資訊專業化程度、投資人意向與企業資訊揭露政策

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摘　要

2001 年恩龍醜聞發生後，股市對擁有資訊的參與者(informed investors)其特徵更感到興趣。由於市場資訊過多，何謂「有價值」的資訊對於決策者也更加重要。本文提出一「資訊專業化程度」與「資訊來源」的分析架構，並延伸 Boot and Thakor's (2001)理論模型，推導「資訊專業化程度」在企業管理階層、擁有資訊的市場參與者及具資訊劣勢的投資人(uninformed investors)三者在投資決策上的重要性，因此提出兩項推論(propositions)：第一，經營績效良好的企業會誠實揭露好消息，以促使其股價收益極大；第二，在市場上有名但經營狀況可能不良的企業，其資訊宣告會在股價收益極大化的條件下，遭管理階層操弄「資訊專業化程度」，而使得擁有特定資訊的市場參與者獲得額外利潤，並反使具資訊劣勢的投資人受害。因此本文強調在學術與實務界發展上，找出市場參與者成爲「擁有資訊優勢」因素的重要性。

關鍵字：擁有資訊的市場參與者、管理階層資訊的捏造、資訊專業化程度。

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Professional Nature of Information, Investors' Intention, and Corporate Disclosure Policy

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Abstract

After the Enron scandal occurred in 2001, the stock market participants asked what characteristics can make people "informed". Obviously, the key point is that the information is important "enough" for an investor to push him or her to make decisions (i.e. buy or sell stocks). In this paper I suggest the information-quality space model to denote how important the professional nature of information is for informed and uninformed investors' decision making. I assume that different sources of information can represent its differential meanings to investors, and make the theoretical ratiocination with some important variables. The two propositions have been built: (1) Good firms who know their types must announce good news honestly for the stock price maximum, and (2) Firms whose stocks are favored by uninformed investors could maximize their revenues by manipulating their professional nature of information announcements. This paper indentifies the importance of the professional characteristics in the firm-specific information that could be manipulated for managerial maximum revenue purpose. This manipulating process could benefit on informed investors but might suffer uninformed investors, and thus pictures some meaningful factors that define what the empirical "informed" investors are.

Keyword: informed investors, managerial manipulation, professional nature of information.

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Introduction

Too much information is available in the financial market. Some seem "valuable" but others don't. The "valuable" information for finance field is defined as those who can affect the prices of target stocks, even going up or down. However, the key point is how the information can "make sense" by the investor's view. That is, the information is important "enough" for an investor to push him or her to make decisions (i.e. buy or sell stocks). By this point, it must depend on some certain standards, or variables, in an investor's mind.

The information (or news) announced among the stock markets also comes from many ways. Most time people are accustomed to view the information as the "firm-specific" of the "macro-economics" ones. Also, they can distinguish information as "good" or "bad" news. Even the information can be separated by different announcing sources—it is from the government? From the firm's managers (or other insiders)? From the outside exports (i.e. analysts or bankers)? Or just from the street-talking?

By the way, we can assume that different sources of information can represent its differential meanings to investors, and thus infer that the information sources affect the market. Since investors can define information as "good" or "bad", the macro-source-judgmental space to picture an investor's mind can be shown as below:

