2011 International Conference on Financial Management and Economics
IPEDR vol.11 (2011) © (2011) IACSIT Press, Singapore

Signaling Efficiency of Forward Looking Information under IFRS

Zhemin Wang[1,+] Zhijun Lin[2], and Ming Liu[3]
[1] University of Wisconsin-Parkside
[2,3] Hong Kong Baptist University

Abstract. While the notion of more voluntary disclosures of nonfinancial and forward-looking information is increasingly embraced by the financial community and accounting standard setting bodies such as FASB and IASB, accounting researchers are still debating the credibility and signaling efficiency of such disclosures. Voluntary disclosure of forward-looking information is considered costless signaling because such disclosure can be made with little or no cost. Existing literature generally questions the credibility of costless signaling. Existing signaling literature generally examines either the costly signaling or the costless signaling mechanisms. This study extends the literature in two major ways. First, this study examines a signaling equilibrium which requires the use of both costly and costless signaling mechanisms, which is clearly more realistic because both signaling mechanisms are available to all companies. Second, this study allows ex post uncertainty of disclosure quality. The assumption of ex post uncertainty is an important extension to the literature because it rules out the case where only cooperative behavior can occur and because in reality the capital market will never be able to verify with certainty whether management has truthfully disclosed all its private information even ex post. A model of a non-cooperatively supported equilibrium is presented. At equilibrium, the capital market correctly anticipates that firms will voluntarily disclose forward-looking information honestly, and reacts to the disclosed information as if it truthfully reflects management private information. According to the model, despite the fact that the disclosing company will never want to defect from the equilibrium, for some distributions of the alternative information, the disclosing company and the capital market will enter into a non-cooperative episode, during which the company can communicate to the capital market only through costly signaling such as dividend policy or stock repurchase plans. This conclusion seems consistent with the observation that companies do use both costly and costless signaling mechanisms. The analysis has direct policy implications in that it supports FASB and IASB's position of encouraging more voluntary disclosures of nonfinancial and forward-looking information to satisfy the growing informational needs of the global financial community.

Keywords: IFRS, forward looking information, signaling

1. Introduction

The financial community and accounting standard setting bodies such as FASB and IASB have increasingly embraced the notion of more voluntary disclosure of non-financial and forward-looking information as a means to satisfy investors' informational needs. However, the theoretical issue of credibility and signaling efficiency of such disclosure is still being debated (Gaeremynck 1997; Frost 1997; Jenkins 1994). Proponents of more voluntary disclosures of nonfinancial and forward-looking information contend that such disclosures constitute an important component of the information users need to make investment and credit decisions and therefore should be encouraged (Gigler 1994).

While the relevance of such information is not disputed, critics of more voluntary disclosure of forward-looking information remain skeptical about the credibility of such disclosures (Gaeremynck 1997). For example, according to the "cheap talk" model, were a company able to make credible claims about its cash flow prospects, it would have incentive to lie to the capital market since it would benefit from manipulating capital market's perception about the company's future performance. This implies that knowing the above, the capital market would never believe in any such disclosure (or cheap talk) and the company would never be able to communicate credibly about its future performances through voluntary disclosure of forward-looking information.

Two types of signaling mechanisms, namely costless signaling and costly signaling, have been examined in the literature (Herbig and Milewicz 1996). Costless signaling refers to the announcement by a firm to the press, a disclosure at annual report, reports to analysts, or any public statements. Costless signaling can be made timely with little or no cost. Costly signaling, on the other hand, occurs when no verbal signals are given, when it is the action, such as stock repurchases plans, which must be evaluated and interpreted by the capital market (John et al. 1985). Unlike costless signaling, costly signaling usually requires a high level of expenses. Because it is expensive, costly signaling is considered more believable and has a lasting and more powerful effect than costly signaling (Herbig and Milewicz 1996).

