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GIDA

Generic Information-based Decision Support Assistant

Economic News and Stock Market Correlation: A Study of the UK Market

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Terminology and Knowledge Engineering



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Financial News

- Consider this news item about the Karachi Stock Exchange (KSE) in Pakistan:

“The KSE 100 was broadly lower amid fears of escalating tensions with India in the wake of recent massacre in the disputed Kashmir region”.

FACT : The overall value of 100 key stocks traded in the KSE was lower than the previously reported.

FACT: Massacre in Kashmir

FACT: Disputed region of Kashmir

SENTIMENT: Fears of escalating tension

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Financial News

- Carries MARKET SENTIMENT.
- Can be regarded as “information arrival”.
- May explain current economic performance or predict the state of the future economy.

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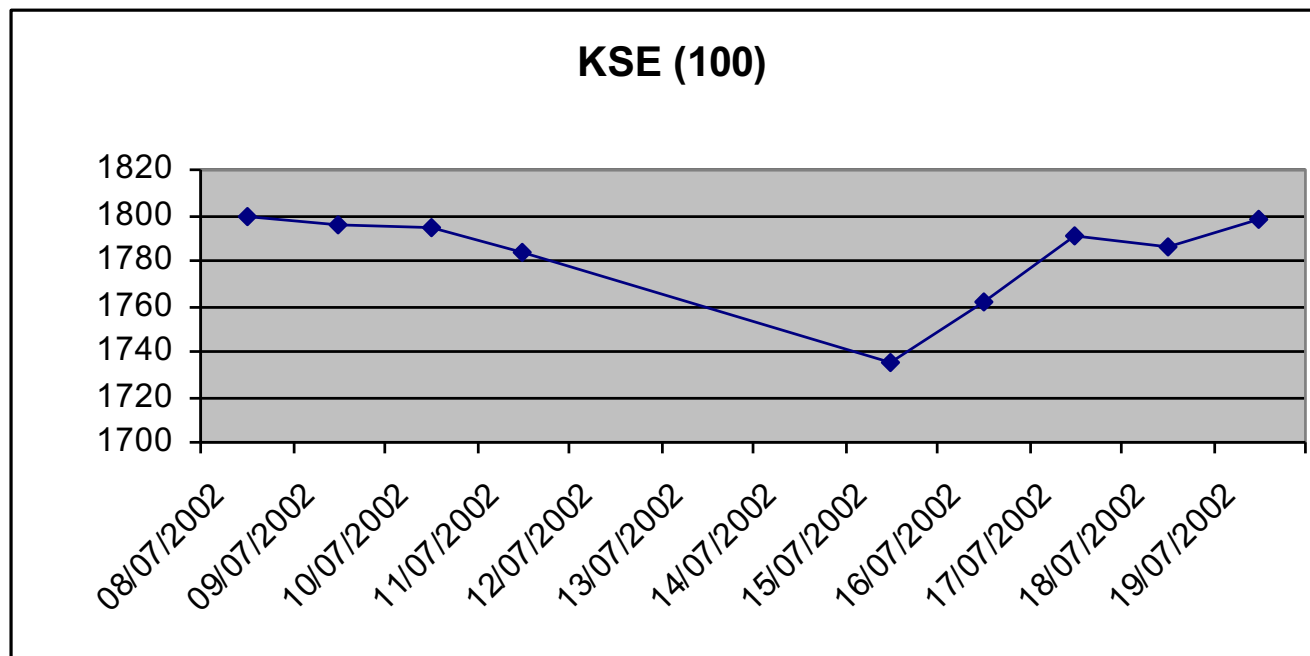
What is an efficient market hypothesis?

- Effect of news is rapidly accounted for in the market.
- Financial traders react to news events and make investment decisions accordingly.
- **Example 1:** Karachi Stock Exchange (July 15, 2002) – “**Broadly lower** amid fears of **escalating tensions** with India in the wake of recent massacre in the disputed Kashmir region”.
- **Example 2:** Karachi Stock Exchange (July 17, 2002) – “Muted response by India to last week's deadly attack in Kashmir **inspired keen demand** and **rises beat falls 5 to 2 ratio**”.

