

# Risk.

## How much a portfolio can lose, and where the risk sits.

Value at risk and expected shortfall under six estimation methods side by side, with filtered historical as the headline figure, computed for each portfolio every day and broken down by position, sector, venue and factor.



Risk through time for a demonstration portfolio: one-day value at risk at 99 percent and expected shortfall at 97.5 percent, every week over a year, as the portfolio was held.

Value at risk, 1 day, 97.5%

**2.25%**

\$561,500

Expected shortfall, 1 day, 97.5%

**2.84%**

\$710,500

Gap between methods

**1.04 pp**

expected shortfall, 99%

Largest share of shortfall

**23.6%**

ADA

Average correlation

**0.81**

highest pair 0.87

### Loss.

Value at risk and expected shortfall from 95 to 99.9 percent under each estimation method, over one, five and ten days, and any loss amount translated into how often the current positions would have lost that much.

### Concentration.

Each position's share of expected shortfall against its share of capital, by sector, sleeve, instrument, venue or side. Contributions add up to the portfolio's figure; hedges appear as negative.

### Change.

Each measure over a day, a week and a month, split into what changed in the positions and what the market did.

### Factors.

Exposure to the market, to sectors and to five styles, the share of risk each accounts for, and the probability that two assets fall sharply on the same day.

## What is covered. By question.

### What the portfolio could lose

Expected shortfall and value at risk by estimation method

Liquidity-adjusted value at risk

Risk through time, as held: loss, volatility, beta, leverage

How often a day this bad occurs

### What changed

Each measure over a day, a week and a month

Split into position changes and market moves

### Where the risk sits

Share of expected shortfall against share of capital

Correlation over the window, today and in stress

Differences from a chosen benchmark

Exit cost by position, in basis points and dollars

### Factors

Market, sector and style exposures

Factor and specific shares of risk

Exposures by asset and against the market

Factor returns, contribution by holding

### When assets fall together

Tail dependence for every pair held

The pairs most likely to fall sharply together

### Breakdown

By sleeve, sector, instrument, venue, side or position

Share of gross against share of expected shortfall, down to each position

## Reports. Where the figures go.

|       |                                                            |
|-------|------------------------------------------------------------|
| Daily | Daily risk pack; morning pack; all portfolios on one page. |
|-------|------------------------------------------------------------|

|         |                      |
|---------|----------------------|
| Monthly | Risk committee pack. |
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|           |                  |
|-----------|------------------|
| Quarterly | Investor report. |
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## Settings. As used on the pages.

|         |                                                                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methods | Filtered historical, shown first; historical; parametric; parametric adjusted for skewness and kurtosis, for value at risk only; extreme value; filtered extreme value. |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|            |                                      |
|------------|--------------------------------------|
| Confidence | 95, 97.5, 99, 99.5 and 99.9 percent. |
|------------|--------------------------------------|

|         |                                                                         |
|---------|-------------------------------------------------------------------------|
| Horizon | One, five and ten days on the pages; up to thirty days through the API. |
|---------|-------------------------------------------------------------------------|

|         |                                   |
|---------|-----------------------------------|
| History | 90 to 1,000 days; 500 by default. |
|---------|-----------------------------------|

|              |                                                                                                    |
|--------------|----------------------------------------------------------------------------------------------------|
| Factor model | Market, sector and five style factors: beta to bitcoin, momentum, volatility, liquidity and carry. |
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|            |                                                                      |
|------------|----------------------------------------------------------------------|
| Past dates | Any page can be read as of a past day, with the positions then held. |
|------------|----------------------------------------------------------------------|

## Methods side by side. Expected shortfall, one day.

| Percent of equity      | 95%  | 97.5% | 99%  |
|------------------------|------|-------|------|
| Filtered historical    | 2.43 | 2.84  | 3.53 |
| Historical             | 2.71 | 3.30  | 4.57 |
| Parametric             | 2.75 | 3.12  | 3.56 |
| Extreme value          | 2.73 | 3.36  | 4.48 |
| Filtered extreme value | 2.43 | 2.90  | 3.54 |
| Gap, percentage points | 0.32 | 0.52  | 1.04 |

## Data. In and out.

|           |                                                                                       |
|-----------|---------------------------------------------------------------------------------------|
| Portfolio | Exchange or PMS exports in CSV, spreadsheet cells, or positions typed in plain lines. |
|-----------|---------------------------------------------------------------------------------------|

|             |                                                          |
|-------------|----------------------------------------------------------|
| Market data | Daily closes at 00:00 UTC, back to each asset's listing. |
|-------------|----------------------------------------------------------|

|        |                                                                                                                    |
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| Output | PDF and Excel reports; Word and PowerPoint on the firm's templates; tables as CSV, Excel or JSON; an Excel add-in. |
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