The signaling literature generally examines either the costless signaling or the costly signaling mechanism. This study extends the literature in that it proposes that both signaling mechanisms are required for efficient signaling. It argues that firms prefer costless signaling to costly signaling because the former can be made timely with little cost. Such preference provides an incentive for honest disclosure because the capital market can punish dishonest disclosures swiftly by ignoring costless disclosures, and therefore can force the firm to rely on more expensive costly signaling mechanisms to communicate to the capital market. Specifically, a model of a non-cooperatively supported equilibrium is presented. At equilibrium, the capital market correctly anticipates that companies will disclose forward-looking information about its cash flow prospects honestly and reacts to the disclosed information as if it truthfully reflects management private information. According to the model, despite the fact that the disclosing company will never want to defect from the equilibrium, for some distributions of the alternative information, the disclosing company and the capital market will enter into a non-cooperative episode, during which the company can communicate to the capital market only through costly signaling such as dividend policy or stock repurchase plans. This conclusion seems consistent with the observation that companies do use both costly signaling and costless signaling mechanisms (Frost 1997; Herbig and Milewicz 1996). This conclusion also provides an explanation to the conflicting empirical findings regarding the informativeness of management voluntary disclosure in that such disclosure is informative during the cooperative period and not informative during the non-cooperative episode. The conclusion of this research has direct policy implications in that it supports FASB and IASB's strategy of encouraging more voluntary disclosures of nonfinancial and forward-looking information to satisfy the information need of financial statement users.

The rest of this study is organized as follows. Section 2 presents the model of analysis which shows that under certain assumptions, a cooperative result can be achieved in the non-cooperative disclosure game. Section 3 presents a brief summary and discusses limitations of the model.

2. The Model

In an effort to satisfy the increasing informational needs of investors, accounting standard setting bodies have encouraged more and more voluntary disclosure of non-financial and forward-looking information. However, the fundamental theoretical issue regarding the credibility of such disclosures remains unresolved. As indicated in the above review, the signaling literature has generally questioned the credibility of costless signaling such as management voluntary disclosures. The empirical evidence is also mixed. Some studies found management voluntary disclosure contained information content (e.g., Han et al. 1989; Han and Wild 1990) while others found such disclosure not informative. In light of the controversies regarding voluntary disclosure, it is timely to examine the credibility of management voluntary disclosure of forward looking information.

The above review of literature also indicates that the existing signaling literature generally examines either the costly signaling or costless signaling mechanism often in a one-period static setting. This study extends the literature in two major ways. First, this study examines a signaling equilibrium which requires the use of both costly and costless signaling mechanisms. Second, this study addresses the disclosure equilibrium using dynamic programming in a multi-period setting. This study's setting is clearly more realistic because both signaling mechanisms are available to all companies and business operations are "going concerns." In addition, this study also extends the existing literature by allowing ex post uncertainty of disclosure quality. The assumption of ex post uncertainty is an important extension to the literature

because it rules out the case when only cooperative behavior can occur and because in reality the capital market will never be able to verify with certainty whether management has truthfully disclosed all its private information even ex post. Instead, the capital market can only infer the firm's disclosure quality indirectly by the fulfillment history of prior signals. That is, the market observes the realized return and compares it with the expected return to infer disclosure quality. Comparison between realized returns and expected returns based on the disclosed information can be used by the capital market to measure disclosure quality because it reflects alternative information about the firms which either confirms or disconfirms the information voluntarily disclosed by companies. However, even if both the market and the reporting firms form rational expectations about the future, comparison between realized returns and expected returns is only a noisy measure of disclosure quality because returns are a function of many other variables, not all of which are under management control, nor are observable to the capital market. In other words, the securities market can not differentiate disclosure quality with certainty upon observing alternative information because disconfirming information does not necessarily imply dishonest disclosure by the management. Consequently, uncertainty on disclosure quality exists even ex post.

