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Career Concerns and Earnings Management [*]

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Abstract

Motivated by the disconnect between survey evidence documenting that executives prioritize implicit contracting (i.e., labor market based career concerns) when making earnings management decisions (Graham et al (2005)) and the extant literature's focus on explicit contracting to explain earnings manipulation, we examine analytically the role of managerial career concerns in earnings management. Building on Holmstrom (1982, 1999), we present a career concerns based earnings management model that incorporates the unique reversing nature of earnings management. A key insight derived from the model is that whether the predictions of a traditional career concerns model prevail, which is to say that managers engage in more income-increasing behavior in their early years, critically depends upon the reversal characteristics of the earnings management vehicle chosen.

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1 Introduction

Top executives of US publicly-traded firms often face intense incentives to manage earnings.[1] Broadly speaking, executives can manage reported earnings in one of two ways. First, managers may use "accruals management", which refers to the discretion available within Generally Accepted Accounting Principles (GAAP) to " 'obscure' or 'mask' true economic performance" (Dechow and Skinner (2000)). Alternatively, executives may use real activities manipulation to alter the timing and amount of expenditures in order to affect the current period's bottom line (e.g., cutting R&D expenditures).[2] Most of the extant academic literature links the incentives for both real and accruals based earnings management, directly or indirectly, to explicit contracts.[3] While explicit contracting-based incentives undoubtedly play an important role, the literature has been almost silent about the effects of implicit contracts and implicit incentives over earnings management[4] even though a recent survey by Graham, Harvey and Rajgopal (2005) documents that more than three quarters of responding executives consider upward mobility in the labor market (i.e., an implicit career incentive) to be more important than short-run current compensation benefits in influencing their earnings management decisions.[5] Our study addresses the apparent disconnect between this survey evidence regarding the importance of implicit contracts and the extant literature's focus on explicit contracting explanations, by presenting a model of earnings management that builds upon the seminal career concerns work of Holmstrom (1982, 1999). Specifically, we incorpo-

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[1]For an excellent and extensive academic summary of the earnings management literature, we refer the reader to Ronen and Yaari (2008). Prominent examples of non-academic sources of attention to the issue of earnings management pressures include the famous speeches by Levitt (1998, 2003).

[2]Unlike accruals earnings management, real activities earnings manipulations have direct cash flow consequences to the firm. Real activities management involves deviations from optimal business practices, such as cutting discretionary expenses (e.g., R&D or advertising) or incurring abnormal production costs, with the primary objective of upwardly manipulating the current period's reported earnings.

[3]Contracting-based motives for earnings management that have been examined include executive current cash bonus maximization (Healy 1985), the avoidance of debt covenant violations (Defond and Jiambalvo 1994), more favorable equity and bond pricing (Teoh, Welch and Wong 1998a and 1998b; Aharony, Wang and Yuan 2010; Higgins 2013), the reduction of debt renegotiation costs (Bohren and Haug 2006), political cost considerations (Key 1997; Patten and Trompeter 2003), and executive equity compensation (Cheng and Warfield 2005).

[4]One exception is the study by Bowen, DuCharme and Shores (1995). These authors consider the impact of various stakeholders' implicit claims, notably excluding managerial career concerns, on accounting *method* choices (i.e., not accruals or real activities management *per se*).

[5]Furthermore, Gillan et al (2009) document that fewer than half of the CEOs of S&P 500 firms have comprehensive *explicit* employment agreements.

rate features of the accrual accounting performance measurement system and the longer-term value-destroying effects of real activities earnings management. While the traditional prediction of career concerns models is that managers will exert themselves more in their early years in order to influence the labor market's assessment of their quality, the major implication of our model is that the extent to which managers engage income-increasing earnings management when they are young relative to old depends critically on the rate at which earnings management reverses.

Our paper contributes to the literature by analytically demonstrating the role of career concerns in determining earnings management levels. Moreover, the model's predictions do not extrapolate from a traditional Holmstrom model, but rather they depend critically upon the reversing nature of alternative earnings management channels.

2 Model

2.1 Model Setup and Assumptions

We develop a model of earnings management based upon managerial career concerns by building on the seminal work of Holmstrom (1982, 1999). As interpreted by Autrey, Dikolli and Newman (2007),"Career concerns are implicit incentives that arise because a manager expects future wages to be affected by the labor market's use of publicly-observable performance measures to assess the manager's ability." It is worth noting that a distinctive characteristic of career concerns models is that managers are incentivized by future, rather than current, compensation.

