Discretionary reporting, incentives and auditing

Abstract

We propose an agency model that rationalizes the board's support of a discretionary reporting system allowing managerial earning manipulation. Our framework predicts that such support is mainly related to (i) the discretion level that underlying accounting principles give the top management, (ii) the level of fines the board faces, and (iii) the degree of independence/integrity of external auditors.

Key words: earning management, accounting discretion, board incentives, external auditing
JEL: D86, G34, J33, M41, M42

1. Introduction

This article proposes an optimal contracting model between the board of directors and the top management that analyzes the conditions under which a company adopts an either truthful or discretionary reporting system. Whereas under the first system the true level of profits are always disclosed, under the second the management possesses a discretion degree that makes likely an equilibrium with overstatement of profits.

We show that the decision on the reporting system finally implemented mainly depends on (i) the level of the managerial reporting discretion, (ii) the detecting probability of the external auditing technology, and (iii) the level of fines the board must pay if a discretionary system is detected by auditors.

There is a large body of previous literature modeling earning management behavior (Andergassen, 2016 and 2010; Baglioni et al., 2011; Evans and Sridhar, 1996; Lacker and Weinberg, 1989; Goldman and Slezak, 2006; Povel et al., 2007). However, in general these theoretical works differ from our setup in two crucial aspects. First, most of the received literature does not consider the possibility that the board incentivizes the manager to manipulate earnings, as it assumes that truthful reporting is always superior to

falsification.[1] Second, these papers do not analyze the notion of reporting discretion, but the possibility of a direct earnings management action.[2]

This paper proceeds as follows. Section 2 presents an agency model between the board and the management; Section 3 characterizes the implementation of an either truthful or discretionary reporting system; and Section 4 discusses the main implications of the model. All the proofs are collected in the Appendix.

2. The Model

Consider the following agency model between the board of directors (she) and the manager (he) of a firm. First, the board offers the manager a wage contract represented by w, which can be contingent on verifiable outcomes, through a take-it-or-leave-it offer. If the manager accepts such an offer, he makes a decision on implementing a reporting system $a \in \{t, d\}$, which is unverifiable by the board. Whereas t represents implementing a *truthful* reporting system, d represents implementing a *discretionary* reporting system according to the scheme described below. After that decision, the manager privately observes x, the true profits of the company, which is distributed as follows:

$$x = \begin{cases} y & \text{with probability } p \\ 0 & \text{with probability } 1-p \end{cases}$$

where $y > 0$ and $p > 0$. Then, the board and the capital market verifies $\hat{x}$ from financial statements, which are the profits reported by the manager according to the class of reporting system chosen by him previously. Thus, if $a = t$, the manager always reports the true level of profits. By contrast, if $a = d$, the manager reports $\hat{x}$ in accordance with the following scheme:

$$\hat{x} = \begin{cases} y & \text{with probability } p+\delta \\ 0 & \text{with probability } 1-p-\delta \end{cases}.$$

Thus, the discretionary reporting system allows the manager to inflate reported profits with probability $\delta \in (0, 1-p]$, which represents the degree of

[1] An exceptions is Goldman and Slezak (2006), who study stock-based compensation but, contrary to our approach, do not characterize the optimal managerial incentive scheme.

[2] In this vein, Evans and Sridhar (1996) is the closest work to ours. They however model reporting discretion as an exogenous variable over which the manager has no control. Moreover, in their framework auditing plays no role.

reporting discretion. Whereas decision t is not costly, decision d has a cost of $c > 0$ to the manager.

Then, the managerial compensation is paid in accordance with the contract previously signed by both parties. Finally, an external auditor audits financial statements and detects with probability θ the actual reporting system implemented by the manager. If auditor detects that this system is discretionary, the board must pay a fine $\phi\hat{x}$ to a regulatory agency such that $\phi \in (0, 1)$.

In addition, we adopt the following assumptions: (A1) there is universal risk neutrality, (A2) the board has zero reservation payoff and the manager's reservation payoff is given by $\underline{U} > 0$, (A3) the board and the manager have limited liability, i.e., $0 \leq w \leq \hat{x}$, and zero initial wealth, (A4) $\max\left\{\frac{\underline{U}}{p}, \frac{\underline{U}+c}{p+\delta}\right\} < \frac{c}{\delta} < (1 - \theta\phi)y$, and (A5) a full franchise contract is not allowed.

3. The results

Our main result is that the model is sufficiently general to allow for a situation in which it is optimal for the board to encourage the manager to implementing a discretionary accounting system. The next proposition characterizes the condition ensuring this outcome.

