

Matlab for Finance

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Course agenda

Linear regression and trading strategy

- Devise and test a trading strategy
- Warm-up exercises on regression.
- Learn commonly used features and workflows with Matlab.
- Simple and multiple Linear Regression. Discussing R^2 .



You can use the **historical stock prices data** to devise and test a trading strategy.

A simple strategy could be linked to the overall state of the economy.

Simple indicator:

Moving Average Convergence Divergence MACD, of the FTSE index.

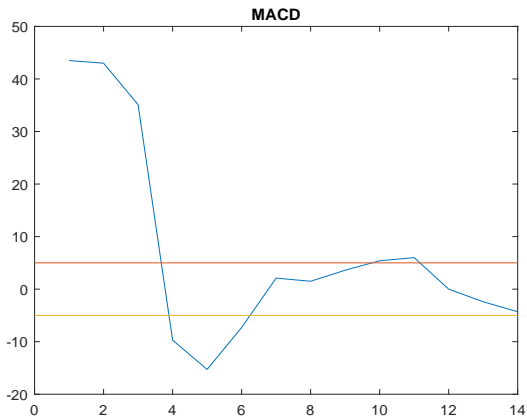


In this strategy, if the MACD is above some threshold, the economic momentum is supposed to be good (up).

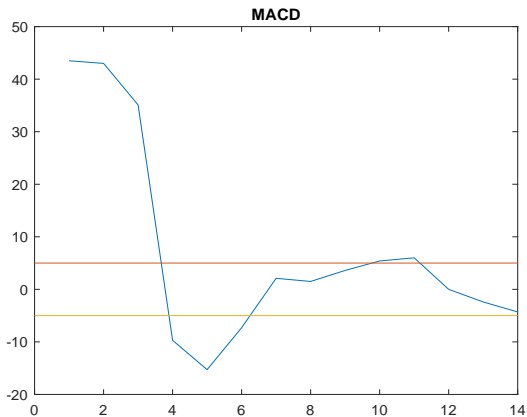
Date	FTSE	MACD	Economy
2-Jan-07	6310.9	43.5	Up
3-Jan-07	6319	43	Up
4-Jan-07	6287	35.1	Up
5-Jan-07	6220.1	-9.7	Down
8-Jan-07	6194.2	-15.28	Down
...
...
...



When the economic momentum is up, buy stocks from the industries that typically do well in a good economy, such as finance, and consumer products and services.



If the economic momentum is down, buy the stocks from more stable industries, such as capital goods and health care.



The case of the trading strategy then is to determine when the MACD rises above or falls below given threshold values.



Warm up exercise on the linear regression of Fund xxx from Lecture Week 1

Linear regression on Fund xxx



Capital Asset Pricing Model

CAPM on Microsoft stock



Learning by doing!

Use the data given in the spreadsheet HousePrices.xlsx to work out your linear regression.

Data: houses of different sizes, sold for a range of different prices.

You have a friend whose house is 2045 square feet, who wants to know how much might be able to sell it for.

He is asking to you a guess.

Gussing the price of a house



Trading strategy

Let's go to use the **historical stock prices data** to devise and test a trading strategy using the **Moving Average Convergence Divergence MACD** of the FTSE index.



Simple Moving Averages

Indicators in technical analysis

Help to assess the stock's trend by averaging the daily price over a fixed period.

Buy and sell signals are generated when a shorter duration moving average crosses a longer duration one \Rightarrow “crossing-points”

In trading, the moving average is evaluated on the closing prices

Go to the exercise: \Rightarrow SMA



A technical indicator: Moving Average Convergence Divergence

Trend-following momentum indicator that shows the relationship between two moving averages of a security's price.

It is calculated by subtracting the 26-period Exponential Moving Average (EMA) from the 12-period EMA. The result of that calculation is the MACD line.

Go to the exercise: \Rightarrow **MACD**

