Event[R]

[Analysing financial event data]

Event Study analysis of share price and stock market index data.

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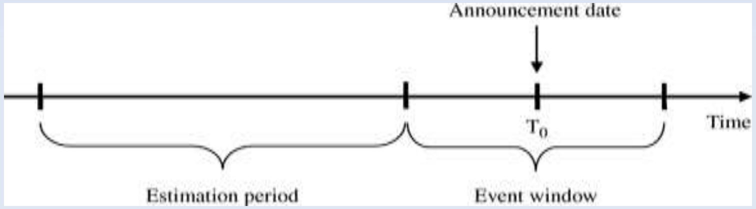
"An Event Study is a statistical method to assess the impact of an event on the value of a firm"

- Event study is used for post analysis of an event. – Did a firm lose/gain value because of an event and can this be proven?

- Event study can also be used for forecasting the likely change in stock prices given a forthcoming event.

Required information for event study

- **Event Date** – From which you derive;
  - An estimation period
  - An event window



- **Historical stock prices** – Close price and dates
- **Market index stock prices** – S&P500, FTSE....

Steps involved to calculate analysis

- Calculate **daily returns** for the stock and index over the estimation period
- Use **regression analysis** to estimate the security characteristic line (SCL) from the estimation period. This gives us values to estimate what the expected return of the stock should be if no event was to occur.

$$\text{SCL: } r_s = a + B(r_m) + e$$

- Using the expected return calculated over the event window, the **abnormal returns** (AB) can be calculated for the event window using a combination of market models.

$$AB = r_s - E(r_s)$$

- Calculate the **cumulative abnormal returns** (CAR) and **average abnormal returns** (AAB) over the event window and carry out **significance testing** on the result to indicate if the event caused a significant change in the stock value

$$CAR_{j,t} = \sum_{-T}^{t} AB_{j,t}$$

Technology Used

- Front end – Web based, html page design and UI developed using **JQuery**.
- Middle tier - jsp / servlets used to produce the html pages and running on tomcat servlet container. **MVC** design pattern used to structure the code sequence.
- Back end analysis – R statisical package running **Rserve**. Rserve is a TCP/IP server which allows other programs to use facilities of **R**