A distinctive feature of the model presented in this study is that both costless signaling and costly signaling mechanisms are necessary to signal efficiently. Specifically, the capital market will react cooperatively with respect to management voluntarily disclosure (costless signaling) as long as the fulfillment history of prior disclosure is satisfactory to the market (i.e., realized return on investment decisions based on management voluntarily disclosed information at t-1 is at the expected level). But the market will revert for a while to non-cooperative behavior when the realized return falls. During the non-cooperative period, the market severely discounts or completely ignores the costless signaling by the firm, which means that the company has to rely exclusively on costly signaling mechanisms such as stock repurchase plans to communicate information to the capital market. Thus, the threat by the capital market to ignore costless signals and therefore force the company to rely on costly signaling mechanisms acts as an incentive for truthful costless signaling by the disclosing company. The disclosing firms and the capital market agree on a trigger-level of return to which the market compares the realized return in deciding its strategy to react to the current disclosure. In addition, such comparison is also observable to the disclosing firms which, in turn, use such information to determine their signaling strategy. Whenever the realized return falls below the trigger-level while they have been acting cooperatively, the capital market will revert to a non-cooperative behavior by ignoring costless signals for some fixed amount of time before resuming cooperative behavior.

Suppose at a given time when the firm is supposed to be cooperative with the capital market (i.e., the firm's management is supposed to disclose truthfully its private information about the firm's future cash flow prospects and the capital market is supposed to believe it), if the firm overstates its future cash flow prospects, its share value at that time will increase. However, by increasing the probability that the return to investments based on this information will fall below the trigger-level, the disclosing firm incurs a risk that the capital market will enter a punishing episode during which the firm will have to expend economic resources to rely on costly signaling to communicate with the capital market. To the extent real economic resources are sacrificed in signaling, the firm's share price will be lowered. In addition, the firm's inability to communicate timely and the resulting adverse-selection by the capital market will further depress the firm's share price. For high disclosure quality to be the disclosing firm's non-cooperatively optimal action, the marginal expected loss in future share price decline from possibly triggering the market punishment must exactly balance the marginal gain from fooling the capital market by overstating its future cash flow prospects.

The following assumptions are made about the economy, the capital market, and the disclosing firm. First, the macro economic condition, the capital market, and the disclosing firm is assumed to be stable (i.e., the environment is stationary and time separable). Second, while the past and present disclosure quality is the disclosing firm's private knowledge (i.e., only the firm's management knows whether it has truthfully disclosed all its private information to the capital market), the expected return and realized return of the investment, as well as the economic environment within which the firm operates is observable by both

parties. Finally, the fulfillment history of prior signals, based on which the capital market assesses the disclosure quality of the firm, is only imperfectly correlated with the firm's disclosure quality. In other words, the return is subject to some factors that cannot be accurately identified in judging the disclosure quality. The first assumption is required in order to assume that both the disclosing firm and the capital market have rational expectations - an assumption that underlies the use of Nash equilibrium. The second assumption is necessary because the realization of a common variable must be observed in order to decide for both the capital market and the disclosing firm whether the game is in a corporative or non-corporative period. Finally, the third assumption rules out the case where only corporative behavior can occur.

Specifically, the reporting firm's return function is i(eit,qit) (i is the firm's return from disclosing a future performance level ei,t and being perceived by the market as of quality qi,t). qi,t is a function of unexpected returns, ri,t, which, in turn, is a function of disclosed information, ei,t, and alternative information, Ii,t, i.e., ri,t =Ii r(ei). The alternative information Ii,t is a random variable distributed i.i.d. with cumulative density function F having a continuous density f. Intuitively, the alternative information comes to the capital market in a random manner which either confirms or disconfirms the voluntarily disclosed information. However, the alternative information cannot reveal disclosure quality with certainty because the market cannot differentiate with certainty the controllable (or normal) events from the uncontrollable (or unpredictable) events. The disclosing firm is assumed to be risk neutral and maximize the following function:

$$Max\ E(\sum_{t=0}^{\infty} \beta^t (e_{i,t},\ q_{i,t}) \qquad (1)$$

where ∃ is the discount rate. The disclosing firm's strategy is:

