MGMT 638

Session 4

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Fall 2025

Agenda

- Data
- Using sorts to evaluate factors
- Building a streamlit stock recommender app
- Profitability factor
- Sorting on multiple factors

Data

- Download data1.parquet
- Monthly data for all stocks in database for Feb, 2011 through Oct, 2025
- Return, momentum, market cap, equity, assets, gross profit, operating profit, net income (netinccmn), asset growth rate (agr)
- Tell Claude to read the data and add the following variables:
  - bm (book-to-market) = equity / marketcap
  - gpa = gross profits / assets
  - roe = netinccmn / equity
  - opr = operating profit / equity
  - lagret = return shifted one month forward after grouping by ticker

Sorting

- Pick a factor: size (marketcap), value (book-to-market), momentum, lagret, agr, opr, gpa, or roe
- Tell Claude;
  - Sort by the factor each month into deciles.
  - Then calculate the average return of each decile each month.
- We now have returns of 10 portfolios that could have been constructed in real time.
- We're selecting stocks at the beginning of each month, investing the same amount in each stock, and holding for a month.
- Which of the 10 portfolios did better? What criteria will you use to decide?

Streamlit

- Your 1st assignment is due Sunday night. It is to build a Streamlit stock recommender app.
- Trial run. Tell Claude:
  - Sort stocks into quartiles based on some stock factor for November, 2025.
  - Label the best quartile as 'Buy', the worst quartile as 'Sell', and the middle half as 'Hold.'
  - Build a Streamlit app that prompts the user for a ticker and then displays the recommendation or 'Not Classified' if the ticker is not in the data set.
  - Run the streamlit app.

Profitability

- PDF: Novy-Marx and Medhat, 2025
- Video: Novy-Marx and Medhat, 2025
- NotebookLM

Sorting on Multiple Factors

- We can group stocks based on multiple factors.
- If we use a lot of factors and a lot of groups, some groups may be unpopulated or sparsely populated.
- Factors usually only work in diversified portfolios, because factors are weak predictors.
- Examples that should be OK:
  - Two factors and quintiles $\Rightarrow$ 25 portfolios
  - Three factors and terciles $\Rightarrow$ 27 portfolios
- Try momentum and book-to-market. Tell Claude to sort into quintiles on each factor each month and to compute the average return each month in each of the 25 groups. What is the best group?