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Research Cluster on
Data Analytics &
Artificial Intelligence

Macro environment and non-company news on stock market performance: A comparative study of media sentiment, public engagement, and prediction models

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OBJECTIVES

1. To analyze the news coverage by Hong Kong media in past 20 years, and illustrate the longitudinal patterns of news sentiment and related public engagement on interactive media outlets.
2. To explore and discover several useful non-company specific and macro environment indicators from the news patterns that are significantly correlated with market (Hang Seng Index and sub-indices) and specific stock price fluctuations.
3. To compare predictability and reliability of the found non-company specific news indicators and that of existing company specific tools in financial practices.
4. To develop accurate and efficient computational methods for market indicators identification and media text analysis.

HIGHLIGHTS

Challenges

- Whether and how news coverage is correlated with stock market performance?
- How does emotion embedded in news translate into investor sentiment and then cause market fluctuations?
- What kind of media outlets and what type of news can tell more about the investor sentiment and market fluctuations?
- Can investors effectively identify some useful predictive indicators of market fluctuations via daily news exposure? If yes, how accurate and reliable these indicators can be?

Prior Results

Experiments on five years historical Hong Kong Stock Exchange prices and news articles show that [1]

1. Sentiment analysis does help improve the prediction accuracy. At stock, sector and index levels, the models with sentiment analysis outperform the bag-of-words model in both validation and independent testing data sets;
2. Simply focusing on positive and negative dimensions could not bring useful predictions. The models which use sentiment polarity do not perform well in all the tests;
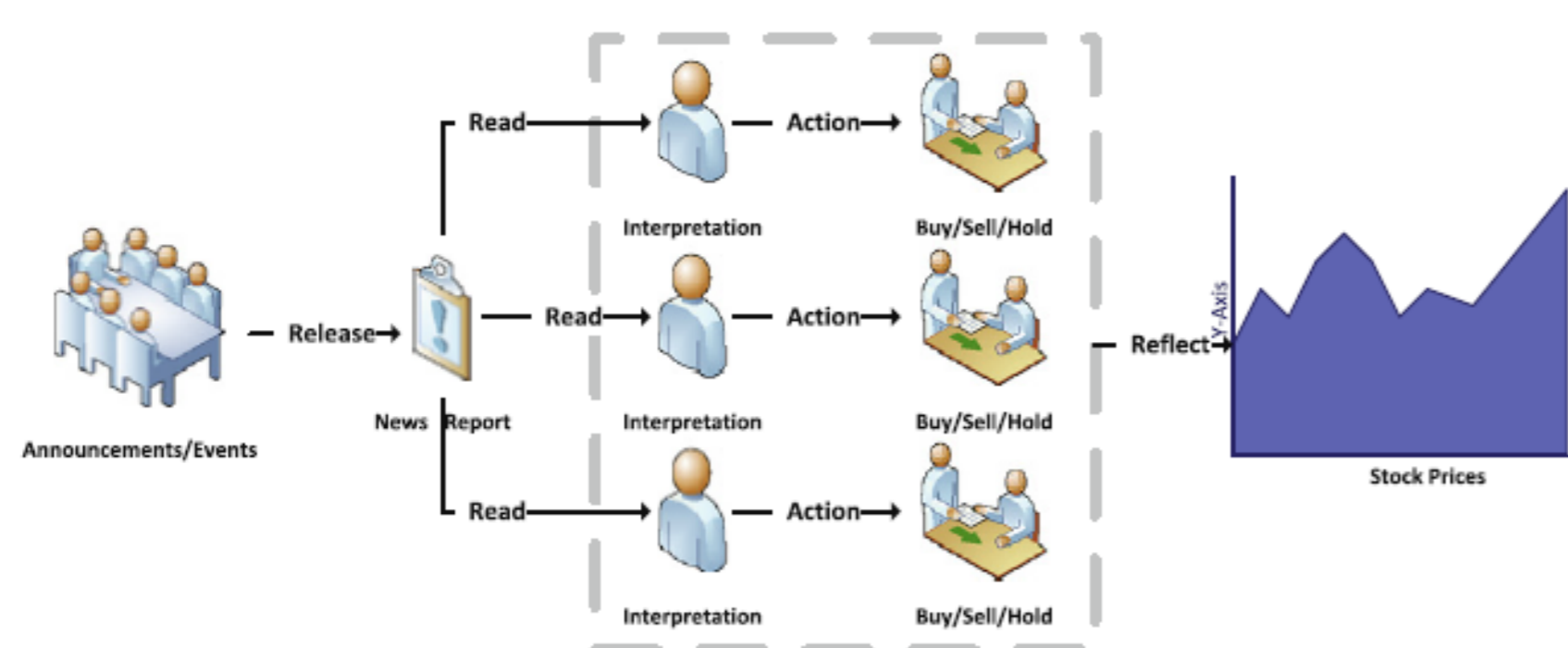3. There is a minor difference between the models using two different sentiment dictionaries.

