# Lecture 8 – Event Studies in Finance

**Do Analyst Recommendations Affect Stock Prices?**

* Project analyses the impact of sell-side analysts’ recommendations in the financial domain
  + The recommendations can be summarised into a simple recommended action
    - Known as **grades** such as *Buy, Hold* and *Sell*
    - Common for grades to be revised over time as new information emerges
* Impact of analyst recommendations vary based on different levels of market efficiency
  + Under strong market efficiency, analyst recommendations have **no impact** on stock price
    - All new information would be incorporated into prices immediately
    - Recommendations are redundant as prices would have already moved
  + Analysts can provide new information to market participants under weaker market efficiency
    - Some information are not incorporated into prices
    - Presence of information asymmetries or information acquisition costs make them better suited to collect and disseminate information about the value of a stock
  + Highly unlikely that asset prices incorporate all information
    - Mechanisms such as insider trading laws protect against this

**Event Studies in Finance**

* The general statistical methodology proceeds after data collection
  + Develop a hypothesis around a specific type of event
  + Define and compute asset returns associated with the event
  + Statistically evaluate the *null hypothesis* that the event does not affect asset prices

**Hypothesis Development**

* Begins by defining the *event* of interest
  + **Downgrade:** analyst revises their recommendation downwards
  + **Upgrade:** analyst revises their recommendation upwards
  + **Neutral:** no change in the analyst’s recommendation

|  |  |  |  |
| --- | --- | --- | --- |
| **Previous Grade** | **New Grade** | | |
| **Buy** | **Hold** | **Sell** |
| **Buy** | Neutral | Downgrade | Downgrade |
| **Hold** | Upgrade | Neutral | Downgrade |
| **Sell** | Upgrade | Upgrade | Neutral |

* + For the study, neutral recommendations are ignored (*not an event*)
* **Event:** recommendation by a *firm* on a given *day* that represents either an upgrade or downgrade of some company's stock
  + **Firm:** financial institution the analyst works for
  + **Ticker:** ticker of the company’s stock
  + **Event date:** date this recommendation was released
  + **Event type:** recommendations classification (upgrade/downgrade)
* **Null hypothesis:** *“Changes in analyst recommendation have no effect on stock prices”*

**Outcome Variable**

* Let represent the event date when the analyst releases a new recommendation
  + denotes the adjusted *closing* stock price on day
  + denotes the return from to
* Analysis is performed in a window surrounding the event date (choice is completely arbitrary)
  + Should repeat for different windows and verify results are consistent
  + Example uses a 5-day window from to
* The **abnormal return** filters out the systematic component from the stock returns
  + Recall that stock returns have a systematic and an idiosyncratic component
  + Simply subtract the market return from the stock return
  + denotes the market return for a particular
* **Outcome variable** is defined as the **Cumulative Abnormal Returns (CAR)**
  + For a 5-day window from to , we have
  + represents the event ID
  + denotes the *event time* variable (0 at the event date)
  + denotes the stock return for company
  + denotes the overall market return

**Testing the Null Hypothesis**

* Assuming independence, we test the hypothesis that using a simple -test
  + Compute the average CAR, and its variance across all events
  + Then, compute the corresponding -statistic to test our hypothesis
    - This follows a student -distribution with degrees of freedom
    - Converges to a standard normal distribution for a large number of events
    - Reject if the absolute value of the -statistic is greater than 1.96 for