

A Preview of FM 5990

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Motivation

- ▶ **Data analysis** is a **crucial skill** for quantitative professionals.
- ▶ *Quants* are being replaced by *Data Scientists*.
- ▶ MFM graduates are increasingly working in data analysis roles.
- ▶ This course is the MFM's response to the changing professional landscape.
- ▶ It is an **introductory treatment** of **R** and **Python** for data analysis in the context of **quantitative finance**.

Course Specifics & Philosophy

- ▶ Tuesdays from 5:30p-7:10p in Vincent 364.
- ▶ 2 credits pass/fail - let's focus on learning not grades.
- ▶ Learning data science on toy data sucks.
- ▶ Learning data science on cool data is awesome.
- ▶ **Theorem:** awesome $>$ sucks. **Proof:** Exercise.
- ▶ **Corrollary:** All in-class examples, projects, and assignments are going to involve real world financial data.
- ▶ A big **THANKS** to our industry data partners.

Industry Data Partners

www.wolve.com



www.historicaloptiondata.com



www.qandl.com



Wolverine Analysis Project (1 of 3)

- ▶ Wolverine Trading is a option market maker. **What???**
- ▶ Let's say you wanted to trade a particular option, and that Wolverine is a market-maker for that option.
- ▶ This means that you can call up Wolverine and ask them what their *market* is for that option. (Note: you haven't told them if you want to buy or sell.)
- ▶ **Wolverine's Market:** A price at which they would sell the option *-and simultaneously-* a price at which they would buy the option.
- ▶ The price at which they are willing to buy is their **bid price**.
- ▶ The price at which they are willing to sell is their **ask price**.
 - ▶ Question: Which is higher the bid or the ask?

Wolverine Analysis Project (2 of 3)

- ▶ On any given day, Wolverine is a market maker for literally hundreds of thousands of options.
- ▶ The way they make money is by buying and selling lots of different options, with their bids being lower than their asks.
- ▶ All the while, they hope they don't accumulate large positions in any one option or underlying (AAPL, FB, GOOG).
- ▶ If they do accumulate positions, which is inevitable in their business, they hope that the underlying stock doesn't move too much, as this could result in significant losses.

Wolverine Analysis Project (3 of 3)

- ▶ Companies whose stock can be owned by anyone (AAPL, FB, GOOG) are highly regulated.
- ▶ They are required to publicly report their profitability once per quarter. This is called their *quarterly earnings report*.
- ▶ What do you think happens to the companies stock price around the time of their earnings report?
- ▶ This is a time of **high risk** for option market-makers.
- ▶ Wolverine has tasked us with analyzing the price movement of stocks in the days following their earnings reports.
- ▶ **How:** We will use the data that Wolverine has provided. We will also repeat the analysis using the Delta Neutral data and make sure they lead to similar conclusions.