DMP05 Lecture Summary

Overview

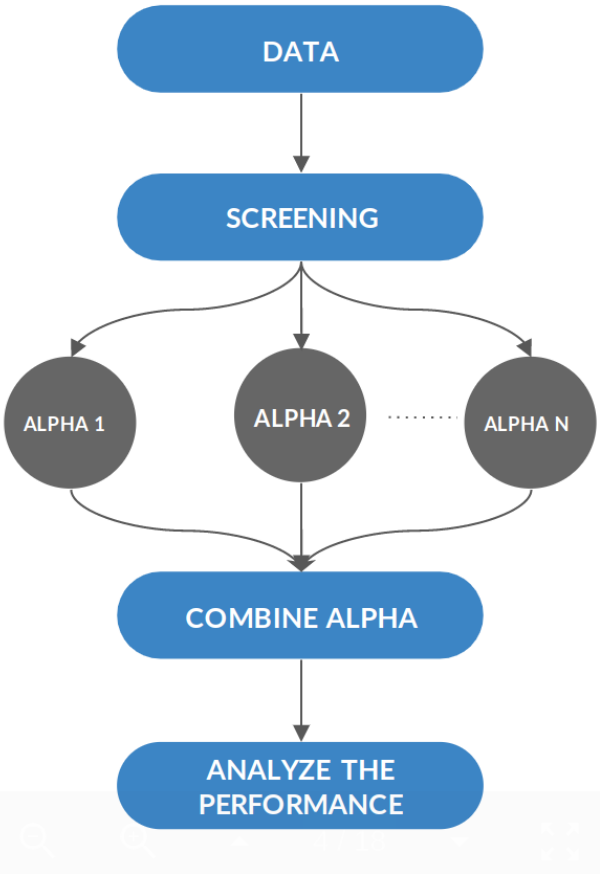
This document summarises the DMP-05 lecture on modular programming and the workflow of building a trading strategy from data gathering to performance analysis. It also provides the interpretation of beta and introduces the "betting against beta" strategy.

The following topics are covered -

- Quant strategy workflow
- Systematic vs Idiosyncratic risk
- Beta interpretation
- Betting against beta

Strategy workflow

The following snapshot shows the steps of building a trading strategy.



Data

There are various data sources that can be used to generate trading signals.

- **Price series -** Open, High, Low, Close and Volume. Source: Blueshift, Quandl, other brokers, etc.
- **Fundamental** - Valuations, Income statements, cash flow statements, earnings calendar, broker ratings, etc. Source: Morningstar, etc.
- **Sentiments** - Trader mood. Sources: StockTwits, PsychSignal, etc.
- **Legal, Regulatory and Economic** - Inflation rate, GDP, Fed meeting dates, etc. Source: FRED (USA)

Screening out

This step requires the removal of instruments that you don't want to add to your portfolio. For example -

- Penny stocks
- Low liquidity stocks
- High volatility stocks
- Removing stocks that recently had an M&A deal.

Alphas

In this step, we build a hypothesis based on which we'll trade. For example -

- Sell in May and go away
- January effect
- In the market rises for two days, then it will continue to rise
- Buy and hold quality stocks
- Mean-reversion strategy
- Trend following strategy

Analyze performance

This step requires you to analyze the performance of your strategy using various performance metrics such as Sharpe ratio, returns, volatility, Sortino ratio, maximum drawdown, etc.

Systematic risk vs Idiosyncratic risk

Systematic risk affects the whole market. It is also known as an undiversifiable risk. However, idiosyncratic risk is for individual firms and can be diversified away. For example - A global economic slowdown is a market risk whereas a CEO of a particular company resigning is idiosyncratic risk.

Beta interpretation

The following snapshot shows the interpretation of beta at different values and also provides an example of a financial instrument for each scenario.

Beta	*Interpretation*	*Example*
> 1	More volatile than the market	Indiabulls Housing

1	As volatile as the market	Asian Paints
0 and 1	Less volatile than the market	Colgate-Palmolive
0	Market volatility is not related to stock volatility	Smallcap stocks
< 0	Less volatile than the market but in the opposite direction	Gold, VIX

Betting against beta

This section elaborates on betting against beta strategy. Beta is a measure of risk that cannot be reduced by diversification. The rationale for this strategy is as follows -

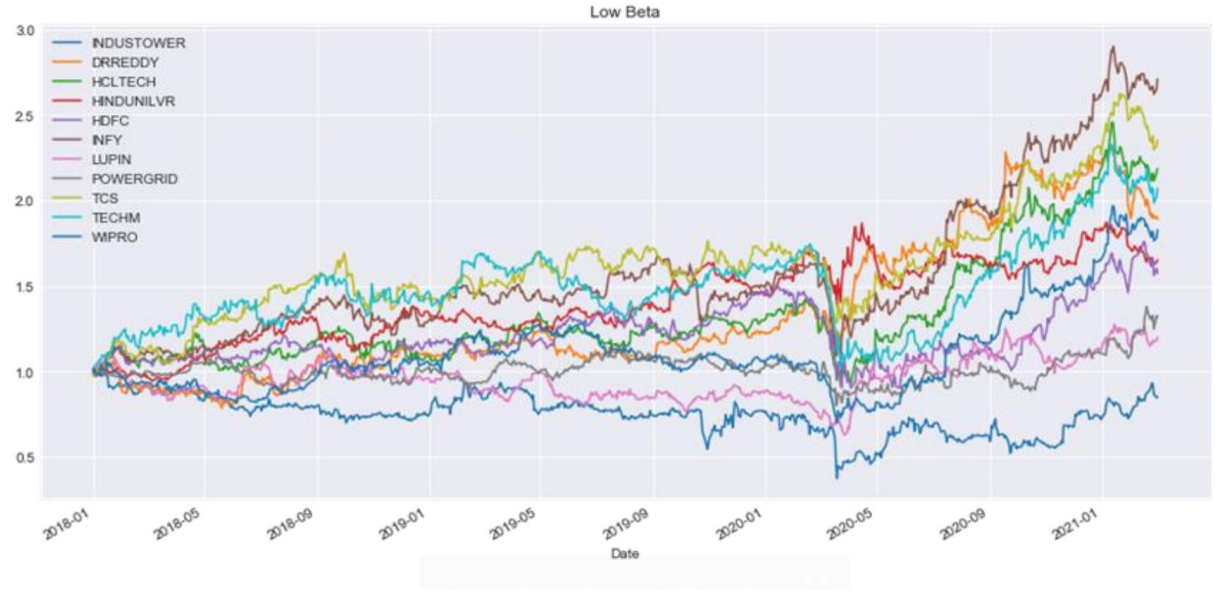
- People prefer assets with higher expected returns per unit of risk
- Mutual Funds and retail investors are constrained in the leverage
- They incline their allocation towards high beta assets to improve returns and this results in overpricing.

Steps for building the strategy

1. Read the Nifty component stock list
2. Read the price data of the stocks
3. Calculate the beta
4. Generate signals and calculate strategy returns
5. Generate the signal based on beta and ROE
6. Compute portfolio returns
7. Returns analysis

Here's an example -

The following snapshot shows the returns of multiple low beta stocks.



The following snapshot shows the performance of a low-beta portfolio as compared to Nifty

The following snapshot shows the performance of a low-beta portfolio with high ROE as compared to Nifty

Additional resources

Beta calculations
Betting against beta