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Your First Step in Managed Futures Investing

COMPREHENSIVE TRADING ADVISOR RESEARCH, ANALYSIS and BROKERAGE

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The following provides a brief description of each statistic used in our analysis and gives the formula used to calculate each. Annualized statistics are based on monthly data, unless Quarterly data is specified.

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|-------------------------|------------------|
| VAMI | Sortino Ratio |
| Average Return (Mean) | Pro forma |
| Compound Average Return | Calmar Ratio |
| Standard Deviation | Sterling Ratio |
| Downside Deviation | Drawdown |
| Sharpe Ratio | Maximum Drawdown |

Value Added Monthly Index (VAMI) - This index reflects the growth of a hypothetical \$1,000 in a given investment over time. The index is equal to \$1,000 at inception. Subsequent month-end values are calculated by multiplying the previous month's VAMI index by 1 plus the current month rate of return.

Where Vami₀ = 1000 and
Where R_N = Return for period N

$$Vami_N = (1 + R_N)^N \cdot Vami_{N-1}$$

Average Return (Mean) - This is a simple average return (arithmetic mean) which is calculated by summing the returns for each period and dividing the total by the number of periods. The simple average does not take the compounding effect of investment returns into account.

Annualized Return - This is the yearly increase (or decrease) in the value of an investment, including the effects of compounding. An Annualized Rate of Return is the return on an investment over a period other than one year (such as a month, or two years) multiplied or divided to give a comparable one-year return. Annualized returns are a bit more complicated than average returns, which you can get by adding up the annual returns of an investment and dividing by the number of years. To calculate annualized return for a three-year annualized return, for example, you must take the cube root of the cumulative return for a three-year period to factor in compounding. Annualized return gives you an idea of how an investment has performed and allows you to compare it over the long term. Investments that have the same average return may have wildly different annualized returns, especially if one investment is volatile. For example, it's possible for an investment to have a respectable average return but a negative annualized return if gains in the first two years are offset by a big drop in the third.

Compound (Geometric) Average Return - The geometric mean is the monthly average return that assumes the same rate of return every period to arrive at the equivalent compound growth rate reflected in the actual return data. In other words, the geometric mean is the monthly average return that, if applied each period, would give you a final Vami (growth) index that is equivalent to the actual final Vami index for the return stream you are

considering. Annualized compound quarterly and annualized returns are calculated using the compound monthly return as a base.

Where N=Number of periods

Where $V_{ami_0} = 1000$

$$\text{Compound Monthly ROR} = (V_{ami_N} \div V_{ami_0})^{1/N} - 1$$

$$\text{Compound Quarterly ROR} = (1 + \text{Compound Monthly ROR})^3 - 1$$

$$\text{Compound Annualized ROR} = (1 + \text{Compound Monthly ROR})^{12} - 1$$

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Standard Deviation - Standard Deviation measures the dispersal or uncertainty in a random variable (in this case, investment returns). It measures the degree of variation of returns around the mean (average) return. The higher the volatility of the investment returns, the higher the standard deviation will be. For this reason, standard deviation is often used as a measure of investment risk.

Where R_I = Return for period I

Where M_R = Mean of return set R

Where N=Number of Periods

N

$$M_R = (\sum_{I=1}^N R_I) \div N$$

I=1

N

$$\text{Standard Deviation} = (\sum_{I=1}^N (R_I - M_R)^2 \div (N - 1))^{1/2}$$

I=

Annualized Standard Deviation

$$\text{Annualized Standard Deviation} = \text{Monthly Standard Deviation} \times (12)^{1/2}$$

$$\text{Annualized Standard Deviation} * = \text{Quarterly Standard Deviation} \times (4)^{1/2}$$

* Quarterly Data

$$M_G = (\sum_{I=1}^{N_G} R_{GI}) \div N_G$$

I=1

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Downside Deviation - Similar to the loss standard deviation except the downside deviation considers only returns that fall below a defined Minimum Acceptable Return (MAR) rather than the arithmetic mean. For example, if the MAR were assumed to be 10%, the downside deviation would measure the variation of each period that falls below 10%. (The loss standard deviation, on the other hand, would take only losing periods, calculate an average return for the losing periods, and then measure the variation between each losing return and the losing return average).