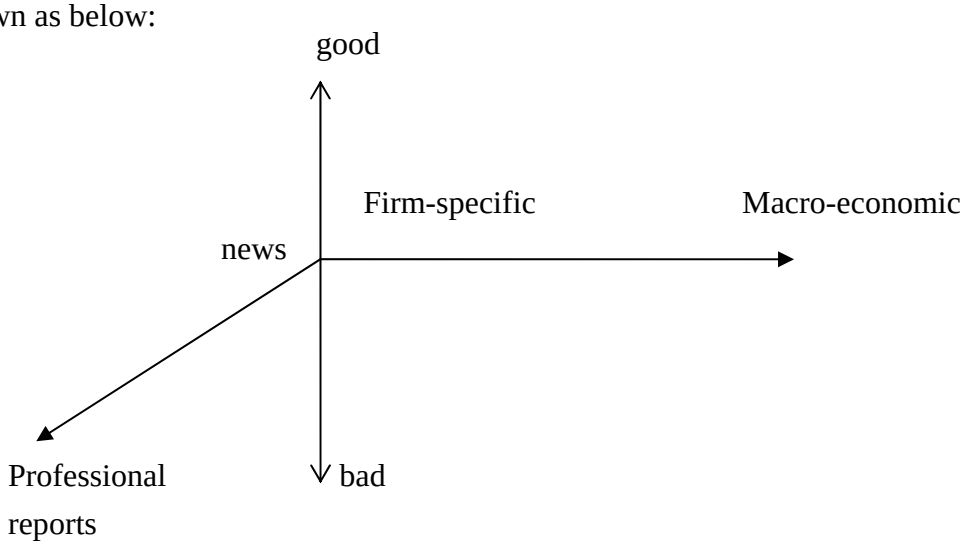

Figure 1 The information quality space

Theoretical Background and Literature Review

Many empirical studies in information-market reacting association have been published in different fields (see table 1).

TABLE 1

Information-Market Reacting Association—

Summary of Some Studies about Information Disclosure

Studies	Sub-titles	Intervening Variables	Focus with information disclosure
Daimond (1985)	Information production incentives	Uncoordinated investors	Private information production
Fishman and Hagerty (1992)	Insider trading	Cost for insider trading	Market participants (insiders and outsiders)
Bhattacharya and Chiesa (1995), Yosha (1995)	Spillover effects		Firm’s competitors
Allen and Gale (1997, 1999), Boot and Thakor (1997)	Emerging economics	Price transparency	Capital market growth
Bhattacharya and Nicodano (1999)	Insider trading	Payoff uncertainty	Social welfare
Boot and Thakor (2001)	Information production incentives	Different types of disclosure	The amount of information

Resource: Boot and Thakor (2001)

Most of the literature on information disclosure focused on insider trading, market liquidity, spillover effects and private information production incentives.

That is so called “information asymmetry” demonstrated the market situation that the informed investors owned superior information rather than the uninformed investors. However, Boot and Thakor (2001) argued how much information the shareholders would ask the manager for disclosure to the market. They defined three kinds of information as below:

- *To-be-processed complementary information*: the information is those which improves the precision of the information that informed investors have. The informed investors are processing publicly available information at a personal cost. The processing enables them to learn something about firm value that uninformed investors don’t know even though the information was available to them as well.
- *Preprocessed complementary information*: the information is those which benefits all investors and be costless processed by all investors. This information thus complements what investors know.
- *Substitute information*: the information is those in which disclosure requirements result in the release of information to all investors that would have been available only to the informed investors. The disclosure provides information that is a substitute for the information possessed by informed investors.

The example for the first case is firms’ R&D spending, which is like to be the “professional and firm-specific” status in our information quality space. The example for the second case is the macroeconomic new, such like the customer spending or the GNP index that all investors have known and is announced by the government. However, the example for the third case is earning forecasts and management’s guidelines. This kind of information characterizes the firm-specific source, whatever the format is the “news” or “professional report”. Thus our macro-source-judgmental space can include those information definition represented in Boot and Thakor (2001)

Based on our macro-source-judgmental space model, the purpose of this paper is to find how much effect the information produced by the professionals can affect the firm’s value.

The model

Based on Boot and Thakor's (2001), the five-date model is presented as below:

TABLE 2

Sequence of Events

Timing T	Events
T=0	✓ Firm knows its own type.
	✓ Firm seeks access to market.
	✓ Firm announces its information disclosure policy.
	✓ Firm designs securities with which to access market.
T=1	Subsets of investors become informed.
T=2	Firm disclosures information according to its announced policy.
T=3	✓ Orders received by the market maker.
	✓ Price determined based on total order flow.
	✓ Market clears.
T=4	✓ True values of firms become known.
	✓ Investors are paid off.

Resource: Boot and Thakor (2001).

Each firm is assumed to be interested in obtaining the maximum price it can for the security issuing. The firm can be one of two types: good and bad. On date t=4, the good (G) firm gets (x-a, x+a) cash flow (value) while the bad (B) gets (y-a, y+a) with the probability of 0.5 for both situations. In this case, a is a random variable. The authors also assume that any investor can look at the firm's announced disclosure policy and determine how the nature of the information will change when the disclosure actually occurs. On date t=1, some investors are informed about the issuing firm at a cost, whereas the rest is uninformed. What I focus on are the informed investors—here called the analysts.