$$S = (s_0,\ S_1,\ \ldots) \qquad (2)$$

where s_0 is the initial disclosure quality and s_t determines the disclosure quality at t for t>0 as a function of the market perception of the firm's past disclosure quality by $s_t=(q_0,\ldots,q_{t-1})=e_t$. A Nash equilibrium strategy satisfies

$$E_s\left(\sum_{t=0}^{\infty} \beta^t \Pi_i[S_{i,t}(q_1(r_1),\ldots,q_t(r_t)),\ q_{i,t}(r_{i,t})]\right) \le E_{S^*}\left(\sum_{t=0}^{\infty} \beta^t \Pi_i[S^*_{i,t}(q_1(r_1),\ldots,q_t(r_e)),\ q_{i,t}(r_{i,t})]\right) \qquad (3)$$

for all feasible s.

Now consider the disclosure quality in a Nash equilibrium in trigger-level strategies. The disclosing firm's management will initially disclose its private knowledge about the firm's future cash flow prospects to the market, and the market responds as if it believes such information in pricing the disclosing firm's stocks. They will continue to do so until the unexpected return (the deviation of realized return on investment from the expected return based on the firm's voluntarily disclosed information) falls below a trigger-level return, ⊆. Then the market will punish the disclosing firm for a fixed number of periods, T-1, during which the firm's stock price is depressed. The disclosing firm will have to rely on costly signaling mechanisms (such as dividend policy or stock repurchase plans) to communicate to the capital market during this period. At the conclusion of the episode (T periods after r< $\overline{r}$), the disclosing firm and the market will resume cooperative behavior and will continue to do so until the next time r< $\overline{r}$.

Let's define the disclosing firm's strategy by $e=e_H$ if t is a corporative period and $e=e_L$ if t is a non-corporative period (t is a corporative period if (a) t=0, or (b) t-1 was corporative and r< $\overline{r}$, or (c) t-T was normal and r< $\overline{r}$; t is a non-corporative period otherwise). The disclosing firm faces a two-state T-stage dynamic programming problem. Its optimal policy is to report e_z in cooperative periods and e_L in non-cooperative periods. Let B_H and B_L be the disclosing firm's expected return of disclosing e_H and e_L respectively, and let B_z be the disclosing firm's expected return of reporting e_z when it is supposed to report e_H. Since during a cooperative period the firm is able to credibly communicate information about its future cash flows, overstating its future cash flow potential would increase its return in that period. We assume that

$B_L < B_H < B_z$. The expected discounted present value of the disclosing firm under the optimal reporting strategy, $V(e_z)$ satisfies the following condition:

$$V(e_z) = \pi_z + \beta[1-F(\frac{\bar{r}}{r(e_z)})]V(e_z) + F(\frac{\bar{r}}{r(e_z)})\left(\sum_{t=1}^{T-1}\beta^t\pi_L+\beta^T V(e_z)\right) \quad (4)$$

where $F(\bar{r}/r(e_z))$ is the probability that $Ir(e_z)$ is less than $\bar{r}$. The first term on the right hand side is the return from disclosing e_z when it is supposed to disclose e_H. The second term is the discounted present value of the disclosing firm times the probability that e_z does not trigger a reversionary episode. The third term is the discounted present value of the disclosing firm when a reversionary period is triggered by e_z. The Nash equilibrium in equation 3 can now be rewritten as

$$V(e_z) \le V(e_H) \quad (5)$$

F.O.C.

$$V'(e_H) = 0 \quad (6)$$

Specifically,

$$\pi_H\left(1-\beta+(\beta-\beta^t)F\left(\frac{\bar{r}}{r(e_H)}\right)\right) = (\pi_H(e_H)-\pi_L)\left((\beta-\beta^t)f(\frac{\bar{r}}{r(e_H)})\left(\frac{\bar{r}r'(e_H)}{[r(e_H)]^2}\right)\right) \quad (7)$$

Equation 7 states that the marginal return to the disclosing firm from overstating its performance potential in cooperative periods must be offset exactly by the marginal increase in risk of triggering a non-cooperative episode. It is evident that the disclosing firm will never defect from the equilibrium disclosure quality and voluntary disclosure of forward looking information can efficiently disclose management private information about future cash flows. It is also evident that costly signaling by the firms and adverse market reaction are also necessary conditions of the equilibrium requirement. In addition, the frequency of reversion from cooperative states is given by $F(\bar{r}/r(e_h))$. This conclusion explains why both costly signaling and costless signaling mechanisms are used by companies.