Where R_i = Return for period i

Where N = Number of Periods

Where R_{MAR} = Period Minimum Acceptable Return

Where $L_i = R_i - R_{MAR}$ (IF $R_i - R_{MAR} < 0$) or 0 (IF $R_i - R_{MAR} \geq 0$)

$\sum_{i=1}^N$

Downside Deviation = $\left(\sum_{i=1}^N (L_i)^2 \right)^{1/2}$

$i=1$

Downside Deviation = $\left(\sum_{i=1}^N (L_i)^2 \right)^{1/2}$

i

Where N_L = Number of Periods where $R_i - M < 0$

$\sum_{i=1}^{N_L}$

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Sharpe Ratio - A return/risk measure developed by William Sharpe. Return (numerator) is defined as the incremental average return of an investment over the risk free rate. Risk (denominator) is defined as the standard deviation of the investment returns.

Where R_i = Return for period i

Where M_R = Mean of return set R

Where N = Number of Periods

Where SD = Period Standard Deviation

Where R_{RF} = Period Risk Free Return

$\sum_{i=1}^N$

$M_R = \left(\sum_{i=1}^N R_i \right) / N$

$i=1$

N

$$SD = \left(\sum_{I=1}^N (R_I - M_R)^2 \right)^{1/2}$$

I=1

$$\text{Sharpe Ratio} = (M_R - R_{RF}) / SD$$

Annualized Sharpe Ratio

$$\text{Annualized Sharpe} = \text{Monthly Sharpe} \cdot (12)^{1/2}$$

$$\text{Annualized Sharpe}^* = \text{Quarterly Sharpe} \cdot (4)^{1/2} \cdot \text{Quarterly Data}$$

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Sortino Ratio - This is another return/risk ratio developed by Frank Sortino. Return (numerator) is defined as the incremental compound average period return over a Minimum Acceptable Return (MAR). Risk (denominator) is defined as the Downside Deviation below a Minimum Acceptable Return (MAR).

Where R_I = Return for period I

Where N = Number of Periods

Where R_{MAR} = Period Minimum Acceptable Return

Where DD_{MAR} = Downside Deviation

Where $L_I = R_I - R_{MAR}$ (IF $R_I - R_{MAR} < 0$) or 0 (IF $R_I - R_{MAR} \geq 0$)

N

$$DD_{MAR} = \left(\sum_{I=1}^N (L_I)^2 \right)^{1/2}$$

I=1

$$\text{Sortino Ratio} = (\text{Compound Period Return} - R_{MAR}) / DD_{MAR}$$

Annualized Sortino Ratio

$$\text{Annualized Sortino} = \text{Monthly Sortino} \cdot (12)^{1/2}$$

$$\text{Annualized Sortino}^* = \text{Quarterly Sortino} \cdot (4)^{1/2}$$

* Quarterly Data

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Calmar Ratio - This is a return/risk ratio. Return (numerator) is defined as the Compound Annualized Rate of Return over the last 3 years. Risk (denominator) is

defined as the Maximum Drawdown over the last 3 years. If three years of data are not available, the available data is used. ABS is the Absolute Value.

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Sterling Ratio - This is a return/risk ratio. Return (numerator) is defined as the Compound Annualized Rate of Return over the last 3 years. Risk (denominator) is defined as the Average Yearly Maximum Drawdown over the last 3 years less an arbitrary 10%. To calculate this average yearly drawdown, the latest 3 years (36 months) is divided into 3 separate 12-month periods and the maximum drawdown is calculated for each. Then these 3 drawdowns are averaged to produce the Average Yearly Maximum Drawdown for the 3-year period. If three years of data are not available, the available data is used.

Where D1 **Calmar Ratio** = Compound Annualized ROR \div ABS (Maximum Drawdown)

= Maximum Drawdown for first 12 months

Where D2 = Maximum Drawdown for next 12 months

Where D3 = Maximum Drawdown for latest 12 months

Average Drawdown = (D1 + D2 + D3) \div 3

Sterling Ratio = Compound Annualized ROR \div ABS ((Average Drawdown - 10%))

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Pro Forma - Describes a presentation of data, typically financial statements or performance records, where the data reflect the world on an 'as if' or hypothetical basis. That is, as if the state of the presentation were different from that which is in fact the case. For example, a pro forma performance record might show the performance record as if management and incentive fees under consideration had already been deducted. This approach is often adopted in order to show the impact of these fees on a CTA's proprietary record. A pro forma multi-advisor performance record might reflect the combined performance as if you combined all the individual composite performance records of various CTA's you've chosen to create a multi-advisor portfolio and created a single composite record which reflects the pro forma results.

Drawdown - Drawdown is any losing period during an investment record. It is defined as the percent retrenchment from an equity peak to an equity valley. A Drawdown is in effect from the time an equity retrenchment begins until a new equity high is reached. (i.e. In terms of time, a drawdown encompasses both the period from equity peak to equity valley (Length) and the time from the equity valley to a new equity high (Recovery).

Maximum Drawdown is simply the largest percentage drawdown that has occurred in any investment data record.