Equations and variable definitions

Followed Boot and Thakor's (2001), I denote that the expected net gain (V) for getting information should be

$$V = -M_i + qu\int_0^{\infty}\left\{\left[0.5(x-a)+0.5(x+a)-P^e(\Omega+l)\right]\left[P^e(\Omega+l)^{-1}\right]\right\}f(l)dl$$
$$- \ (1-q)(1-u)\int_0^{\infty}\left\{\left[P^e(\Omega+l)-0.5(y-a)-0.5(y+a)\right]*\left[P^e(\Omega+l)^{-1}\right]\right\}f(l)dl \quad (1)$$

Where

M_i is the information acquisition cost for the marginal investor i.

"q" is the probability that the investor submits a buy order when the security is truly type G.

"u" is the probability that an analyst sees the firm type is G while considering a G firm.

"l" is the aggregate demand of the investors, which is given by the continuously differentiable probability density function f(l).

Ω is other measure of those who becomes informed, which is endogenously determined.

$P^e(\Omega+l)$ is the equilibrium price of the security as set by the market maker and the firm type is disclosed.

Excluded of the given M_i, the two terms in the equation (1) represent the investment gain and loss from the analyst decision: $qu\int_0^{\infty}\left\{\left[0.5(x-a)+0.5(x+a)-P^e(\Omega+l)\right]\left[P^e(\Omega+l)^{-1}\right]\right\}f(l)dl$ means that the analyst regards the considering firm is good while it is really the "G" type, and $(1-q)(1-u)\int_0^{\infty}\left\{\left[P^e(\Omega+l)-0.5(y-a)-0.5(y+a)\right]*\left[P^e(\Omega+l)^{-1}\right]\right\}f(l)dl$ means the analyst makes the wrong decision to submit a "sell" order while the considering firm is really the "G" type.

Analysis

I consider about the impact of the substitute information since all participants in the market receive these kind of information, but few of them can explain the information and thus become the informed investors. This information-explaining process makes the information acquisition cost (M_i) reasonable and profitable. However, the professional nature of information could make the information more unexplainable and thus would increase the information acquisition cost (M_i). We can derive the quality variable, α_i, to measure this "qualitative" variation, that demonstrates the difficulty to analyze the information by the marginal investor i.

$$M_i = \mathrm{M}(\alpha_i) \qquad (2)$$

Thus the expect profit of an informed investor is

$$V = -M(\alpha_i) + q(1-r)\int_0^{\infty}\left[\frac{x - P^e(\Omega + l)}{P^e(\Omega + l)}\right] f(l)dl \qquad (3)$$

where "r" is the probability that the type of the firm will be revealed. I provide this variation to measure the tendency that the firm decides to be "honest" by announcing his true performance.

Proposition 1. Good firms who know their types must announce good news honestly for the stock price maximum.

By the way, the expected revenue of the G firm can be

$$R = rx + (1-r)\int_0^{\infty} P^e(\Omega + l)\, f(l)dl \qquad (4)$$

For the assumption that the firm maximize its revenue by issuing the security, the FOC condition for R, given r, Ω, l, and x is

$$\frac{\partial R}{\partial P^e} = (1\text{-r})* P^e(\Omega + l) = 0 \qquad (5)$$

$P^e(\Omega + l)$ is the equilibrium price of the security when the firm type is disclosed, and thus is not zero definitely. It is clear that the G firm (defined as the firm that owns good performance) must announce his "good" news since the information can make the maximum of expected revenue. and by the equation (5) we can make sure the r (defined as the probability that the type of the firm will be truly revealed) should be 1.

Proposition 2. Firms whose stocks are favored by uninformed investors could maximize their revenues by manipulating their professional nature of information announcements.

