Quant Research: TRENTDTO CHOPINESS TO TREND (Life cycle)

**Platforms:** Built in functions, ease of use (Tradingview, Python, Amibroker), Ease of analysis, Filter data, Portfolio testing (Amibroker/ QuantConnect), Optimizations, Warlk forward and Monte Carlo Simulation (Amibroker) , Cost-Investment

**Start with simple idea**: i.e. MA crossover, RSI

Enter(Long): I will buy if MA cross below 5-day and then I will check RSI 2 period is below 90

Exit: If it close above 5 day MA I shall close my trade

Think like a Quant:

Strategy: What is your strategy? E.x. MA cross over 50 cross then buy 100

Strengths- Trends

Weakness- Ranging or Choppy Market

Products- Stocks or ETFs or Futures(Do I need leverage)

Long only or Long and Short- Market Behavior

**Risk and Money Management:**

Multiple stocks or Index ETF

Risk per trade % (Position Sizing mean how much I am allocation to each position)

Maximum open positions(Multiple stocks): How many open positions I want at the time

Exit system similar to entry? How much am I willing to lose (1%)

Drawdowns (Drawdown of overall portfolio, we will need to back test)

**Program the strategy:**

Write down strategy

Double check – Use arrows

Analysis of Backtest(Quant brain): More data = more I can analyze the results

Bigger sample size at least 25 years

Special focus on Black Swam events (Dot com bubble, 2008 financial crisis, pandemic): You can analyze and test on these events to see how your strategy performs

Maximum system drawdowns: Beat the S&P 500 by drawdown

Year over year analysis

**Optimize:**

Amibroker can get better results e.g. Why not 62 ma crosses 90 ma, can this beat the previous result

Find put the best inputs

Find the best result CAGR/Drawdowns

**Walk Forward Analysis: (In sample vs out sample)**

Curvefitting: In sample 2000-2010(Dot com bubble, 9/11, Irag war, Madoff, Housing bubble, Global Financial Crisis)

Out sample: 2010-2020 (Flash Crash, Longest Bull market, QE, Brexit, Trade ware, Pandemic)

**Compare optimized inputs from In-sample and then test it on out-sample(If they are giving similar results then we go ahead wih our strategy, otherwise you need better strategy)**

In sample x years, out sample y years

Does the result come close

Compare CAGR/DD

If Yes go ahead with strategy

Other important stuff:

Enter and exit is it at Open or Close

Can options give better results, option selling

Should I go this annually or close it to trade automatically

Filter(Nasdaq 100, S&P500)

Cases Against Day trading:

Taxes, Leverage, Commissions, Strategy, Back testing, Psychology

Leverage:

Monte Carlo Analysis: Random experiments and simulated trade sequences

Take different results and come to real world conclusion. For instance, we can take 1000 times trades in amibroker for the simulation we have randomness and unique realization. For 100 trades we can have N^N so 100^100 unique realization for the simulation using monte Carlo analysis. We can get the results such as percentile, range(max,min) and graphgs. We can handle best cast and worst care scenario.

Pair Trading: Give diversification to portfolio

Trading pairs to lessen the volatility

Ratios

Portfolio Diversification:

Basic Diversification

Ray Dalio’s All weather Portfolio

Diversification of Strategies: (20% trend stocks, 20% Mean-Reversion stocks, 20% trend ETF, 20% Mean-Reversion (ETF), 10% Trend(Micro), 10%(Pairs)

STRATEGIES:

Pairs trade

Trend Following

Mean Reversion

Index and or Stock subsets(Micro, S&P500)

Diversification of Strategies: (20% trend stocks, 20% Mean-Reversion stocks, 20% trend ETF, 20% Mean-Reversion (ETF), 10% Trend(Micro), 10%(Pairs)

XRP

**Structure and Data:**

Amibroker- SPY

Trading-SPY

Trading-Indian stocks(15 stocks ranked by market cap)

Data feed- Indian stocks, Delisted stocks, Functions

3 trend following and 2 mean reversion

No short selling overnight for Indian markets

Long trades

Condition to BUY: Close to be 200 MA, 5 consecutive days

Condition to SELL: Close below 200 MA, 5 consecutive days closes