IQIC - Quantitative Tools

#8: Evaluating Results

Why Return Alone Isn't Enough

- Would you rather earn *15%/year* with brutal crashes, or a steady *10%/year*? Most people pick the second once they picture living through it.
- Return tells you how much you made — it says nothing about how much risk you took to get there.
- Two strategies can post the same average return and still be very different in quality once risk is factored in.
- This is why evaluation needs multiple metrics, not just one number.

Return

- Total return = gain over the whole backtest period; annualized return = converted to a "per year" figure so strategies of different lengths can be compared.
- Return only means something relative to a benchmark — a 10% return looks great until you find out the market did 20%.
- Always compare against something (S&P 500, risk-free rate), never in isolation.

Volatility

- Volatility = standard deviation of returns — a measure of how much the value swings over time.
- Two strategies can land at the exact same final value while one got there smoothly and the other swung wildly the whole way.
- Higher volatility means less predictability, even when the average outcome is identical.

Maximum Drawdown

- The largest peak-to-trough decline the strategy experiences at any point in the backtest.
- This is the number that makes real investors panic and abandon a strategy — even one that eventually recovers.
- A strategy can look great on average and still have a drawdown few people could actually stomach holding through.

Sharpe Ratio

- Formula: (return - risk-free rate) ÷ volatility — return earned per unit of risk taken.
- Combines return and risk into one number, so you can compare strategies fairly even when their risk levels differ.
- Rule of thumb: above 1 is generally considered decent, though context matters.

Comparing Two Strategies

- Strategy A: high return, brutal drawdown, weak Sharpe ratio.
- Strategy B: lower return, but consistent, with a strong Sharpe ratio.
- Which one would you actually trade? There's no single right answer — it depends on what you value.
- Takeaway: never judge a strategy by return alone.

Additional Resources

- Investopedia: “Sharpe Ratio,” “Maximum Drawdown,” and "Volatility" explainer pages
- Book: *Quantitative Trading* by Ernest Chan (performance evaluation chapter)
- Portfolio Visualizer — lets students see real backtests with these metrics calculated