By the definition of Nash equilibrium, we can also find that V should be zero for the marginal investor. Thus

$$V = -M(\alpha_i) + q(1-r)\int_0^{\infty}\left[\frac{x - P^e(\Omega + l)}{P^e(\Omega + l)}\right] f(l)dl \quad = 0 \qquad (6)$$

Since the firm who knows his truly G type has incentive to announce his news, it might infer that the G firm intends to decrease the difficulty to explain its good news. The G firm might promote its news by the street-talking instead of the professional accounting reports.

But I consider about another situation that the firm doesn't make sure his truly G type but disclosures information according to its announced policy. That is, if r is given but not equal to 1, which means

$$\int_0^{\infty}[.]f(l)dl \quad = \quad \frac{V+M(\alpha_i)}{q(1-r)} \qquad (7)$$

The left side of the equation, $\int_0^{\infty}[.]f(l)dl$ means that the total dollar-amount of the aggregate stock demand is limited by the variable V, M(α_i), and q. Given the left side is constant, if the investors more intend to buy the stocks issuing by the G firm (i.e. the q is higher), the value of the information (V) and the acquisition cost (M(α_i)) should be higher.

The analysis of equation (7) has an empirical implication about how managers in good enterprises could earn money from their public information announcements. The Enron scandal occurred in October 2001 is one of the most famous examples. In the Enron scandal, the information value of the managerial announcements is high because the enterprise has big control on the energy market. Therefore, the uninformed investors still intend to buy the Enron stocks even they might be cheated by the Wall Street. However, to get the acquisition cost about how the board of directors makes the numbers in the Enron financial statements is also high enough that makes most uninformed investors suffering the Enron stock loss. The winners are those who know the truth of the Enron scandal by professional checking for the Enron's statements and announcements.

Conclusion

The model presented in this paper concludes the professional characteristics of firm-specific information, the informed/uninformed investors' preferences in the stock market, managerial manipulating skills and different timings of information announcements. By assuming different probability distributions and some important factors that affect all participants' decisions, the model shows how these variables affect the reaction of uninformed investors. We promote our three space model to show how the information qualitative degrees could be manipulated to make the maximum revenue for informed investors. Nevertheless, how to find an empirical definition of "informed" investors still opens to questions. In the Enron

example, the employees of the firm might suffer by their information asymmetry, but the outside analysts might be informative based on their professional knowledge. The framework that indentifies the factors to make people “informed” is still meaningful for future researches.

References

Akerlof, George (1970, August), The Market for Lemons': Quality Uncertainty and the Market Mechanism, Quarterly Journal of Economics 84:488-500.

Allen, F. & Gale, D. (1997), Financial Markets, Intermediaries, and Intertemporal Smoothing, Journal of Political Economy, 105, 523-546.

Allen, F. & Gale, D. (1999), Diversity of Opinion and Financing of New Technologies, Journal of Financial Intermediation, 8, 68-89.

Ball, R. (1978), Anomalies in relationships between securities' yields and yield-surrogates, Journal of Financial Economics 6, 103 -126.

Ball, R. & Brown, P. (1968), An empirical evaluation of accounting numbers, Journal of Accounting Research 6, 159-178.

Ball, R., Brown P. & Finn, F. (1977, October), Share capitalization changes, information, and the Australian equity market, Australian Journal of Management, 105-l 17.

Baron, D., & Myerson, R. (1982, July): Regulating a Monopolist with Unknown Costs, Econometrica, 54:923-942.

Bassett, G. & Koenker, R. (1978), Asymptotic theory of least absolute error regression, Journal of the American Statistical Association 73, 618-622.

Bawa, V., Brown S. & Klein R. (1979), Estimation risk and optimal portfolio choice (North-Holland, New York).

Bhattacharya, S. & Chiesa, G. (1995), Proprietary Information, Financial Intermediation, and Research Incentives, Journal of Financial Intermediation 4, 328-357.

Bhattacharya, S. & Nicodano, G. (1999), Insider Trading, Investment and Welfare: A Perturbation Analysis, working paper, ICER, Torino.

Black, F. (1972), Capital market equilibrium with restricted borrowing, Journal of Business 45, 444-454.

Black, F. & Scholes, M. (1973), The behavior of security returns around ex-dividend days, Unpublished manuscript (Massachusetts Institute of Technology. Cambridge,

MA).

