

**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[R]

[Analysing financial event data]

- 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.

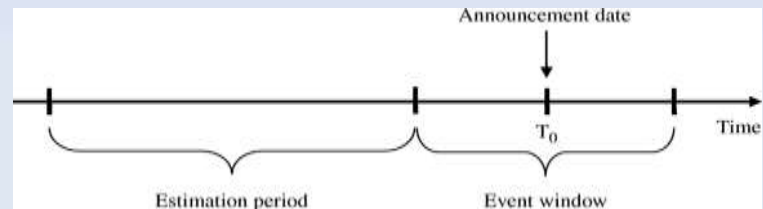
Event[R]

[Analysing financial event data]

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....

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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

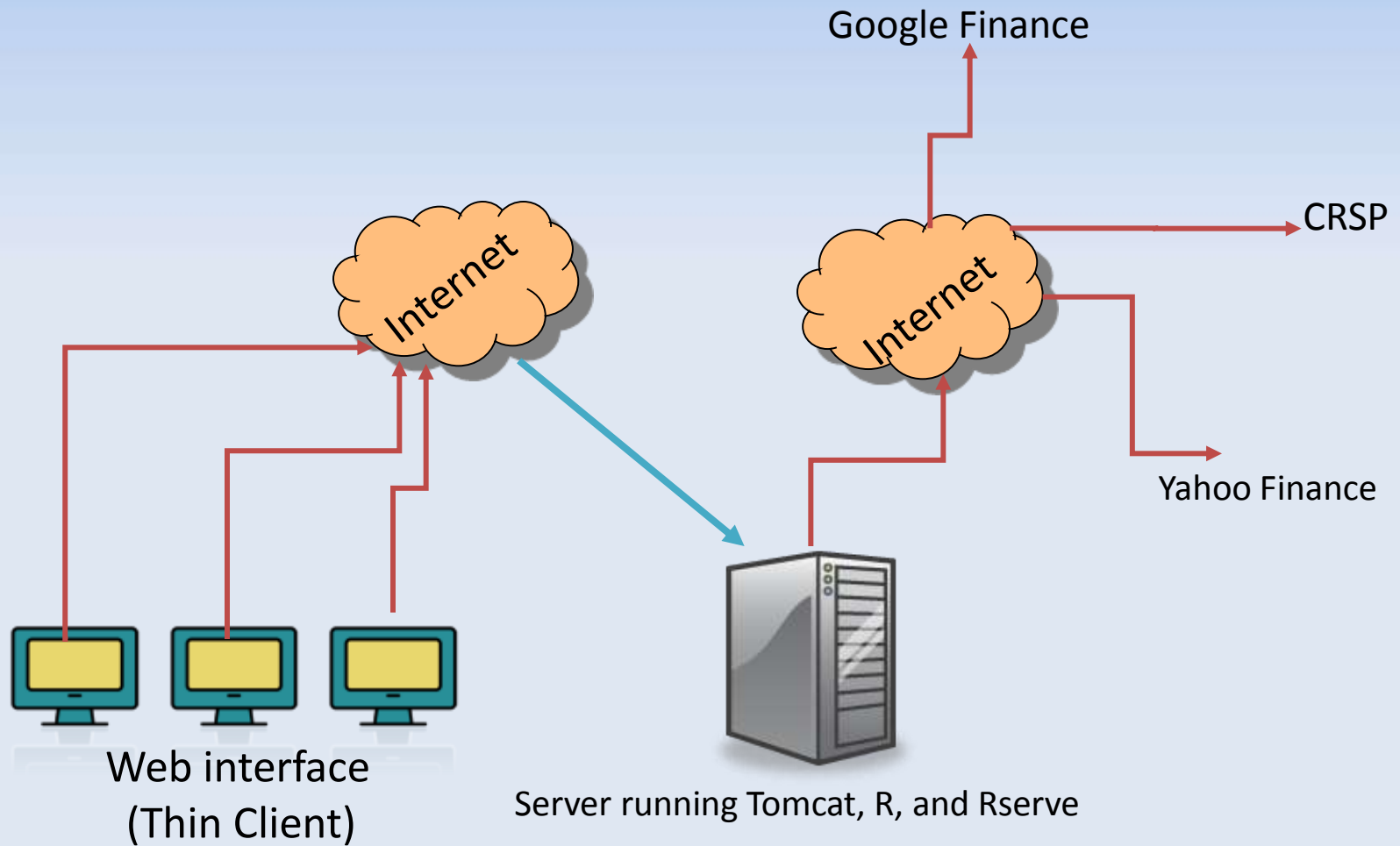
$$CAR_{j,t} = \sum_{-T}^t AB_{j,t}$$

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 statistical package running **Rserve**. Rserve is a TCP/IP server which allows other programs to use facilities of **R**

Event[R]

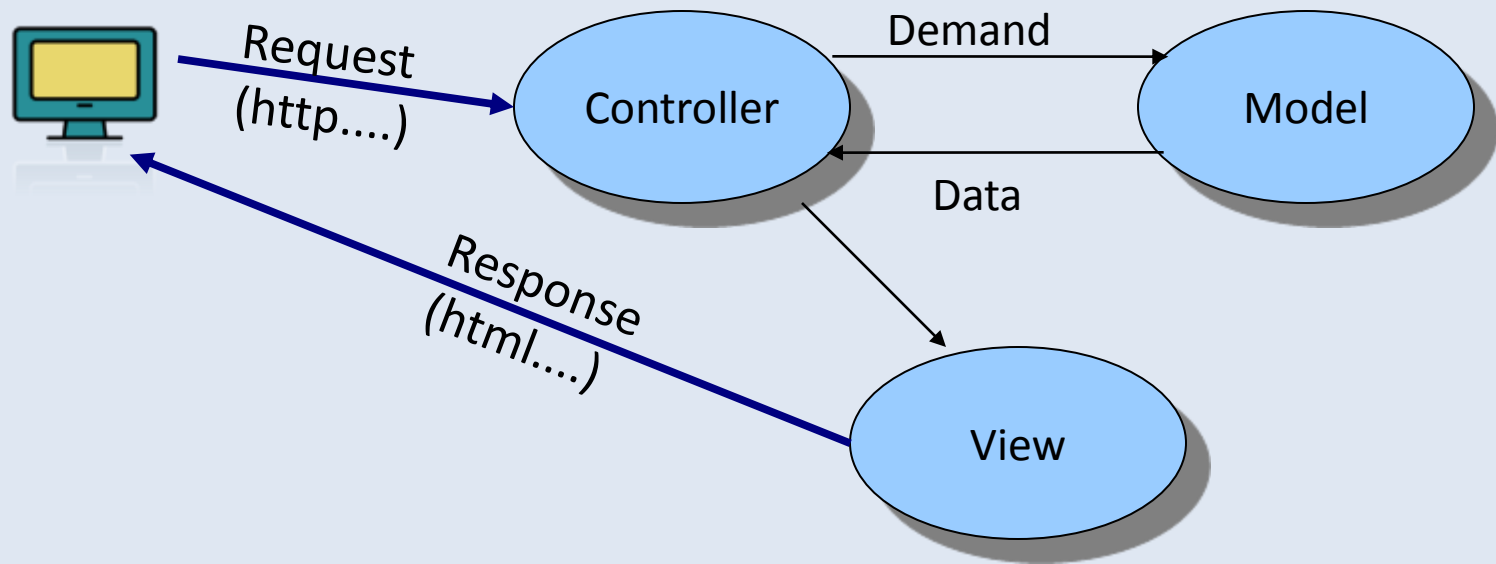
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MVC Design Pattern



