

## Portfolio Risk Profile: Better Allocation Decisions

As an allocator to alternative assets you want to construct the portfolio that maximizes performance while keeping risk within acceptable limits. This requires a deep understanding of the mechanics of your portfolio. Our Portfolio Risk Profiles show you how the components of your portfolio interact and where your portfolio stands in the risk-return landscape.

### Help your investors see you clearly

We apply all of the analytical techniques detailed in our "Manager Risk Profile" service, but at the portfolio level. You will be able to provide your investors with a clearer picture of your own portfolio's risks and returns, giving them the confidence to commit their capital.

### A free feast

Correlation characteristics amongst diverse investments are the drivers behind the allocation decision: they make possible higher return at lower risk. To take full advantage of this opportunity requires more than just a simple correlation coefficient (see chart, right). Our portfolio level analysis uses all the information that is in the data, and makes no assumptions about information that is not!

### A question of fit

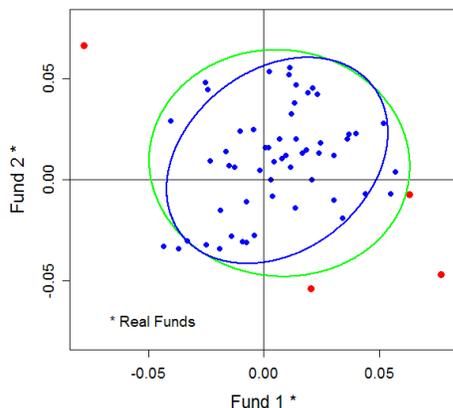
It is one thing to find an investment opportunity that seems attractive on a standalone basis. The next question is how will it interact with your existing portfolio? We test different allocations to examine the effect on your own fund's risk and performance metrics.

### Allocation testing

What would happen if your allocations were modified? We conduct perturbation studies to evaluate the effect of changes on all your preferred risk and return metrics.

After removing only 4 outliers (in red) from a dataset of 60 monthly returns, the green covariance ellipse is transformed into the blue. The correlation coefficient has jumped from  $-0.03$  to  $+0.28$ . These two managers are more correlated than you thought.

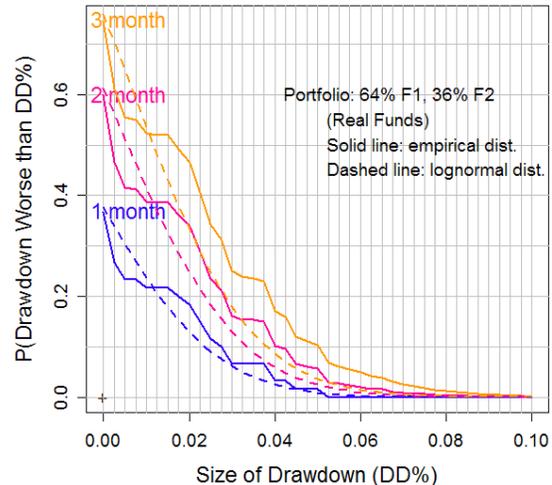
Scatter Plot with Covariance Ellipses



Spotting outliers in 2 series is hard enough, we can find them for you among any combination of the members of your portfolio.

The chart below shows the estimated likelihood of various portfolio draw-downs over randomly selected 1, 2, and 3 month periods. The parametric approach under-estimates some draw-down frequencies by a factor of 2 compared to the empirical approach.

\*\*\*\*\* Portfolio: Drawdown Profile



To meet your risk control targets, your risk estimates have to be reliable and conservative. To optimize your allocations you have to take full advantage of all the features of the data.

### Don't let black cygnets become swans

Spotting an outlying data point in a single time series is easy, doing it for multiple correlated series is not. Outliers bias your analysis compromising your decision-making; their impact must be assessed (see chart, left). An outlier may be a harbinger of problems: when you experience an outlying event, you need to investigate it. We identify those events for you.

### Manage your allocations

Every month brings more information. Updating your analysis and comparing it to the baseline gives you the opportunity to manage your allocations dynamically. This allows you to continuously improve performance, delivering more alpha to your customers.

### To rebalance or not

Rebalancing strategies have an impact on overall returns. We test the effect of periodic and event-driven rebalancing on any risk or performance metrics you choose. We can even assess the cost to you of lock-up agreements and minimum investments.

## What do we need?

You provide us with:

- Periodic return data for each manager. We suggest a minimum 5 years monthly or 2 years weekly / daily. Longer periods cover a wider set of market conditions, but older data may be stale.
- Current portfolio allocations and rebalancing strategy. Proposed allocations to new managers. If we are to complete sensitivity analysis for allocations, we will work with you to define a project scope.
- Periodic benchmark data. If any of your preferred metrics require benchmark data, we request you provide it for consistency.
- The list of metrics you would like us to project, or choose one of our pre-selected bundles.
- Any specific calculation details we need. This includes any variations on the standard statistics as well as the details of any proprietary performance measures you use.

## What do you get?

We provide our reports in a portable document format. We also deliver a separate file containing the original datasets and calculation specifications as an audit trail and all the charts and tables from the report for you to use as you please.

Every aspect of the work we do is customizable from calculation procedure to file format to chart style: our work becomes an integral part of your decision-making audit trail.

## Ian Rayner

I was Chief Operating Officer and Director of Research for The Bornhoff Group, an award-winning pioneer in multi-manager CTA funds. As COO I built institutional quality operations throughout our firm. As Director of Research I developed statistical tools for delving deep into manager performance, and building robust portfolios.

Our team placed hundreds of millions of dollars with quant managers. We allocated capital to the biggest names and to the smallest niche players. We screened 1,000's, analyzed 100's, and completed operational due diligence on the best to construct our portfolios. During my tenure, our flagship program returned over 40% per year.

I hold a Masters in Chemical Engineering from Queens' College, Cambridge University. I graduated one of only 10 Palmer Scholars in my class in the MBA program at The Wharton School, University of Pennsylvania.

## Other Services

### Manager Risk Profile: quantitative due diligence

- See the full risk picture for individual Managers and find subtle differences between them.
- Confidently allocate to higher return opportunities armed with clearer expectations.
- Monitor manager performance for style drift and loss of edge.
- Exploit available time-series relationships.

### Portfolio Optimization: your allocation edge

- Identify the performance metric that you want optimized.
- Tailor risk constraints to meet the demands of your investors.
- Optimize capital allocation to maximize your key performance metric without violating risk constraints.

### Statistical Analysis and Testing

- We will tackle ad hoc analytical challenges. We can assist in improving or auditing your own back-testing, and data and system validation methodologies.
- Having designed and tested our own systematic trading strategies, we are uniquely positioned to participate in the due diligence process for systematic funds.

Call or email to discuss how we can maximize your alternative investment portfolio performance. Please visit us on LinkedIn (<https://www.linkedin.com/in/ianrayner/>) and feel free to connect! We also have a blog on our website (<https://www.raynergobran.com/technical-blog/>) where we discuss quantitative analysis for alternative investments.