What is a time series?

- A time series is a set of time ordered data (numeric) entries.

Example (KSE 100 around July 17, 2002):



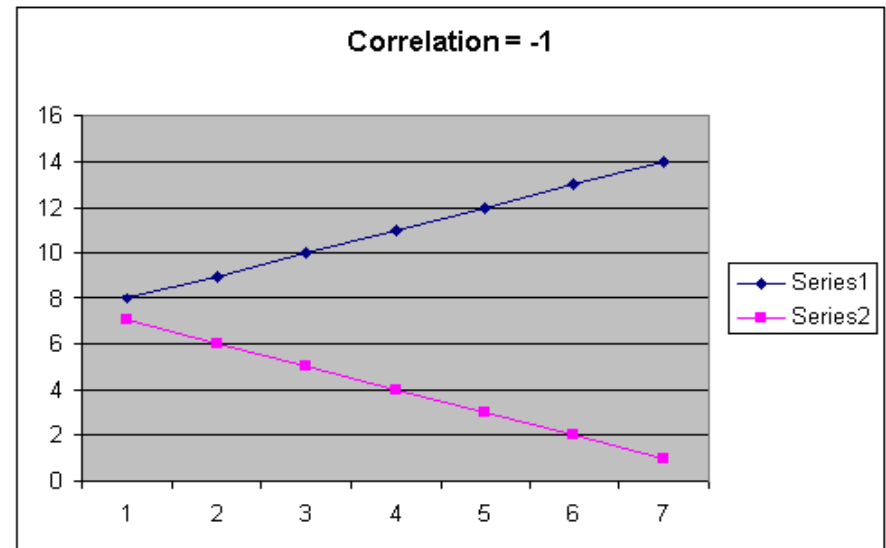
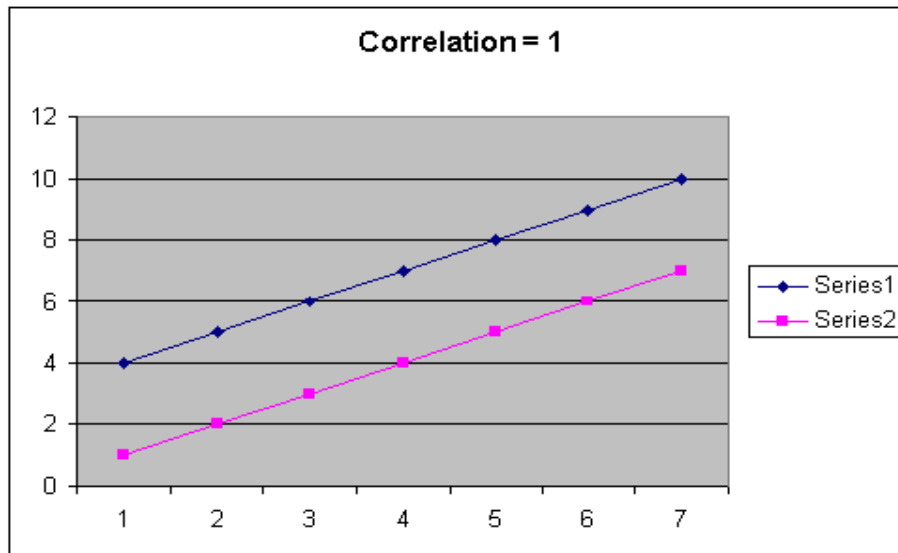
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What's the Upshot?

- There is a possible link between financial news and the market index.
- There might be some *correlation* between them.
- What is a correlation?

Correlation

- Correlation is a *statistic* that indicates extent of relationship between two series of numbers.
- Positive value of the statistic suggests that the two series behave in a similar manner or are correlated ‘correlation’.
- Negative value suggests the opposite: ‘anti-correlation’.



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Economic News and Stock Market Correlation

- FTSE 100 Data is a time series.
- Financial News Published in UK needs to be converted to a time series.

HOW?