Brown, R.L., Durban, J. & Evans, J. M. (1975), Techniques for testing the constancy of regression relationships over time, Journal of the Royal Statistical Society Series 37. 149-192.

Brown & Warner (1980), Measuring Security Price Performance, Journal of Financial Economics 8, 205-258.

Boot, A. W. A. & Thakor, A. V. (2001), The Many Faces of Information Disclosure, The Review of Financial Studies, Vol. 14, 4, 1021-1057.

Boot, A. W., & Thakor, A. V. (1997), Financial System Architecture, Review of Financial Studies, 10, 693-733.

Boot, A. W., & Thakor, A. V. (2001), The Many Faces of Information Disclosure, Review of Financial Studies, 14(4), 1021-1057.

Charest, G. (1978), Split information, stock returns, and market efficiency, Journal of Financial Economics 6, 265-296.

Cho, I. K., & Kreps, D. M.(1987) Signaling Games and Stable Equilibrium, Quarterly Journal of Economics, 102:179-221.

Collins, D. W. & Dent, W. T. (1978), Econometric testing procedures in market based accounting research, Unpublished manuscript (Michigan State University, East Lansing, MI).

Collins, D. W. & Dent W. T. (1979), The proposed elimination of full cost accounting in the extractive petroleum industry, Journal of Accounting and Economics 1, March, 3 -44.

Cowles, A. (1933), Can stock market forecasters forecast? Econometrica 1, 309-324.

Diamond, D. W. (1985), Optimal Release of Information by Firms, Journal of Finance, 40, 1071-1094.

Fama, E. F., Fisher L., Jensen M. & Roll, R. (1969), The adjustment of stock prices of new information, International Economic Review 10, 1-21.

Fama, E. F. & MacBeth, J. D. (1973), Risk, return and equilibrium: Empirical tests, Journal of Political Economy 71. 607-636.

Fishman, M. J., & Hagerty, K. M. (1992), Insider Trading and the Efficiency of Stock Prices, Rand Journal of Economics, 23, 106-122.

Jaffe, J. F. (1974), Special information and insider trading, Journal of Business 47. July. 410-428.

Jovanovic, B.(1982), Favorable Selection with Asymmetric Information, Quarterly Journal of Economics, 97:535-539.

Kaplan, R. S. & Roll R. (1972), Investor evaluation of accounting information: Some empirical evidence, Journal of Business 45, 225 ~257.

Latane, H. A. & Jones, C. P. (1979), Standardized unexpected earnings-- 1971-1977, Journal of Finance 34. 717-724.

Maskin, E., & Riley, J.(1984), Monopoly and Incomplete Information, Rand Journal of Economics, 15:171-196.

Menachem, B. (1976), A note on risk, return, and equilibrium: Empirical tests. Journal of Political Economy 84, 407-409.

Menachem, B. (1979), The sensitivity of the efficient market hypothesis to alternative specifications of the market model, Journal of Finance 34, 915-929.

Nicholas, G. J., Dopuch N. & Penman, S. J. (1976), Disclosure rules, information-production. and capital market equilibrium: The case of forecast disclosure rules, Journal of Accountmg Ressarch 14, 89-137.

Nicholas, G. J. (1978), corporate signaling, external accounting, and capital market equilibrium: Evidence on dividends, income and extraordinary Items, Journal of Accounting Research 16. 26-79.

Ohlson, J. A. (1979), Residual (API) analysis and the private value of Information, Journal of Accounting Research 17, 506-527.

Riley, J.(1979), Informational Equilibrium, Econometrica, 47:331-359.

Schwert, G. W. (1978), Measuring the effects of regulation: evidence from capital markets, Unpublished manuscript (Universtty of Rochester, Rochester, NY).

Spence, M. (1974), Market Signaling, Harvard University Press, Cambridge, MA.

Watts, R. L. (1978), Systematic ‘abnormal’ returns after quarterly earnings announcements, Journal of Financial Economics 6, 127-150.

William, H. B. (1979), Econometric properties of alternative security return metrics. Unpublished manuscript (Stanford University, Stanford. CA).

Yosha, O. (1995), Information Disclosure Costs and the Choice of Financing Source, Journal of Financial Intermediation, 4, 3-20.