

## Modern Portfolio Theory Statistics

Below are some Key Statistics which are helpful in order to analyze the performance, and determine whether the performance results are due luck or because of manager's skills.

The analyses below answer the following questions:

- What is the probability of losing a certain percentage, over a specific period of time?
- How much the performance consistency is?
- Is the performance return sufficiently high compared to the risk taken?
- Is the performance Stable or Volatile?
- Is the performance correlated to benchmark, and markets?
- Are we outperforming other money managers and benchmarks' performance?

### a) Value at Risk (VaR)

Monthly VaR at 95% Confidence: -18.76%

"Value at Risk" measures the potential loss in the portfolio over a defined period, for a given confidence interval.

Our monthly VaR is -18.76% at 95% confidence level; that means there is only a 5% chance that the portfolio will drop more than -18.76% over any given month.

### b) Sharpe Ratio

Sharpe Ratio: 1.09

Sharpe ratio tells us whether a portfolio's returns are due to smart investment decisions or a result of excess risk, it is a risk-adjusted measure of the performance.

The ratio measures how much reward the investment produces for the level of risk taken.

The higher the Sharpe Ratio, the better consistent performance of the portfolio is considered to be.

### c) Standard Deviation (SD)

Monthly Standard Deviation: 26.78

Standard Deviation measures how much the return is deviating and fluctuating around the average return.

Our +8.52% Monthly Average Return with 26.78% Standard Deviation; indicate that the monthly realized return would most probably be somewhere between **-18.26%** and **+35.3%**.

### d) Volatility ( $\sigma$ )

Annual Volatility: 0.93

Volatility is a measure of the portfolio stability; it refers to the amount of uncertainty about the size of changes in the performance value. It is calculated as the standard deviation from a certain continuously compounded return over a given period of time.

Our 92.3% annualized volatility means the potential annual return may increase or decrease up to double its value.

### e) Performance measurement and Benchmarking

When evaluating the performance of any investment, it's important to compare it with those that are perceived as the best performers in the class. The below MPT statistics are useful to understanding and quantifying this risk/reward landscape.

Benchmark Index	Alfa ( $\alpha$ )	Beta ( $\beta$ )	R-SQUARED (R2)	Correlation
S&P	6.31%	-0.10	0.10%	-3.18%
BARCLAYHEDGE'S BTOP FX	6.16%	-0.32	0.09%	-2.92%
MSCI EUROPE FX HEDGE -USD	6.03%	-0.21	0.11%	-3.34%

### f) R-SQUARED (R2)

R-Squared is a statistical measure that represents the percentage of the portfolio's movements, which can be explained by the percentage of the benchmark index movements.

The R2 generated by our performance in correspondence to the above 3 benchmarks, was less than 1%, which means that only 1% of our performance gains are due to benchmark gains.

### g) Correlation

Correlation measures only direction of movement over time which can be explained by the direction of movement of the benchmark.

The correlation generated by our performance in correspondence to the above 3 benchmarks was less than -4%, which means we have a weak correlation.

### h) Beta ( $\beta$ )

While SD determines the volatility of a fund according to the disparity of its returns over a period of time, Beta determines the volatility of a fund in comparison to its benchmark.

Our performance had a negative and less volatility with "S&P500", and "MSCI EUROPE FX HEDGE –USD" by 10% and 21% respectively.

But we had more volatility with " BARCLAYHEDGE'S BTOP FX" by 32%.

### i) Alfa ( $\alpha$ )

Alfa measure the extra return rewarded to you for taking on risk posed by factors other than market volatility. It measures how much if any of this extra risk helped the fund outperform its corresponding benchmark.

A positive alpha of 1 means the portfolio has outperformed its benchmark index by 1%.

This 1% represents the extra return awarded to the investor for taking additional risk rather than accepting the market return. In contrast, a negative alpha indicates that the portfolio has underperformed its benchmark.

Our performance has outperformed the following benchmarks "S&P500", "BARCLAYHEDGE'S BTOP FX" and "MSCI EUROPE FX HEDGE –USD" by generated the following Alphas of 6.31%, 6.16% and 6.03% respectively.