Sentiment? Examples of some 'good' and 'bad' news

'Good' News Stories	'Bad' News Stories
Naval shipbuilder and military contractor Vosper Thornycroft has boosted its civil arm by buying facilities manager Merlin Communications (Nov 14, 2001)	Heavyweight banking and oil stocks have dropped up the leading share index as investors bet on fresh interest rate cuts.' (Nov 21, 2001).
The FTSE 100 stock index looks set to open stronger today after Wall Street added to gains seen at the London close and with U.S. stock index futures boosted by rumours that Osama bin Laden had been captured.' (Nov 15, 2001).	Britain's economy appears to be sailing along relatively smoothly despite the global slowdown and a string of high-profile job layoffs (Oct 22, 2001).
Builder McCarthy & Stone has posted a 13 percent rise in annual pre-tax profits, built on strong sale prices for its retirement homes [...], but cautions that the boom may be over.(Nov 15 2001).	The FTSE 100 fell today, amid concern about how the U.S. economic downturn will hurt technology stocks and British Airways' operations. (Dec 10, 2001).

Converting News to a Time Series?

- We count total number of ‘good’ and ‘bad’ words within a news text.
- We analyse about 30 news texts per day (weekdays) that are published on <http://www.reuters.co.uk/>
- For each weekday, we generate a ‘good’ word and ‘bad’ word frequency.

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Converting News to Time Series

- We have identified over 70 terms each for conveying ‘good’ and ‘bad’ news.
- Example:
 - ‘Good’ terms → accelerate, gained, strong, etc.
 - ‘Bad’ terms → anaemic, decline, tumbles, etc.

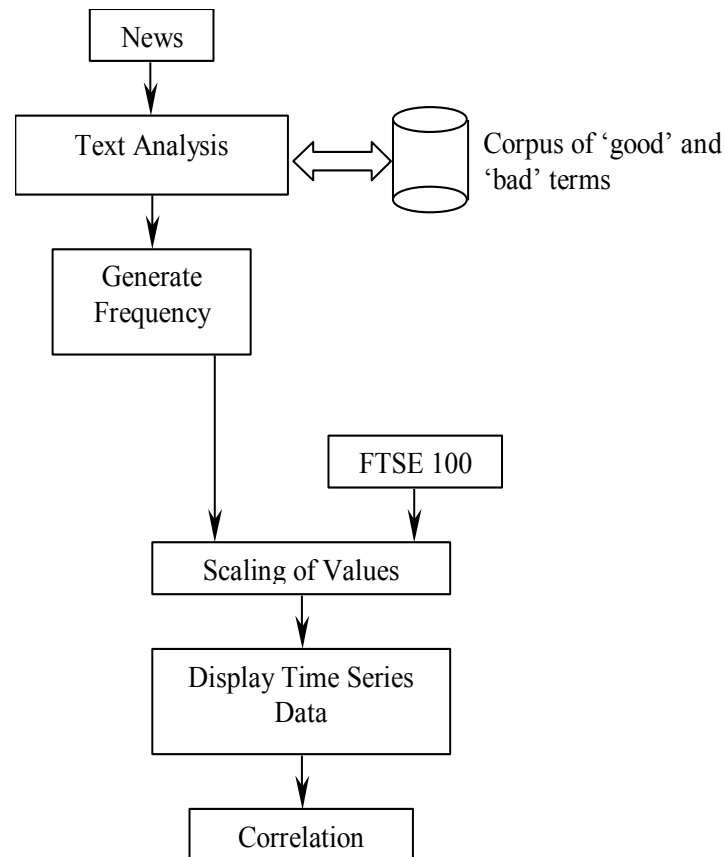
Converting News to Time Series

- Example: Frequency of 'Good' and 'Bad' words in a week in Nov 2001:

Day No.	'Good' Word Frequency	'Bad' Word Frequency
1	58	40
2	71	75
3	77	66
4	73	59
5	72	28

