Sentiment Diffusion in Financial News Networks and Market Impact

Xingchen Wan (OMI student), Jie Yang (OMI visiting student), Slavi Marinov (Man AHL), Jan-Peter Calliess, Stefan Zohren, Xiaowen Dong (OMI Faculty)

In this project, we apply natural language processing (NLP) techniques to understand news sentiment of around 100 of the most reported companies worldwide. We investigate the propagation of such sentiment in company networks and evaluate their impact on market movements in terms of stock price evolution and volatility. Our results suggest that, in certain industrial sectors, strong media sentiment towards one company may indicate a significant change in media sentiment towards related companies measured as neighbours in a financial network constructed from news co-occurrence. Furthermore, there exists a weak but statistically significant association between strong media sentiment and abnormal market return as well as volatility. Such an association is more significant at the level of individual companies, but nevertheless remain visible at the level of sectors or groups of companies.

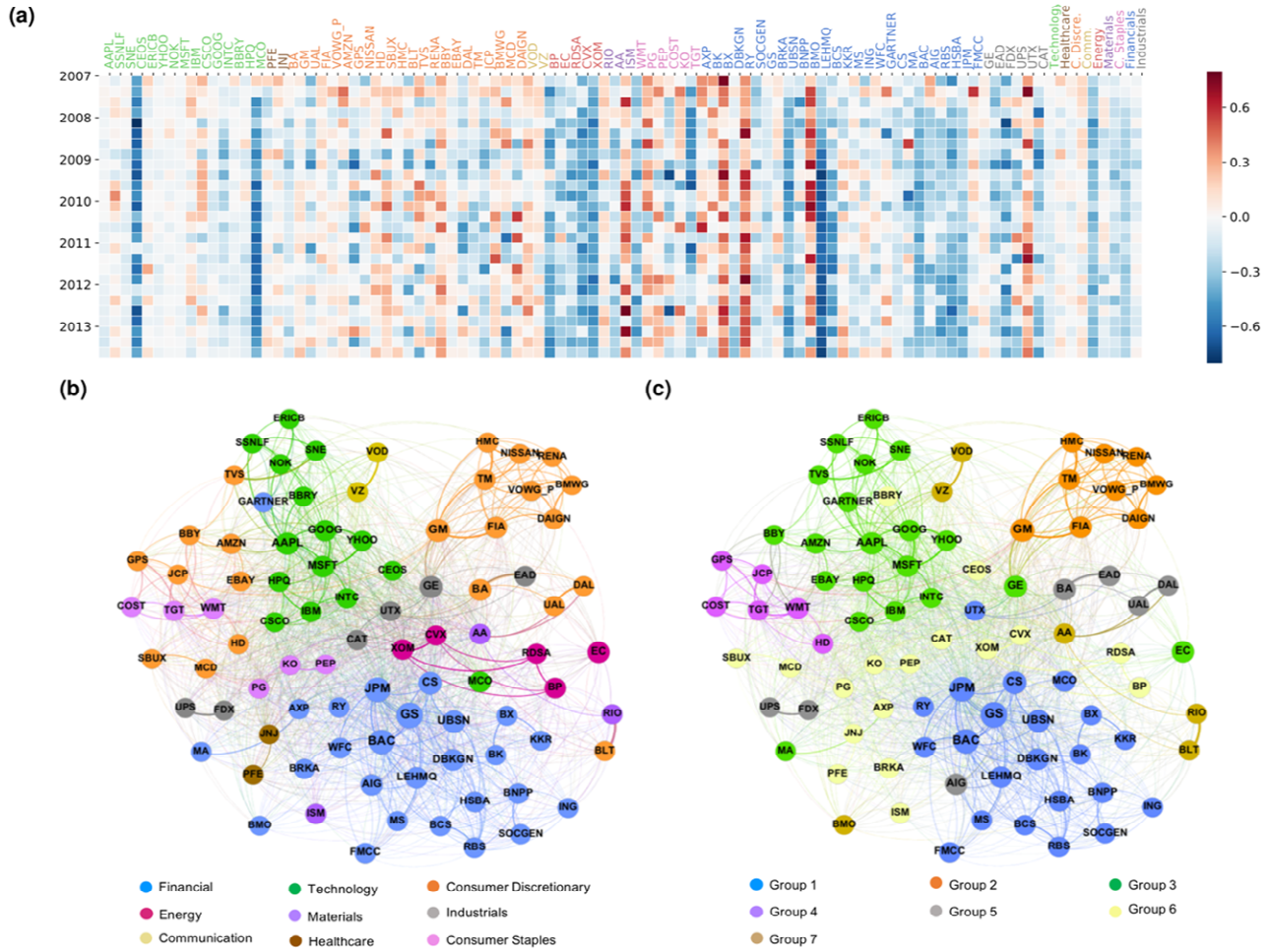

Figure 1. News co-occurrence network and sentiment distribution. (a) Sentiment distribution for target companies and 9sectors (last 9 columns, “C. Discre” = “Consumer Discretionary”, “C. Staples” = “Consumer Staples”, “Comm.” = “Communication”) in 27 quarters from 2007 to 2013. Colours in x-tick represent different sectors; (b) News co-

occurrence network coloured with sectors; (c) News co-occurrence network coloured with detected groups.