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Web Interface

The screenshot shows the Event[R] web interface. At the top, there is a navigation bar with links for Home, New Study, Tutorial, Docs, and Contact Us. Below this is a main banner area with a green background. On the left of the banner are several 3D arrows pointing right in green, orange, and red. The text 'Event[R] Software' is prominently displayed, followed by the subtitle 'Analysing Financial Event Data'. A quote below reads: "Analysis of the present or future impact of a particular news story or significant event related to a firm or a financial market". To the right of the text is a circular logo with a refresh symbol. A red 'RSS' button is located on the right edge of the banner. Below the banner, the page is divided into two columns. The left column is titled 'Resources' and lists 'R Software', 'Rserve', 'Apache Tomcat', and 'jQuery'. The right column is titled 'About Event Study Analysis' and contains a paragraph explaining the statistical method. Below this is an 'Example Study' section featuring three line charts. Each chart shows a price trend over time with a vertical line indicating an event date. The first chart is for F (Ford) on Jan 27, 2011, with the event 'Product Recall'. The second is for CSCO (Cisco Systems) on Feb 5, 2011, with the event 'Q3 Outlook below forecast'. The third is for AMR (American Airlines) on March 7, 2011, with the event '\$1 Billion Notes Offer'. Navigation arrows are visible on the left and right sides of the chart area.

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Products and Services

Event[R] Software

Analysing Financial Event Data

"Analysis of the present or future impact of a particular news story or significant event related to a firm or a financial market"

RSS

Resources

- R Software
- Rserve
- Apache Tomcat
- jQuery

About Event Study Analysis

An Event study is a statistical method to assess the impact of an event on the value of a firm. For example, the announcement of a merger between two business entities can be analyzed to see whether investors believe the merger will create or destroy value. The basic idea is to find the abnormal return attributable to the event being studied by adjusting for the return that stems from the price fluctuation of the market as a whole. Event studies have been used in a large variety of studies, including mergers and acquisitions, earnings announcements, debt or equity issues, corporate reorganisations, investment decisions and corporate social responsibility (MacKinlay 1997; McWilliams & Siegel, 1997)

