

What is Sharpe Ratio?

Worksheet

The Sharpe Ratio is calculated as $(R - R_f) / \sigma$, measuring excess return above the risk-free rate divided by volatility, quantifying efficiency of risk-taking.

$$S = (R - R_f) / \sigma$$

S = Sharpe Ratio (unitless)

R = Portfolio return (%)

R_f = Risk-free rate (%)

σ = Volatility (standard deviation) (%)

Questions

- Portfolio returns 16%, risk-free 3%, volatility 20%. Sharpe Ratio?
A) 0.65
B) 0.80
C) 1.15
D) 0.13
- Two portfolios: A has Sharpe 1.2, B has Sharpe 0.9. What does this mean?
A) A is riskier
B) A is more efficient — better return per risk
C) B has higher absolute return
D) They are equally good
- If risk-free rate increases, Sharpe Ratio...
A) increases (R_f is subtracted, so higher R_f = lower S)
B) decreases (excess return shrinks)
C) stays the same
D) becomes infinite
- A portfolio has high return but also very high volatility. Its Sharpe might be...
A) very high (high return compensates)
B) very low (risk is not worth it)
C) depends on how much excess return compensates for the risk
D) negative
- Portfolio A returns 14%, risk-free rate 2%, volatility 15%. Calculate Sharpe Ratio.
- Portfolio B returns 10%, risk-free 2.5%, volatility 8%. Which has higher Sharpe — A or B?
- An aggressive fund returns 25%, risk-free 3%, volatility 40%. Conservative fund returns 8%, risk-free 3%, volatility 5%. Compare.
- Define: What is the Sharpe Ratio?
- Define: Sharpe Ratio formula?
- Define: What does a Sharpe of 1.5 mean?

Answer Key

1. A) $0.65 - S = (16\% - 3\%) / 20\% = 13\% / 20\% = 0.65$. Every 1% of risk yields 0.65% excess return.
2. B) A is more efficient — better return per risk — Sharpe compares efficiency — A delivers more excess return per unit of risk, making it a better risk-adjusted investment.
3. B) decreases (excess return shrinks) — Higher R_f reduces numerator ($R - R_f$), so Sharpe decreases — investments must beat a higher hurdle rate.
4. C) depends on how much excess return compensates for the risk — Sharpe depends on excess return DIVIDED BY volatility — high volatility can make Sharpe low even with high returns.
5. Excess return = $R - R_f = 14\% - 2\% = 12\%$ Sharpe = $12\% / 15\% = 0.80$ For every 1% of risk, the portfolio returns 0.80% above risk-free.
6. Portfolio A: 0.80 (from above) Portfolio B: $(10\% - 2.5\%) / 8\% = 7.5\% / 8\% = 0.9375$ Portfolio B has higher Sharpe Ratio ($0.94 > 0.80$) despite lower absolute return.
7. Aggressive: $(25\% - 3\%) / 40\% = 22\% / 40\% = 0.55$ Conservative: $(8\% - 3\%) / 5\% = 5\% / 5\% = 1.00$ Conservative has better risk-adjusted return (Sharpe = $1.00 > 0.55$).
8. A metric measuring excess return (above risk-free rate) per unit of volatility — how efficiently an investment rewards risk.
9. $S = (R - R_f) / \sigma$: portfolio return minus risk-free rate, divided by volatility.
10. For every 1% of risk (volatility), the portfolio earns 1.5% above the risk-free rate.

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