The discussion above suggests that managers can credibly communicate forward-looking information through voluntary disclosure of forward looking information even though it is costless. This conclusion is consistent with the empirical evidence documented in previous studies that management voluntary disclosure contains information content (see Han et al. 1989; Han and Wild 1990, among others). This conclusion also provides an explanation to the conflicting empirical findings regarding the informativeness of management voluntary disclosure in that such disclosure is informative during the cooperative period and not informative during the non-cooperative episode. The conclusion of this research has direct policy implications in that it supports FASB and IASB's strategy of encouraging more voluntary disclosures of nonfinancial and forward-looking information to satisfy the information need of financial statement users.

3. Summary and Conclusions

This study addressed the signaling efficiency of FASB and IASB's strategy of encouraging more voluntary disclosure of forward-looking information under the assumption that the quality of the disclosure is never directly observable even ex post. A model of a non-cooperatively supported equilibrium was presented. At equilibrium, the capital market correctly anticipates that companies will disclose their private information honestly through voluntary information disclosure and reacts to the disclosed information as if it truthfully reflects management private information. According to the model, despite the fact that the disclosing firm would never want to defect from the equilibrium, for some distributions of the alternative information, the disclosing firm and the capital market enter a non-cooperative episode, during which the company will have to rely on costly signaling mechanisms to communicate information to the capital market. Contrary to the previous findings, this study supports an efficient signaling equilibrium through management

voluntary disclosure (costless signaling). The finding support FASB and IASB's strategy of encouraging more voluntary disclosures of nonfinancial and forward-looking information to satisfy the information need of financial statement users.

4. MAJOR REFERENCES

[1] DeBondt, W., and R. Thaler, "Does the Stock Market Overreact?" Journal of Finance, July 1985.

[2] DeBondt, W., and R. Thaler, "Further Evidence on Investor Overreaction and Stock Market Seasonality," Journal of Finance, July 1987.

[3] Frost, C.A., "Disclosure Policy Choices of UK Firms Receiving Modified Audit Reports," The Journal of Accounting and Economics (July 1997), v23, n2, pp.163-188.

[4] Gaeremynck, A., "The Limitations of Signaling by the Choice of Accounting Methods," Managerial and Decision Economics (February 1997), v18, n1, pp.33-47.

[5] Gigler, F., "Self-enforcing Voluntary Disclosures," Journal of Accounting Research (Autumn 1994), v32, n2, pp.224-241.

[6] Han, J.C.Y., and J.J. Wild, "Stock Price Behavior Associated with Managers' Earnings and Revenue Forecast," Journal of Accounting Research (Spring 1990).

[7] Han, J.C.Y., and J.J. Wild, and K. Ramech, "Managers' Earnings Forecast and Intra-Industry Information Transfer," Journal of Accounting and Economics (February 1989):3-33.

[8] Herbig, P., and J. Milewicz, "Market Signaling: A Review," Management Decision (January 1996), v34, n1, p35-46.

[9] Jenkins, E.L., "AICPA Reports on Information Needs of Investors and Creditors," Business Credit (July-August 1994), v96, n7, pp.48.

[10] John, K., D.C. Nachman, and C.S. Spatt, "Risky Debt, Investment Incentives, and Reputation in a Sequential Equilibrium," Proceedings of the forty-third annual meeting of the American Finance Association, Dallas, TX, Dec. 1984.