IQIC - Backtesting & Evaluation

#5: What is Backtesting?

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Definition: Backtesting is the process of applying investment strategy rules to historical market data to see how the strategy would have performed in the past

Ex:

Strategy Rule: Buy a stock when its price rises above its 50-day moving average.

Backtest: Apply that rule to the stock's past 5 years of price data and measure the resulting trades.

Why do Investors Backtest

Backtesting helps investors answer questions such as:

Performance: Did the strategy historically generate positive returns?

Risk: How much volatility and drawdown did it experience?

Consistency: Did it work across different periods and market conditions?

Comparison: How does it perform relative to a benchmark?

The Goal: Backtesting isn't about proving that a strategy is 100% successful. It helps determine whether an idea has enough historical evidence to investigate further.

What Can a Backtest Tell You?

A Backtest CAN Help You	A Backtest CANNOT
• Measure historical returns • Evaluate risk & drawdown • Compare against a benchmark • Identify when the strategy struggled • Test whether an idea deserves further research	• Guarantee future returns • Perfectly recreate real trading conditions • Prove a historical pattern will continue • Make a poorly designed strategy reliable

How a Backtest Works

1. **Historical Data:** Past prices, returns, volume, etc.
2. **Strategy Rules:** “When X happens, buy. When Y happens, sell.”
3. **Simulated Trades:** Apply those rules at each point in history
4. **Portfolio Results:** Track how the simulated portfolio changes
5. **Evaluate**
    a. Return
    b. Volatility
    c. Drawdown
    d. Sharpe
    e. Benchmark

Additional Resources

1. **QuantConnect -Backtesting: Getting Started: Guide Link**
   a. A practical guide explaining what backtesting is and how historical simulations are used to evaluate trading algorithms
2. **QuantConnect - Backtesting Research Guide: Guide link**
   a. A more advanced guide covering hypothesis-driven backtesting, overfitting risk, and out-of-sample testing