To illustrate the effects of career concerns, we adopt a simple three-period setting in which the manager is *young*, *established*, and then *retired* in each respective period. In periods 1 and 2, the executive is responsible for managing the firm, while in period 3 the manager may serve as a board member during retirement. Consistent with competitive labor markets being a key premise underlying the general career concerns framework, we also assume that the manager is paid, at the beginning of each period, the expected output that she will deliver in the current period given her history of outputs.

Let η denote the manager's unobservable productivity. For simplicity, assume that η remains constant over time, with the following prior distribution

$$\eta \sim \mathcal{N}(m_0, 1/h_0) \tag{1}$$

where $\mathcal{N}(\cdot, \cdot)$ is the standard normal distribution function, m_0 is the mean for the prior, and h_0 is the precision of the prior (i.e., the inverse of its variance).

Let x_t denote the reported output in period t such that x_1 and x_2 are the earnings reported by the manager when she is *young* and *established* respectively, while x_3 is the value added from the manager's post-retirement board service. During periods $t = 1, 2$ the manager may manipulate accruals or engage in real activities to manage earnings. The period 1 reported earnings are therefore given by

$$x_1 = \eta + \alpha_1 + \epsilon_1, \tag{2}$$

where α_1 is the earnings management through accruals manipulation or real activities in period 1. ϵ_1 is the shock, which is uncorrelated with the manager's productivity η. Shocks in each period are assumed to be normally distributed with precision h_ϵ, such that

$$\epsilon_t \sim \mathcal{N}(0, 1/h_\epsilon). \tag{3}$$

We assume that η, ϵ_1, ϵ_2 and ϵ_3 are jointly independent.

In period 1, when the manager is *young*, she can "impress" the labor market in the short term by boosting earnings via accruals manipulation or real activity choices. However, the amount of accruals manipulation in period 1 must be partially or fully reversed in period 2. This assumption states that earnings cannot be indefinitely managed upward via accruals without triggering a forced earnings restatement or fraud investigation, both of which are assumed to be associated with extreme penalties to the manager. In other words, the manager needs to balance the books via accruals reversals "eventually," although some portion of the reversal may occur in period 3, after the manager has retired. Accruals management decisions are assumed to be value-neutral in that they only involve using the discretion allowed within

GAAP to affect *reported* earnings, they do not impact real activities and thus real value creation.

By contrast, real activity earnings management involves managers taking actions to adjust the timing and/or scale of the firm's underlying business activities away from their optimal level. Alternatively stated, these activities are value-destroying. The real activities earnings management in period 1 is therefore penalized (i.e., it reverses back) at a multiple rate in period 2. This assumption that accruals reversal is at most dollar-for-dollar while the reversal of real activities is more than dollar-for-dollar will be shown to have important implications for the predictions of the model.

In period 2, when the manager is at the *established* stage of her career, the period 1 earnings manipulations (accruals or real activities) begin to reverse and the manager has the option to engage in a second round of earnings manipulations. Let α_2 denote the amount of "new" earnings manipulation in period 2. Reported output in period 2 is given by

$$x_2 = \eta + \alpha_2 - \lambda \alpha_1 + \epsilon_2, \tag{4}$$

where $\lambda \leq 1$ if the channel of earnings management is accruals based, and $\lambda > 1$ if earnings management is accomplished via real activities.

The second period's earnings manipulations also reverse in the subsequent period, after the manager is retired. Because the period 2 manipulations will reverse only when the firm is under new management, however, the retired manager will bear no "direct" consequences from her period 2 earnings manipulation since the market will not incorporate the third period earnings reversal when inferring the manager's productivity (i.e., her type). Therefore, the only mitigating force for the manager not to engage in excess manipulation in period 2 is the convex cost of manipulating earnings.[6] Let $c(\alpha)$ denote the cost associated with earnings manipulation, with the standard properties of $c'(\alpha) > 0$, $c''(\alpha) > 0$, and $c'(0) = 0$.

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[6]Consistent with the notion that there are costs associated with earnings management that are borne by executives, Hazarika et al (2012) provide empirical evidence that CEOs who manage earnings have a greater likelihood of experiencing a forced turnover. See also Liang (2004), who discusses the executive's costs of earnings management at greater length.

Lastly, the retirement period 3 output, x_3, is given by

$$x_3 = \eta + \epsilon_3, \tag{5}$$

Let w_t denote the executive's wage in period t, paid at the beginning of period t. The assumptions of competitive labor markets and no explicit performance-based pay lead to the following:

$$w_1 = \mathbb{E}(x_1|prior), \tag{6}$$

$$w_2(x_1) = \mathbb{E}(x_2|x_1), \tag{7}$$

$$w_3(x_1, x_2) = \mathbb{E}(x_3|x_1, x_2). \tag{8}$$

2.2 The Derivation of Optimal Earnings Management Levels

The executive's objective is to maximize her utility function, which is represented as the discounted present value of her lifetime compensation, net of the cost of earnings management:

$$U = \mathbb{E}\left[w_1 - c(\alpha_1) + \beta(w_2 - c(\alpha_2)) + \beta^2 w_3\right], \tag{9}$$

where $0 < \beta < 1$ is the executive's subjective discount factor.