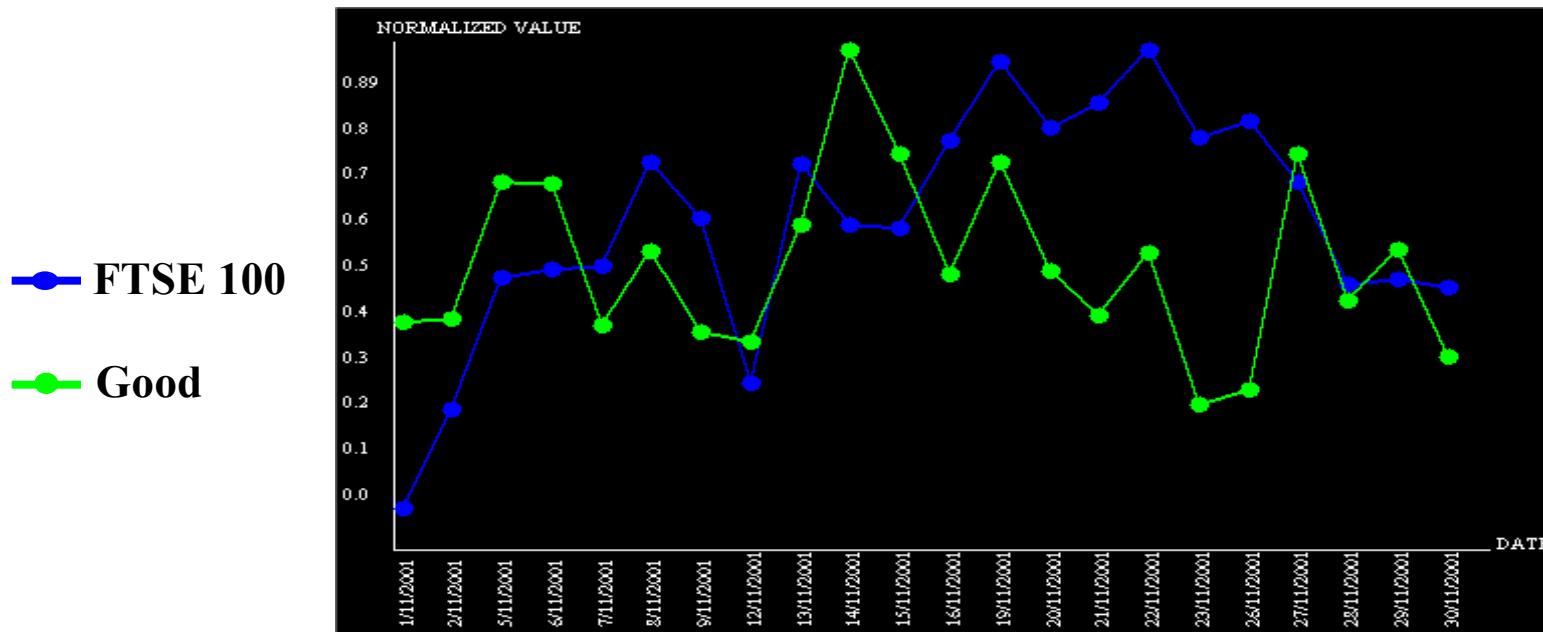
Next Step

- To display this data ('good' and 'bad' word frequency) alongside corresponding FTSE 100 data and to determine the correlations



Prototype SATISFI

- SATISFI → Sentiment and Time Series: Financial analysis system
- SATISFI Screenshot for November 2001:



Prototype SATISFI

- Correlation Results of SATISFI (November 2001):

	'Good'	'Bad'
FTSE	0.15	-0.31
FTSE Shifted One Day Ahead*	-0.08	-0.34
FTSE Shifted Two Days Ahead*	-0.48	-0.58

*Shifting: To see whether news follows the market or vice versa

Discussion and Future Work

- In a recent workshop, we analysed a same set of news manually and by SATISFI.
- 172 Reuters news stories for 4-8 February 2002 were analysed.
- Correlation Results:

	FTSE Vs 'Good'	FTSE Vs 'Bad'
Manual	0.21	-0.67
SATISFI	-0.15	-0.25

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Outlook

- Important to know the *entity* involved in the ‘good’ or ‘bad’ evaluation. Example: *rising inflation* is considered good using this method, however this is bad for stocks.
- Negation. Example: *not seen rising* negates the rise.
- To determine the ‘goodness’ or ‘badness’ of particular words. Example: *surge* or *bankruptcy* are more powerful than *slight rise* or *declining*.

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Thank You

Questions / Comments ??