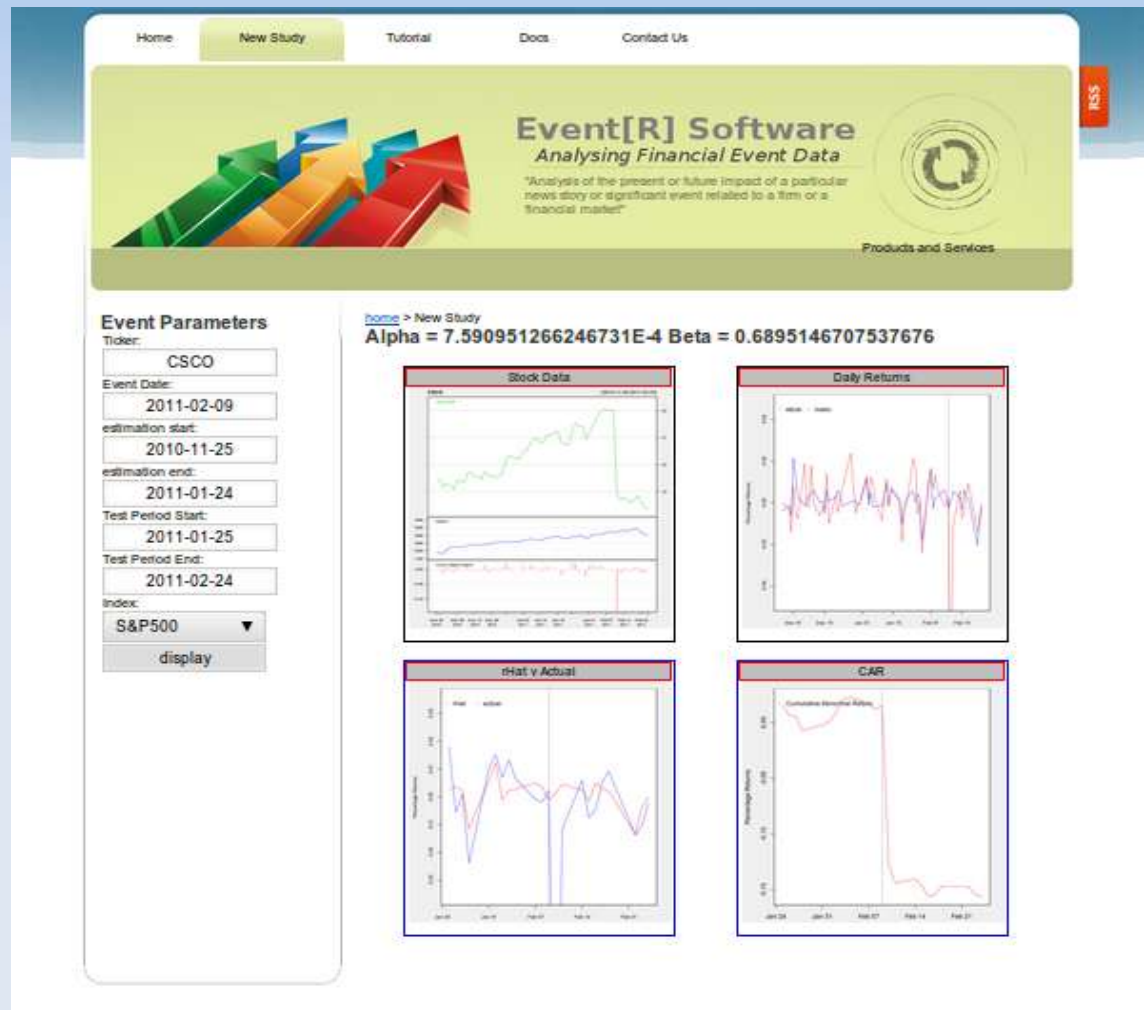
Example Study

Ticker	Event Date	Event
F (Ford)	27th Jan 2011	Product Recall
CSCO (Cisco Systems)	Feb 5th 2011	Q3 Outlook below forecast
