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Financial News Analysis for Equity and Credit

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Equity Motivation – Early Studies –

Roll[1988]

He found almost no relationship between news and stock returns

Tetlock [2007]

He created news indexes from Wall Street Journal (WSJ) and found that they could be a market sentiment index, but they did not contain information essential to stock prices.

Griffin et al. [2011]

(Japanese market) He suggests that news may cause an increase in market volatility.



Equity

Motivation – What’s new in this study–

Okimoto, Hirasawa[2014]

“Stock Market Predictability Using News Indexes”

This paper was selected as Securities Analysts Journal Prizes.

We quantify Nikkei news distributed at QUICK terminals to construct news indexes and then examine whether those indexes contain essential information in relation to stock prices.

Specifically, following Tetlock [2007], we use a three-variable VAR model consisting of the news index, stock returns and trading volumes and investigate the three theories, namely information theory, sentiment theory, and no-information theory.



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Tag Information and News Indexes①

News

Nikkei News distributed at QUICK Terminals

809,667 between July 1, 2007 and December 31,2011

Characteristic of Nikkei news

The news is read in real time by institutional investors and individual investors participating in Japanese securities market, and has great power to communicate information to the market.

Other data such as Stock Index, Trading Volume, etc.

We obtained from NEEDS-Financial QUEST 2.0 from Nikkei Digital Media, Inc..

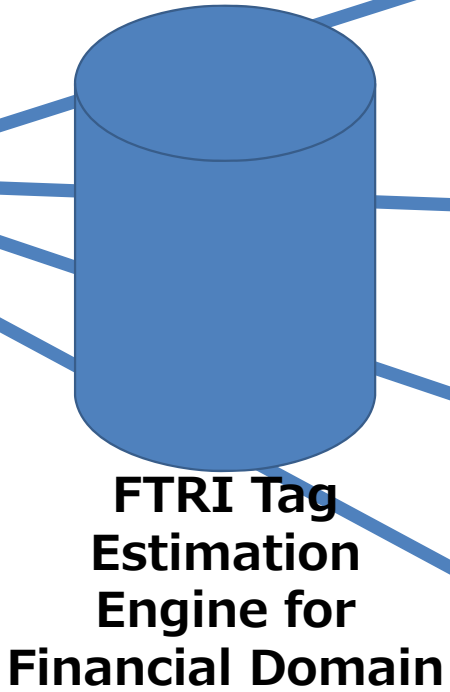


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Tag Information and News Indexes②

News (Headline · Body)

◇<東証>自動車株が高い 1ドル=102円台の円安を好感
 (10時25分、コード **7261**、**7267**など) 自動車株が高い。マツダ(7261)が一時、前日比16円(3.5%)高い478円まで上昇し年初来高値を3日ぶりに更新。ホンダ(7267)は2.6%高まで買われた。外国為替市場で円相場が1ドル=102円台前半と約半年ぶりの円安・ドル高水準で推移していることを受けて、輸出採算の改善を期待した買いが広がっている。
 ほかに、**富士重**(7270)や**スズキ**(7269)も高い。一方、**トヨタ**は寄り付き直後に前日比1.9%高まで上昇したが、その後0.7%高程度で推移している。市場では「米国が休日で外国人投資家の買いが続くと見込みにくい中、相対的に値動きが軽いマツダなどが買われている」(証券ジャパンの大谷正之調査情報部長)との指摘があった。【日経QUICKニュース(NQN)】



【Company Tag】
 Matsuda,Honda,Suzuki, Toyota etc.

【Keyword Tag】
 Automobile Stocks, Favorable, Weak-Yen, Export etc.

【Event Tag】
 Market_up etc.

【Posi/Nega Tag】
 Positive/Negative/Neutral

We have become able to analyze quantitatively a relationship between news and stock price.



Equity Tag Information and News Indexes③

News Tags (Created by FTRI)

Company Code, Event, Positive/Negative, etc.

Event	Positive/ Negative
Profit_positive_against_consensus	P
Profit_negative_against_consensus	N
Sales_Increase	P
Sales decline	N
Market price_rise	P
Market price_decline	N
Stock Buyback	P
Dividend increase	P
Public stock offerings	N
Issue of bond with share options,CB,etc.	N
Stock rating_up	P
Stock rating_down	N

(Ex.)Brokers Recommendation News
 "GGG Securities, HHH (1234) to Buy Recommendation"
 → Company Code :1234
 Event :Equity Rating Up
 P/N : Positive



Equity

Tag Information and News Indexes④

Definition of News Index

(referring to Tetlock, et al.[2008])

$$NI1 = \frac{P - N}{P + N + 1}, \quad NI2 = \frac{-N}{P + N + 1}$$

P is the number of positive news items reporting positive information and N is the number of negative news items reporting negative information.