Fig. 1. The general scenario that news impact takes effect on the market prices. (1) Events happen; (2) events are reported; (3) reports are read by investors; (4) investors interpret the information according to their own knowledge; (5) investors take actions based on their interpretations, positions and budgets; and (6) various actions are translated into orders and reflected in stock price movements.
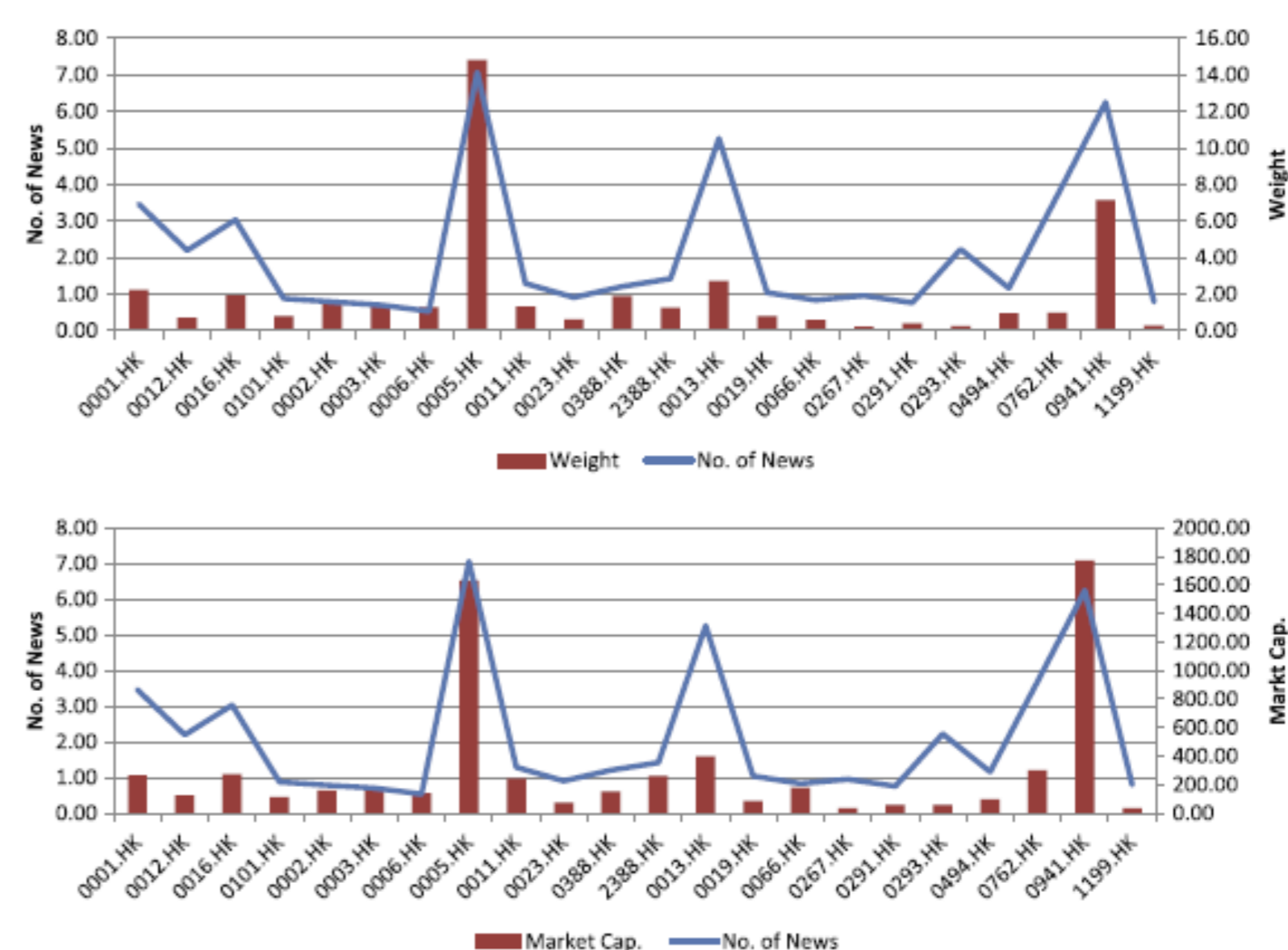

Fig. 2. Correlations between the average number of daily news pieces with stock weight and market capital respectively.

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