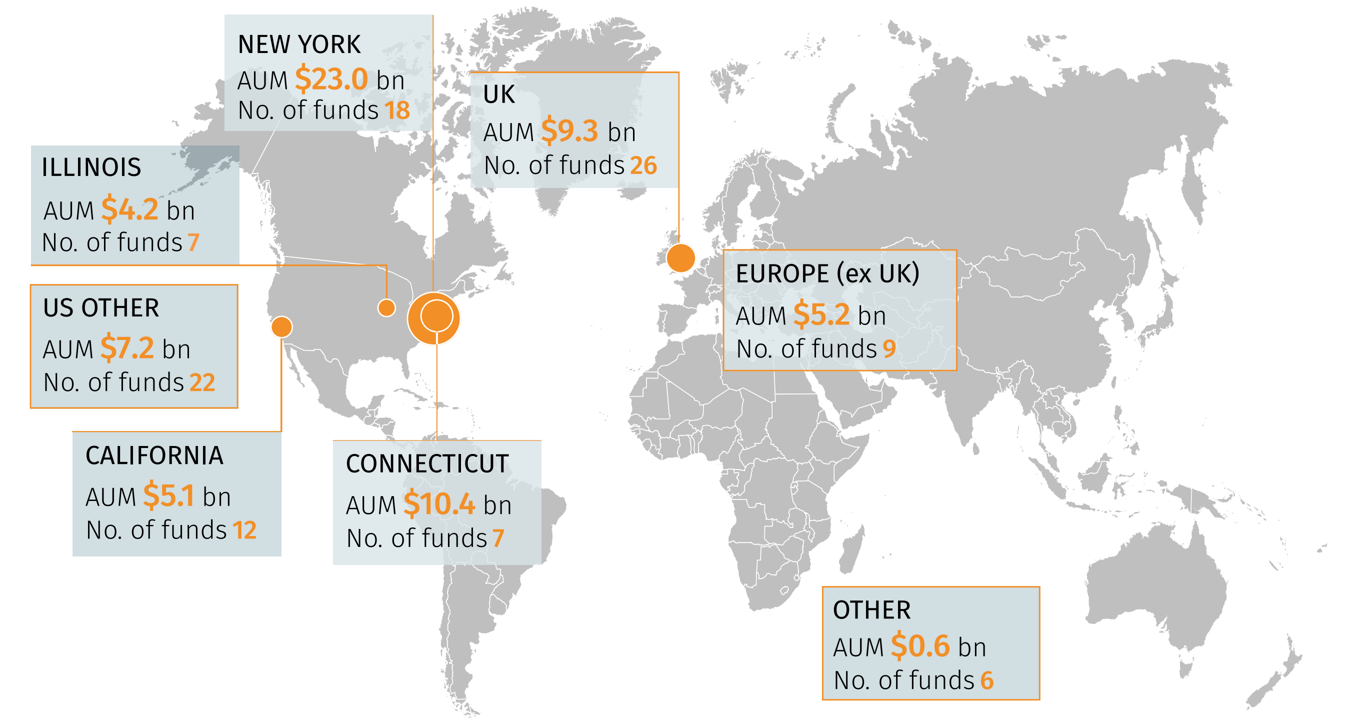
AUM OF MASTER STRATEGY – OCT 2021 ($ BN)



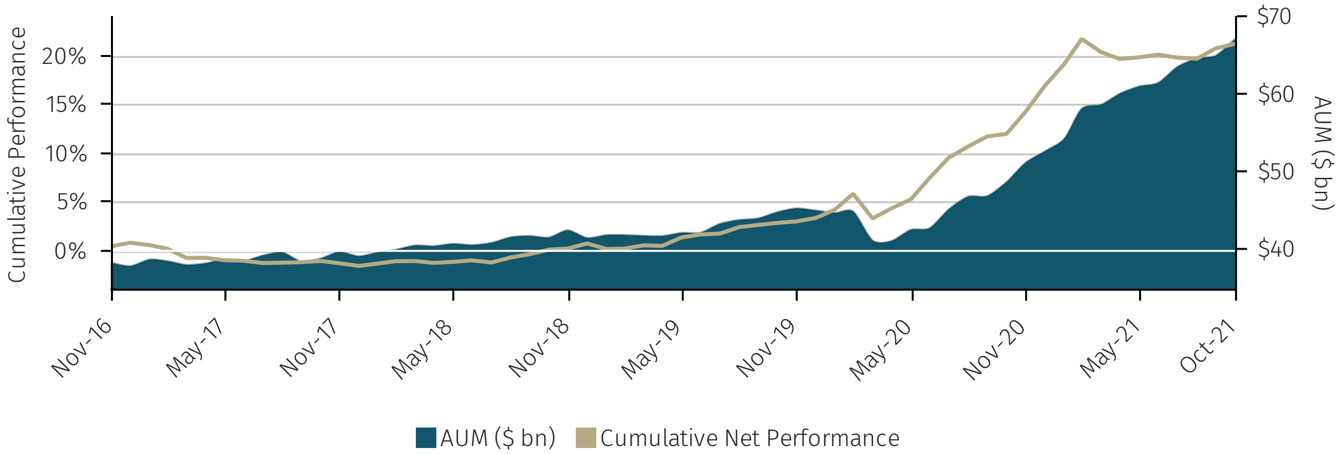
SUB-STRATEGY FUND CONCENTRATION ($ BN)