Equity

Three News Theories and Their Verification①

Information theory

News contains essential information with respect to stock prices.

Sentiment theory

News does not possess information essential to stock prices but does influence market sentiment. News has a short-term significant effect on future stock prices, but this effect disappears over the long term.

No-information theory

News has no effect whatsoever on either stock prices or sentiment.

Tetlock[2007] showed that the indexes constructed from WSJ columns had significantly positive effects on stock prices in the short term, but that rebounds occurred and there was no significant long-term effect. These results are consistent with the sentiment theory.

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Three News Theories and Their Verification②

Three-variable VAR model

$$Tpx_t = \alpha_1 + \sum_{j=1}^5 \beta_{1j} Tpx_{t-j} + \sum_{j=1}^5 \gamma_{1j} NI_{t-j} + \sum_{j=1}^5 \delta_{1j} Vol_{t-j} + \varepsilon_{1t}$$

Tp_{xt} : TOPIX's daily logarithmic rate of return (%)

Vol_t : A logarithm of the total volume of all stocks traded in the TSE 1st section market

NI : Normalized so that they have an average of 0 and a standard deviation of 1.

As in Tetlock [2007], the VAR lag was assumed to be 5, which is to say that the marginal effect of each variable disappeared within the period of a week.

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Three News Theories and Their Verification③

Results

Estimated Values for γ_1

	NI1		NI2	
γ_{11}	0.167**	(0.078)	0.194**	(0.084)
γ_{12}	-0.021	(0.068)	-0.016	(0.071)
γ_{13}	0.087	(0.073)	0.098	(0.076)
γ_{14}	-0.032	(0.070)	-0.043	(0.071)
γ_{15}	0.043	0.061	0.044	(0.065)
Adj R ²	0.011		0.014	

(Figure Note) Newey-West standard errors appears in parentheses. *, **, *** represent significance at the levels of 10%, 5%, and 1% respectively.



Equity Summary

News and Stock Return

The news indexes had a significant impact on the market returns of the next business day and that the rebounds reported in the previous research were not observed.

In short, the news indexes used in this study did not express market sentiment, but did suggest the potential of having essential information to stock prices.

This was in contrast to the results of Tetlock [2007].



Credit

Motivation – Early Studies① –

Basel Committee on Banking Supervision[2001]

As a minimum, a bank should look at each of the following factors for each borrower:

- the availability of audited financial statements
- depth and skill of management
- its position within the industry and future prospects
- ...

Grunet et al. [2005] : Medium-sized firms (Germany)

- Management quality
- Market position

Combined use of financial and non-financial factors leads to a more accurate default explanation than the single use of financial or non-financial factors.



Credit

Motivation – Early Studies② –

Altman et al. [2010] : SME (UK)

- AUDITED or not?
- Audit Qualification-Severe
- Audit Qualification-Going Concern
- Late Filing
- No Cash Flow Statement
- CCJ(number & real value)
- Subsidiary or not?

13% increase in prediction accuracy by non-financial information

Credit Data and Analysis

Data

Company Announcements Disclosure Service(TDnet) of JPX
Japanese Listed Companies

Main Non-financial Information

Audit Qualification-Going Concern
Late Filing
Change of Certified Public Accountant
Press Release on New Services or Products
Share Buyback

Analysis

Comparing a model of financial info with a model of both
financial and non-financial info in terms of default prediction



Credit Summary

11% increase in default prediction

Accuracy Ratio(only financial): 0.81

Accuracy Ratio(financial and non-financial): 0.90

Support Altman et al. [2010]

Audit Qualification-Going Concern and Late Filing are effective factors for the prediction.

It is valuable that there is not.

If there is not information about either “Press Release on New Services or Products” or “Share Buyback”, the company tends to go into default.



Appendix

Difference between Tetlock[2007] and us

Comparison of News Indexes

	Tetlock[2007]	Okimoto · Hirasawa[2014]
Media	WSJ Columns	Nikkei News distributed at QUICK Terminals
Tools	General Inquirer(GI)	Tag Estimation Engine by FTRI
Characteristic	<ul style="list-style-type: none"> • A pure word count program • Not only finance domain • "No, the economy is not strong" and "It is not that the economy is not strong" are the same meanings. 	<ul style="list-style-type: none"> • Judging Positive/Negative on semantic basis • Specializing in financial domain
How to construct News Index	Employing principal components factor analysis to extract "pessimism factor" as the index	$NI = (P - N) / (P + N + 1)$



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