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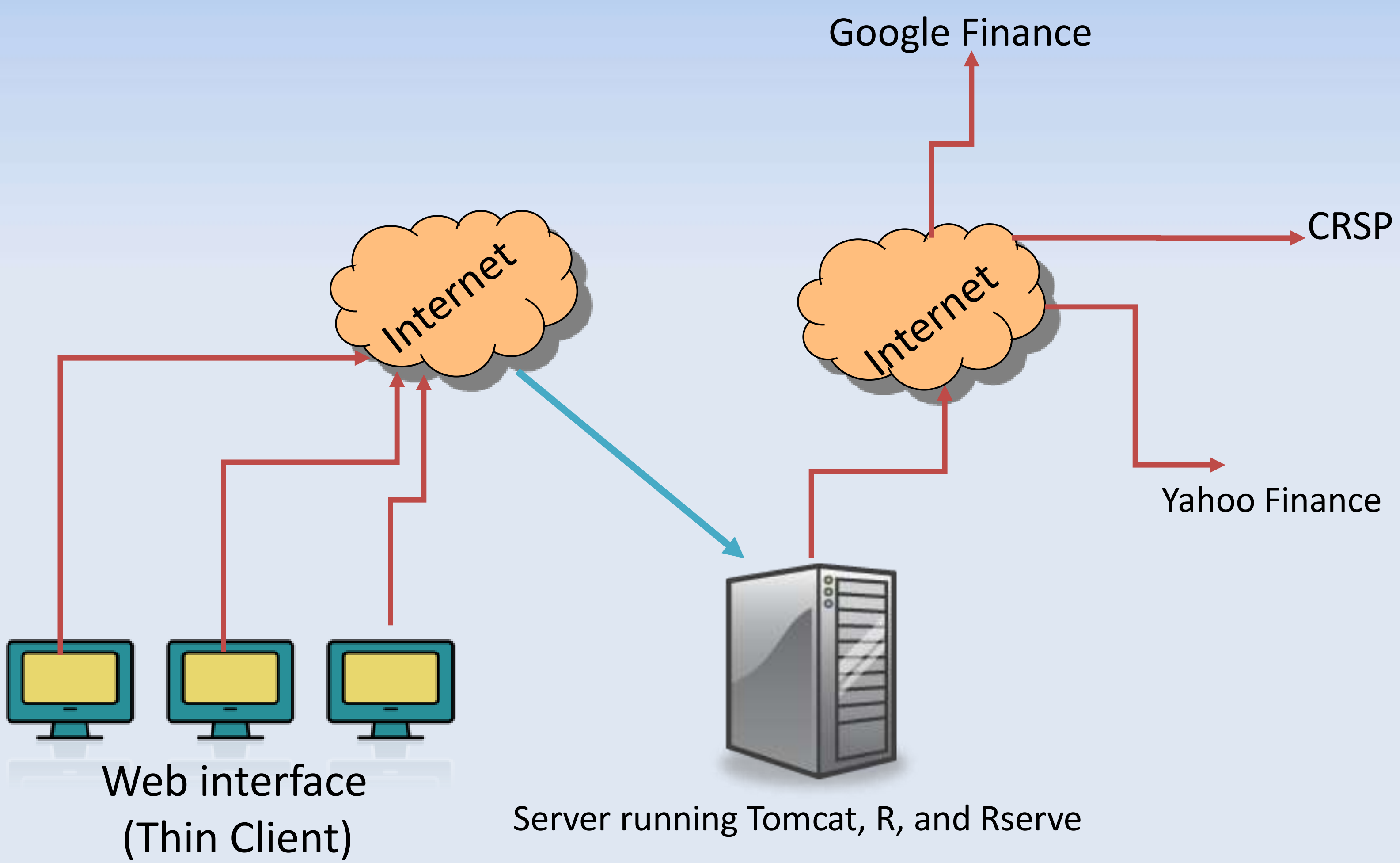
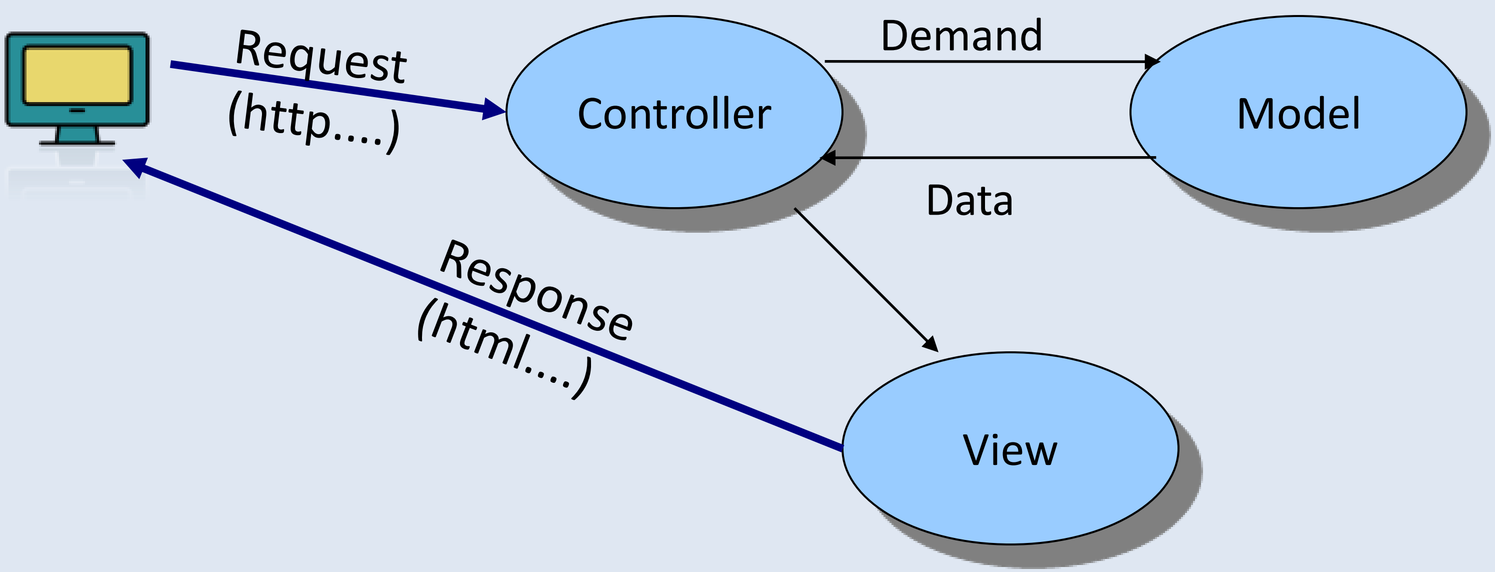