AMR (American Airlines)	March 7th 2011	\$1 Billion Notes Offer

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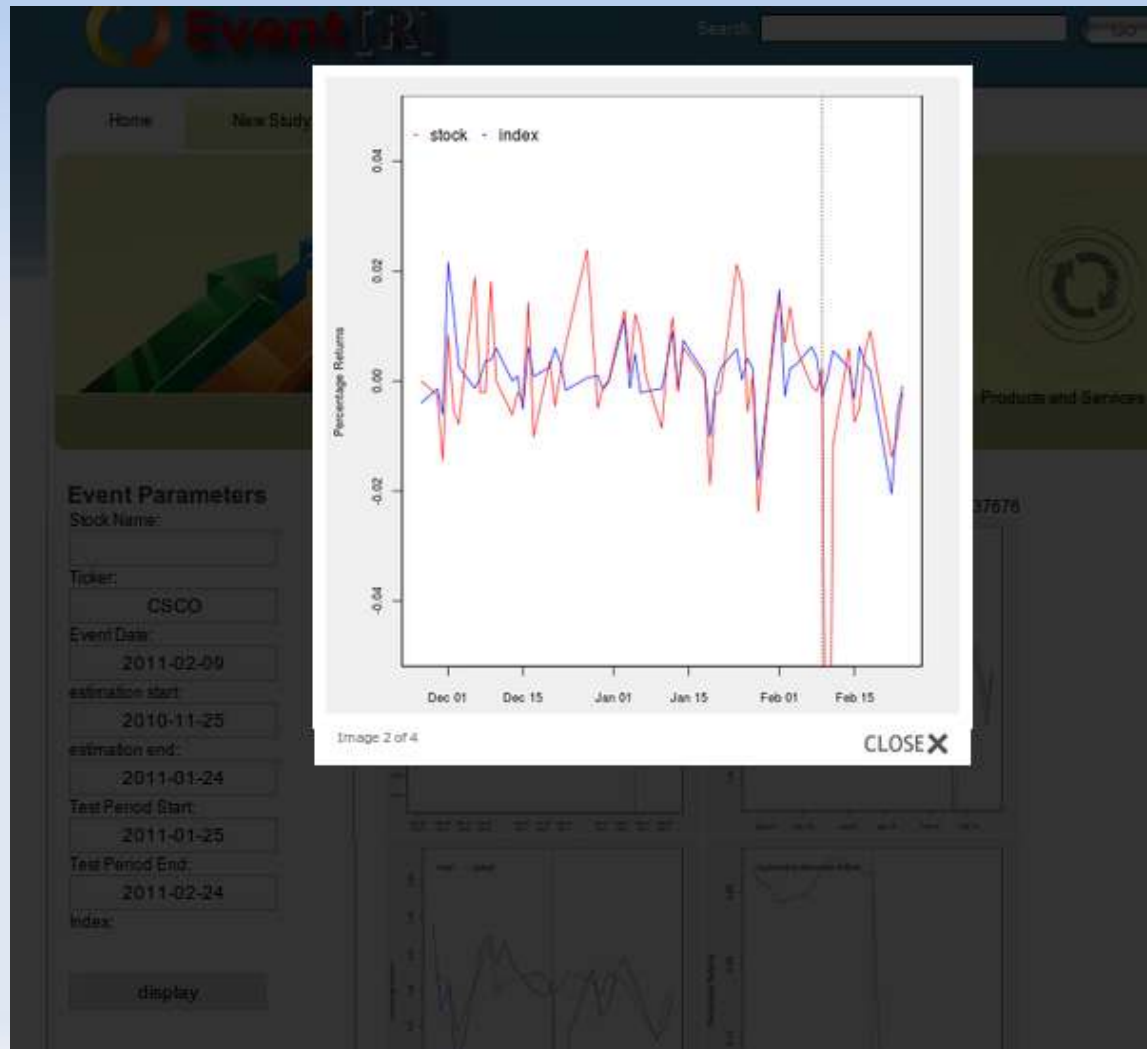
New Event Study



