# Gain/Loss Ratio – Detailed Explanation

- Traditionally risk is measured by the standard deviation, which assumes a bell-shaped return distribution
- For strategies or asset classes with nonlinear payoff profiles, standard deviation is a poor measure of risk
- The appropriate measure of efficiency for nonlinear payoff profiles is the Gain/Loss Ratio (GLR)

$$GLR = \frac{E(r|r>0)\times P(r>0)}{ABS[E(r|r<0)\times P(r<0)]} = \frac{Expected\ Gain}{ABS\ [Expected\ Loss]},$$

where *r* is the return of the strategy.

- The construction of GLR implies that the efficiency of a strategy is influenced by both the average positive (negative) returns and the probability that the return is positive (negative)
- As the expected return is the sum of the expected gain and the expected loss, GLR can also be written in terms of the expected return

$$GLR = \frac{Expected\ Gain}{ABS\ [Expected\ Loss]} = \frac{E(r) - Expected\ Loss}{ABS\ [Expected\ Loss]} = \frac{E(r)}{ABS\ [Expected\ Loss]} + 1$$



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