Proposition 1. *Consider the threshold*

$$\overline{\phi} \equiv \frac{\delta y - \frac{(p+\delta)c}{\delta} + \underline{U}}{\theta(p+\delta)y}$$

and the condition

$$\phi \geq \overline{\phi}. \tag{1}$$

Then the board-management game has two possible equilibria:
(i) Truthtelling equilibrium. If condition (1) holds, a truthful reporting system is implemented in equilibrium.
(ii) Discretionary equilibrium. If condition (1) does not hold, a discretionary reporting system is implemented in equilibrium.

Thus, there is a minimum level of marginal fine $\overline{\phi}$ deterring the board to encouraging a discretionary system. However, if actual penalties are below this threshold, there will be an equilibrium in which there is a positive probability δ that the manager overreports profits with the tacit support of the

board. A richer intuition behind the result of Proposition 1 can be obtained rearranging the converse of condition (1) as follows

$$\delta y > \left[\frac{(p+\delta)c}{\delta} - \underline{U}\right] + \theta(p+\delta)\phi y \tag{2}$$

This condition establishes that in equilibrium the board compares the incremental expected benefits (left-hand-side) and the incremental expected costs (right-hand-side) from implementing a discretionary instead of a truthful reporting system.[3] Thus, as long as benefits exceed costs, the board will design a managerial incentive scheme encouraging the adoption of a discretionary system.

From Proposition 1, the next result follows directly.

Corollary 1. *A discretionary reporting system is more likely as:*
(i) the board's marginal fine ϕ decreases.
(i) the manager's cost of implementing a discretionary system c decreases.
(iii) the probability of being detected by the auditor θ decreases.
(iv) the degree of reporting discretion δ increases.

Thus, it is more likely that a company adopts a discretionary reporting system if the parameter associated to the expected benefits the board experiences when implementing this class of system (i.e., δ) increases, being true the opposite in the case of the parameters associated to their expected costs (i.e., ϕ, θ and c).[4]

4. Discussion

Our model provides an economic rationale to recent accounting scandals in which it seems that the board encouraged –at least tacitly– the management to manipulate financial statements. In practice, this encouragement has been conducted by setting to managers very stringent –sometimes unrealistic– performance targets together with either tempting rewards via bonuses or stock-based payments or severe threats such as dismissal.[5] In

[3] Notice that the expected cost considers two terms: the incremental expected managerial payment and the expected fine paid by the board.

[4] Although c is the managerial cost of implementing a discretionary system, it is finally paid by the board through the compensation scheme (see proof of Proposition 1).

[5] An example of the role played by tempting managerial incentive schemes in aligning board's and management's objectives at the expense of shareholders is provided by the fraud involving the retail company La Polar, considered as the highest accounting scandal

this vein, whereas we here only model the role played by rewards, the influence of reputational penalties appears as an interesting extension to be explored in a dynamic version of our setup.

Our framework predicts that the implementation of a discretionary reporting system –hence a potential upward earning manipulation– will be more likely as the accounting principles underlying this system provide the top management with more discretion to report actual losses as false profits. As a consequence, if US GAAP or IFRS provide more managerial reporting discretion, a change in the accounting principles in favor of one of these standards may affect the probability of upward earning management episodes.

In general, the previous literature (e.g., Desai et al., 2006) has identified the influence of reputational penalties suffered by managers over earning management episodes, but it has not considered the board's penalties. Our work highlights the role played also by these board's penalties in the implementation of a truthfully reporting system, which thus suggests the importance of including fines and other deterring mechanisms in corporate governance policy discussions.

Finally, notice that in our model the detecting probability of the auditing technology can be interpreted as the level of ability, independence or integrity of the external auditor. As when this probability increases, an equilibrium with a discretionary reporting system is more likely to be implemented, our model then illustrates how worthy are policies aimed to improve the efficiency and supervision of the auditing sector, specifically the current discussion on the optimal rotation of external auditors.

5. Appendix

Proof of Proposition 1. The optimal incentive scheme under asymmetric information takes the following structure:

$$w^*(\hat{x}) = \begin{cases} w_s^* & \text{if } \hat{x} = y \\ w_f^* & \text{if } \hat{x} = 0 \end{cases}.$$

We then characterize this optimal scheme considering two cases, depending on which type of reporting system the board prefers the manager implements.

in the history of the Chilean capital market (Jara et al., 2013). In the case of dismissal as an aligning mechanism between the board and the top management, see the recent accounting scandal of Toshiba (Jennings, 2015).