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Lightbox Image Viewer (jQuery)



Event[R]

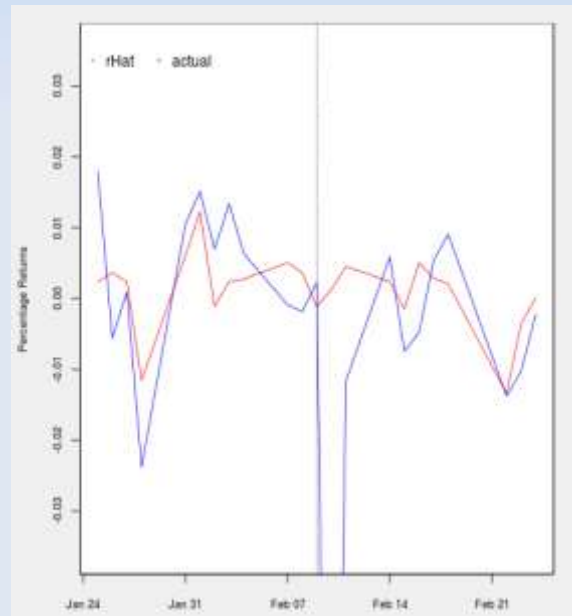
[Analysing financial event data]

Example Graphs

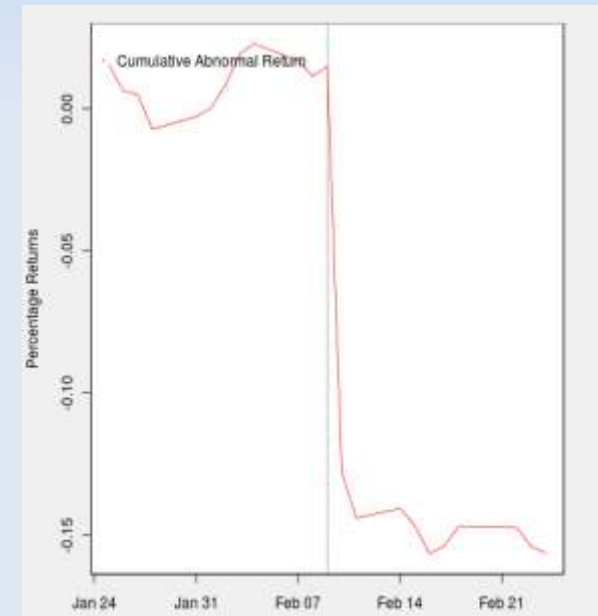
Stock & Index Price



Rhat v Actual Return



Cumulative Ab Return



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Questions?