Analytics Platform Requirements

Fethi Rabhi
Events

• Categories of events
  • Company-specific news (e.g. CEO resigned)
  • Industry-specific news (e.g. oil price drop)
  • Social news (e.g. pessimism about economy)
  • Reaction events (e.g. increased sales)
Relationships with companies share prices

• Everything is linked
  – Good/bad news can drive share price of some companies down/up (e.g. oil producers) or up/down (e.g. transport companies)
  – There could be dependencies linked to trading between different countries (e.g. US tariffs against China)
  – There are indirect relationships between events and company prices
Analytics Platform (1)

• **User**
  – An investor in Australian companies
  – Wants to understand how share price influenced by events

• **You can make any assumption**
  – Australian or foreign companies
  – Focus on 1 industry sector
  – Can be extended later

• **Characteristics**
  – Ability to access data from different sources (via APIs)
  – Ability to visualize and determine events of interest
  – Ability to infer relationships between events of interest and share prices
Analytics Platform (2)

• Example
  – Every time there is an earthquake in China
  – More wheat is exported and wheat prices goes up
  – Share price of wheat exporter goes up

• Data initially used
  – News data
  – Social network data
  – Companies share data

• Other data can be provided on demand
  – Weather data
  – Economic indicators (e.g. interest rates, exchange rates)

• The platform only help analysts determining relationships
  – Acting/trading on these relationships is out of scope
Event Study methodology

• How do we:
  – determine that a particular event had an impact on the share price?
  – How do we determine this impact?

• Over the years, **event study methodology** has been applied to a large number of events including:
  – Dividend increases and decreases
  – Earnings announcements
  – Mergers
  – Capital Spending
  – New Issues of Stock

• In this project, we are looking at events linked to news
The context

• Problem statement
  – We have a type of event (e.g. earthquake)
  – We have a target (stock price)
  – We want to find out if the event has an impact on the target

• Method selected
  – Event study method

• Expected Outputs
  – Efficient market reaction to news
  – Want to know about deviations from efficient market reaction
Role of Event Studies

• Over the years, event study methodology has been applied to a large number of events including:
  – Dividend increases and decreases
  – Earnings announcements
  – Mergers
  – Capital Spending
  – New Issues of Stock

• The studies generally support the view that the market is semistrong form efficient.

• Studies suggest that markets may even have some foresight into the future, i.e., news tends to leak out in advance of public announcements.
The context

• Problem statement
  – We have a *type of event* (e.g. corporate action)
  – We have a *target* (stock price)
  – We want to find out if the event has an *impact* on the target

• Method selected
  – *Event study* method

• Expected Outputs
  – *Efficient market* reaction to news
  – Want to know about *deviations* from efficient market reaction
Implementation

• The steps for an event study are as follows:
  – Event Definition: we need for every stock, an event date
  – Selection Criteria: we need for every stock some way of filtering stocks of interest
  – Cumulative Return Measurement: we need share price data, to compute cumulative returns for every stock
  – Visualisation (see next)
  – Interpretation
Stock Price Reactions

Efficient market response to “good news”

Overreaction to “good news” with reversion

Delayed response to “good news”

Days before (-) and after (+) announcement
Efficient market response to “bad news”

Delayed response to “bad news”

Overreaction to “bad news” with reversion

Days before (-) and after (+) announcement
Time-line

- The interval $T_0-T_1$ is the estimation period (not used)
- The interval $T_1-T_2$ is the event window
- Time 0 is the event date in calendar time
- The interval $T_2-T_3$ is the post-event window (not used)
What’s next

• Have a look at the posted spec
• Each team starts working on the first part
• Each team starts thinking about the second part
• Ask questions during mentoring