Case 1. If the board prefers $a = t$ instead of $a = d$, the optimal scheme solves the problem

$$\underset{w_s, w_f}{Max}\ py - pw_s - (1-p)w_f \tag{3}$$

subject to

$$pw_s + (1-p)w_f \geq \underline{U} \tag{4}$$

$$pw_s + (1-p)w_f \geq (p+\delta)w_s + (1-p-\delta)w_f - c \tag{5}$$

$$w_f, w_s \geq 0 \tag{6}$$

$$w_f \leq 0,\ w_s \leq y \tag{7}$$

where (4) and (5) are the participation and the incentive compatibility constraints, respectively, and (6) and (7) represent the limited liability to which the manager and the board are subject, respectively. The combination of the two limited liability constraints implies that $w_f^* = 0$. In addition, since $\delta > 0$, the previous program can be rewritten as

$$\underset{w_s}{Min}\ pw_s \tag{8}$$

subject to

$$\frac{\underline{U}}{p} \leq w_s \leq \frac{c}{\delta}, \tag{9}$$

which is feasible under assumption (A4). This problem has a corner solution so that $w_s^* = \frac{\underline{U}}{p}$.

Case 2. If the board prefers $a = d$ instead of $a = t$, the optimal incentive scheme solves the program

$$\underset{w_s, w_f}{Max}\ (p+\delta)y - (p+\delta)w_s - (1-p-\delta)w_f - \theta(p+\delta)\phi y \tag{10}$$

subject to

$$(p+\delta)w_s + (1-p-\delta)w_f - c \geq \underline{U} \tag{11}$$

$$(p+\delta)w_s + (1-p-\delta)w_f - c \geq pw_s + (1-p)w_f \tag{12}$$

$$w_f, w_s \geq 0 \tag{13}$$

$$w_f \leq 0,\ w_s \leq y, \tag{14}$$

where conditions (11)-(14) represent constraints similar to those identified in Case 1. Again, the combination of limited liability constraints implies that $w_f^* = 0$. Moreover, since $\delta > 0$ and assumption (A4), the above program

becomes equivalent to

$$\begin{aligned} &\underset{w_s}{Min}\ (p+\delta)w_s \\ &\text{subject to} \\ &\frac{c}{\delta} \leq w_s \leq y. \end{aligned} \tag{15}$$

which is feasible under the right-hand-side of assumption (A4). As this problem has a corner solution, the optimal success reward is $w_s^* = \frac{c}{\delta}$.

The board will thus prefer t rather than d as long as the expected payoff of a truthful reporting system exceeds that of a discretionary system. By comparing the two cases analyzed earlier, this condition is described by

$$p(y - w_{s,t}^*) \geq (p+\delta)(y - w_{s,d}^*) - \theta(p+\delta)\phi y, \tag{16}$$

where, abusing of notation, $w_{s,t}^*$ and $w_{s,d}^*$ represent the optimal success reward under cases 1 and 2, respectively. After substituting these terms and some simple algebraic manipulations, we get condition (1), which completes the proof. □

Proof of Corollary 1. All the results are based on condition (1) in Proposition 1. Result (i) holds immediately as ϕ may decrease to a level below $\overline{\phi}$, which is the minimum level of marginal fine deterring a discretionary system. Results (ii) and (iii) follows directly from checking that the partial derivative of $\overline{\phi}$ with respect to c and θ is negative. Result (iv) holds as this derivative with respect to δ takes a positive sign. □

6. References

Andergassen, R., 2010. Product market competition, incentives and fraudulent behavior. *Economic Letters* 107, 201-204.

Andergassen, R., 2016. Managerial compensation, product market competition and fraud. *International Review of Economics and Finance* 45, 1-15.

Baglioni, A., Colombo, L., 2011. The effects of imperfect auditing on managerial compensation. *International Review of Economics and Finance* 20, 542-548.

Desai, H., Hogan, C., Wilkins, M., 2006. The reputational penalty for aggressive accounting: Earnings Restatements and Managerial Turnover. *The Accounting Review* 81 (1), 83–112.

Evans, J., Sridhar, S., 1996. Multiple control systems, accrual accounting, and earnings management. *Journal of Accounting Research* 34 (1), 45-65.

Goldman, E., Slezak, S., 2006. An equilibrium model of incentive contracts in presence of information manipulation. *Journal of Financial Economics* 80 (3), 603-626.

Jara, M., Arias, J., 2013. The effect of mandatory IFRS adoption on accounting conservatism of reported earnings: Evidence from Chilean firms. *Academia. Revista Latinoamericana de Administración* 26 (1), 139-169.

Jennings, M., 2015. Toshiba lessons: On not being so judgmental of the company or Japan. *Corporate Finance Review* 20 (2), 36-39.

Lacker, J., Weinberg, J., 1989. Optimal contracts under costly state falsification. *Journal of Political Economy* 97 (6), 1345-1363.

Povel, P., Singh, R., Winton, A., 2007. Booms, Busts, and Fraud. *The Review of Financial Studies* 20 (4), 1219–1254.