MVC Design Pattern



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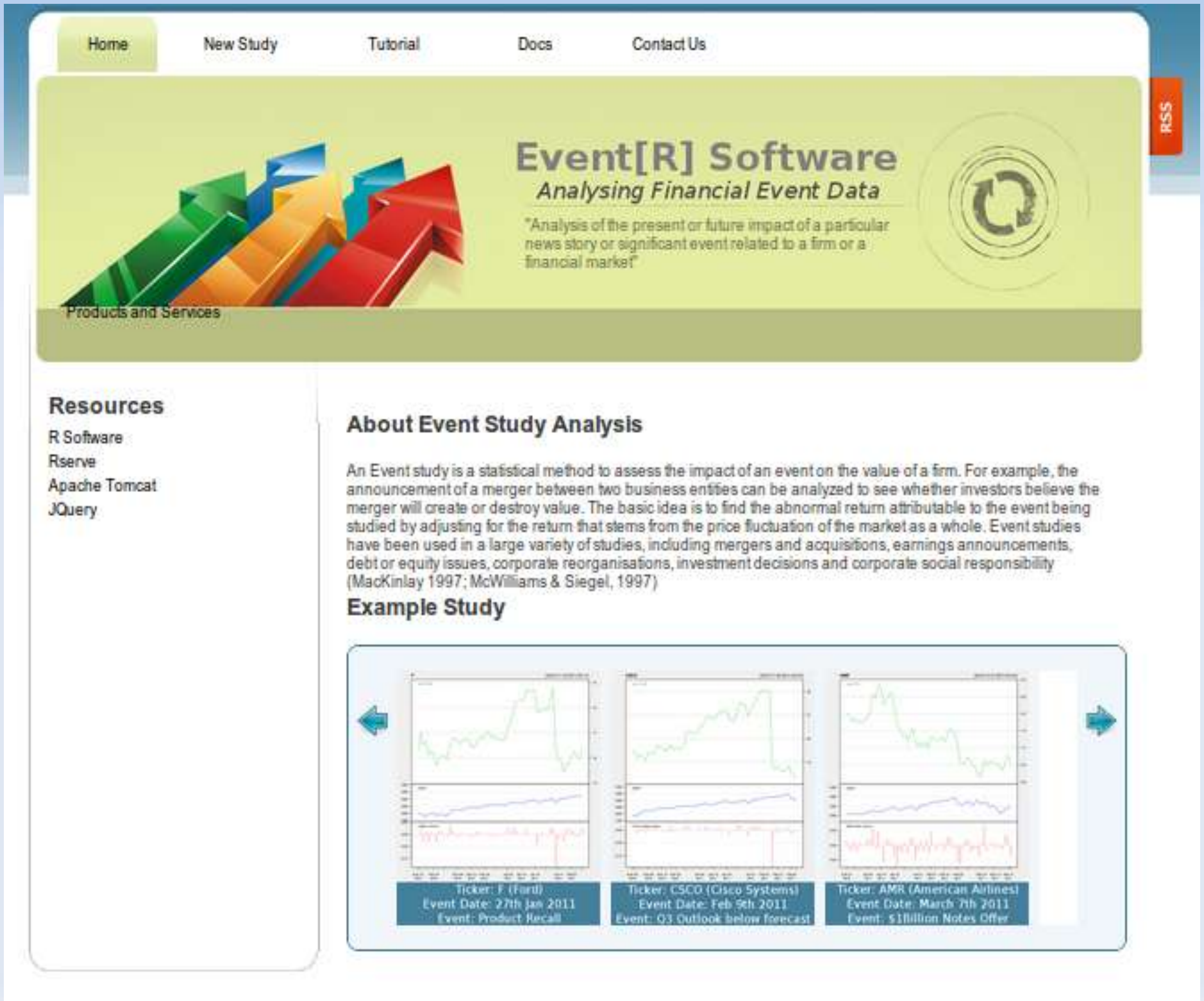
Web Interface