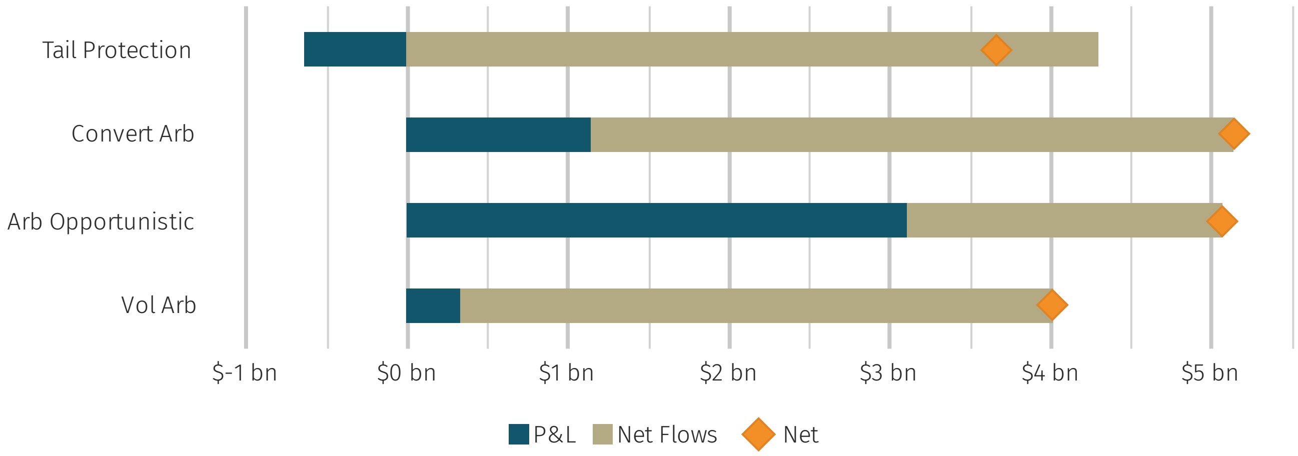
ASSETS UNDER MANAGEMENT BY LOCATION



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
Arbitrage	**30**	**Monthly**	**111**	**1.47%**	**19.99%**
Arbitrage – Convertible bond	45	Quarterly	106	1.27%	17.77%
Arbitrage – Opportunistic	60	Quarterly	145	1.31%	21.13%
Arbitrage – Tail protection	30	Monthly	57	1.64%	16.62%
Arbitrage – Volatility arbitrage	30	Monthly	97	1.70%	20.89%

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

Definitions

Arbitrage

Master strategy: Strategies that look to benefit from mispricings of the same instrument/asset or closely related instruments.

The strategy covers the following areas: convertible bond arbitrage, tail protection, volatility arbitrage or opportunistic trades, including but not limited to other areas such as capital structure arbitrage, ETF arbitrage or arbitrage of other closely related instruments.

Arbitrage - Convertible bond

Traditionally the strategy looks to isolate mispriced components of convertible bond ('CB') securities in order to capture a return to fair value. CBs essentially consist of a bond plus an embedded call option on the equity. Key valuation components relate to the credit (bond component) and the volatility (option and equity component). Those components other than the component believed to be mispriced are typically hedged in order to isolate the mispricing.

Arbitrage - Tail protection

Strategies that explicitly look to benefit from tail events (large market moves to the downside), typically either in the form of large spikes in volatility (either from implied or realised volatility), or from significant moves in the underlying spot price (long gamma) or a particular asset. Some tail protection strategies also look to benefit from sudden/large moves in spread relationships, which are typically tight, but which can move to extremes during periods of stress.

Arbitrage - Volatility arbitrage

Traditionally the strategy looks to identify the mispricing of volatility. Funds may incorporate exposure to factors such as implied volatility, dividends, skew, term structure and correlation. Funds may be biased short, long or neutral to Greek exposures such as delta, vega and gamma.

Arbitrage - Opportunistic

Strategies that look to benefit from inconsistent/mispricing of the same instrument/asset or extremely closely related assets. Opportunistic arbitrage strategies typically have the flexibility to trade across multiple areas, but tend to specialise in a combination of volatility trading, convertible bonds and capital structure arbitrage trades. But they may also focus on other niche areas in order to capitalise upon perceived mispricing. The narrow arbitrage focus is why they are better considered as part of arbitrage, rather than in the broader multi-strategy classification.

Bond and equity indices

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