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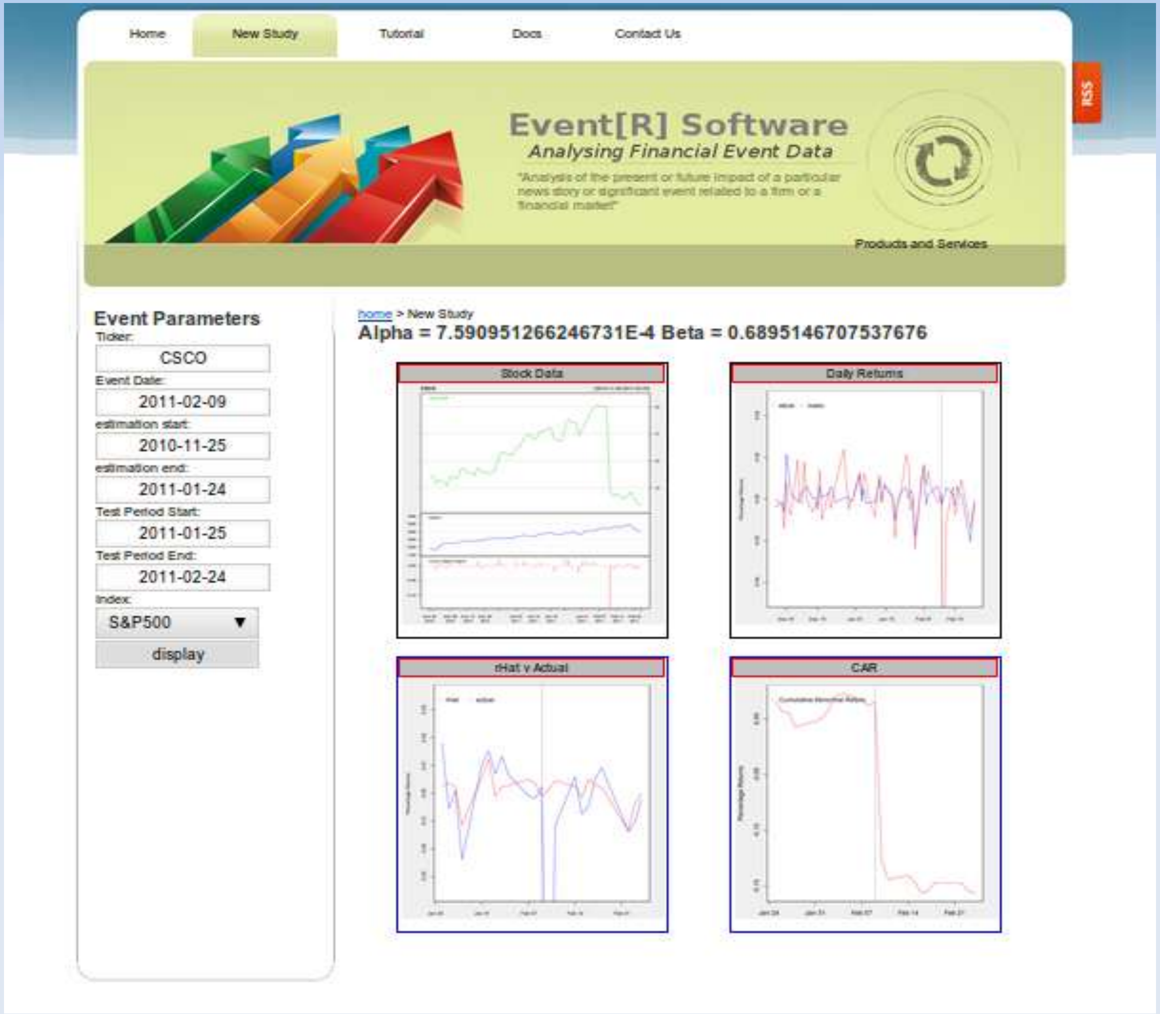
New Event Study



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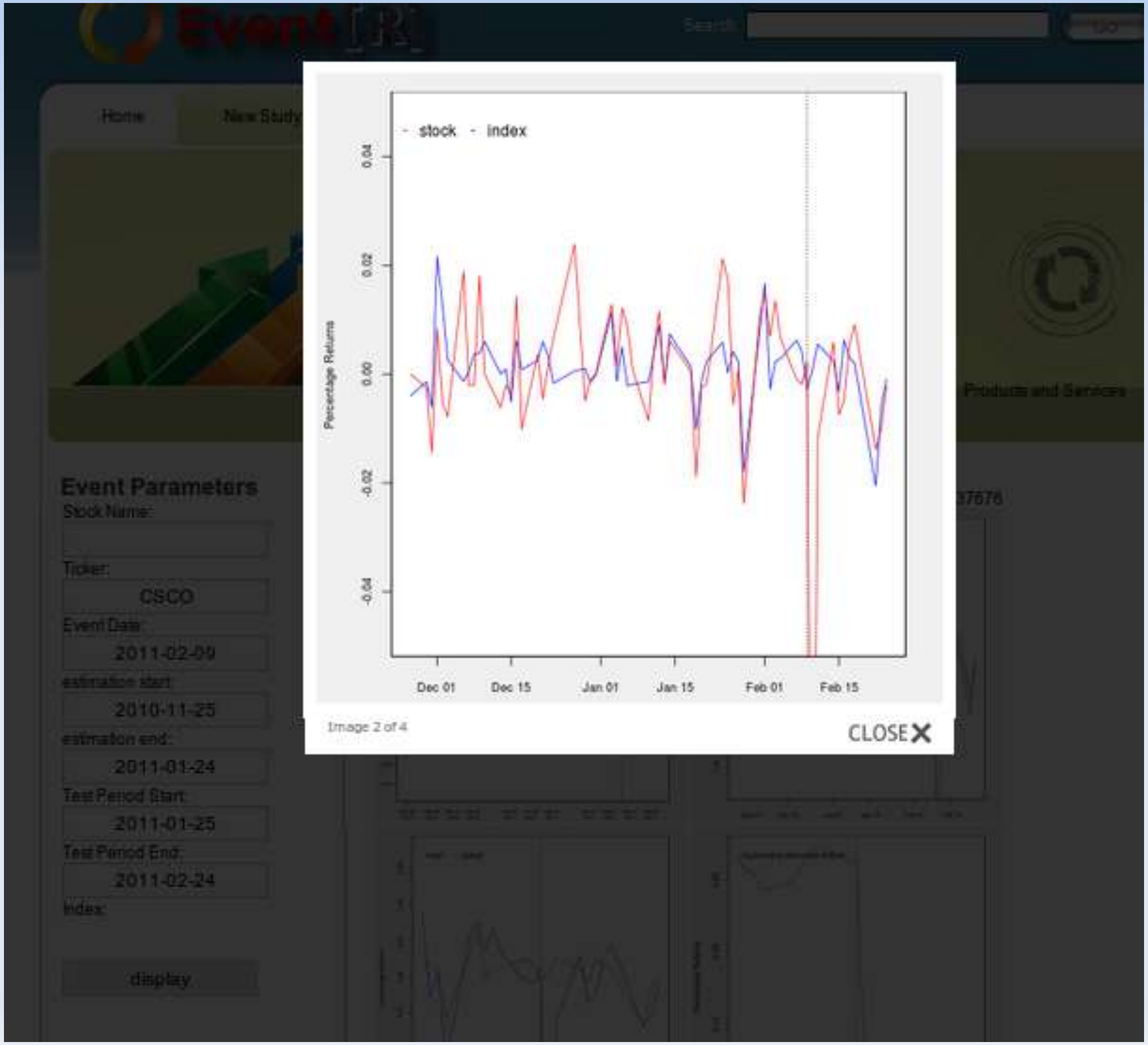
Lightbox Image Viewer (jQuery)



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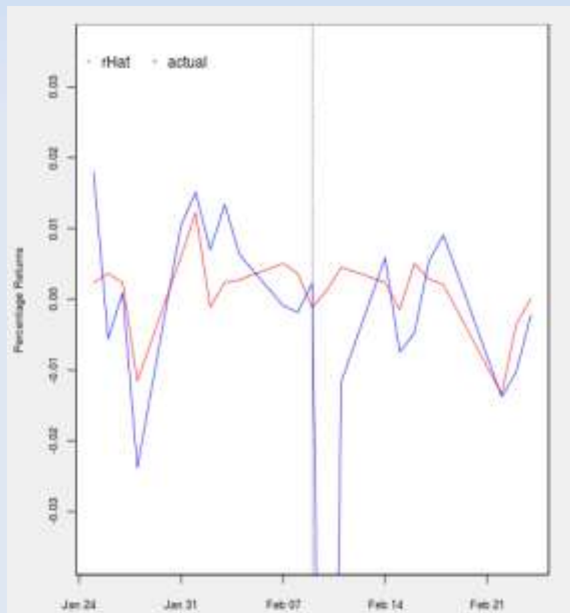
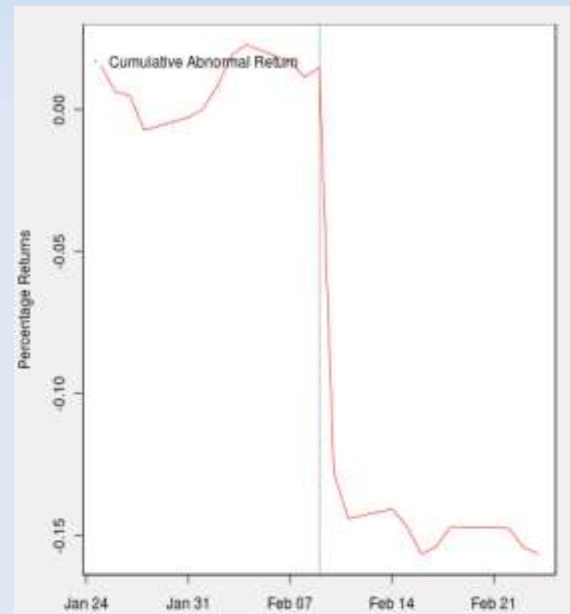
Example Graphs

Stock & Index Price

Rhat v Actual Return



Cumulative Ab Return



Questions?