Substituting (5) into (8) yields:

$$w_3(x_1, x_2) = \mathbb{E}(\eta|x_1, x_2) \tag{10}$$

Let $\overline{\alpha}_1$ and $\overline{\alpha}_2$ denote the labor market's conjectures of α_1 and α_2, respectively. z_1 and z_2 represent the market's conjectures of unmanaged earnings, defined as:

$$z_1 \equiv x_1 - \overline{\alpha}_1 = \eta + \epsilon_1 \tag{11}$$

$$z_2 \equiv x_2 - \overline{\alpha}_2 + \lambda\overline{\alpha}_1 = \eta + \epsilon_2. \tag{12}$$

We apply the standard belief updating formula to obtain the conditional distribution of η

given z_1 and z_2 as follows:[7]

$$\eta|(z_1, z_2) \sim \mathcal{N}\left(m_0 + \frac{h_\epsilon}{h_0 + 2h_\epsilon}(z_1 + z_2 - 2m_0), \frac{1}{h_0 + 2h_\epsilon}\right). \tag{13}$$

Thus, the market begins with prior m_0, and adjusts its beliefs about η based upon the information conveyed by z_1 and z_2. Similar to Holmstrom (1982, 1999) and other career concerns models, both the market and the manager are equally informed about managerial ability in all periods, all participants learn about the manager's type in the same way, and there is no information asymmetry.[8] The manager does try to influence the market's inference about her type, and consequently a moral hazard issue will arise, however in equilibrium no one is fooled. Thus, the market correctly anticipates the level of earnings management in equilibrium, and z_1 and z_2 are known in equilibrium given the observed outputs in periods 1 and 2, x_1 and x_2, respectively.

The wages are given by:

$$w_3(x_1, x_2) = \mathbb{E}(\eta|x_1, x_2) = m_0 + \frac{h_\epsilon}{h_0 + 2h_\epsilon}(x_1 + x_2 - \overline{\alpha}_2 + (\lambda - 1)\overline{\alpha}_1 - 2m_0) \tag{14}$$

$$w_2(x_1) = \mathbb{E}(\eta|x_1) + \alpha_2^* - \lambda\overline{\alpha}_1 = \frac{h_0 m_0 + h_\epsilon(x_1 - \overline{\alpha}_1)}{h_0 + h_\epsilon} + \alpha_2^* - \lambda\overline{\alpha}_1 \tag{15}$$

$$w_1 = \mathbb{E}(x_1|prior) = \mathbb{E}(\eta|prior) + \overline{\alpha}_1 = m_0 + \alpha_1^* \tag{16}$$

where we rely on the standard belief updating formula for the substitution of $\mathbb{E}(\eta|x_1) = m_0 + \frac{h_\epsilon}{h_0 + h_\epsilon}(z_1 - m_0)$ into equation (15). We also rely on the assumption that all players (i.e., the manager and the market) are able to determine the optimal α_2^* by solving the backward induction problem in a perfect Bayesian equilibrium. This implies the following first order conditions for period 2, where the manager chooses α_2 to maximize $\mathbb{E}\{-c(\alpha_2) + \beta w_3\}$ using (14):

$$-c'(\alpha_2) + \beta\frac{h_\epsilon}{h_0 + 2h_\epsilon} = 0, \tag{17}$$

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[7]See, e.g., Greene (1997) Theorem 3.6 on marginal and conditional normal distributions.
[8]In other words, neither our model nor the standard careers concerns setup are adverse selection models.

which in turn implies the closed form solution:

$$c'(\alpha_2^*) = \beta \frac{h_\epsilon}{h_0 + 2h_\epsilon}.$$

(18)

The first order derivative with respect to α_1 is:

$$\frac{\partial U}{\partial \alpha_1} = -c'(\alpha_1) + \beta \frac{h_\epsilon}{h_0 + h_\epsilon} + \beta^2 \frac{h_\epsilon}{h_0 + 2h_\epsilon}(1 - \lambda),$$

(19)

which in turn implies the closed form solution:

$$c'(\alpha_1^*) = \beta \frac{h_\epsilon}{h_0 + h_\epsilon} + \beta^2 \frac{h_\epsilon}{h_0 + 2h_\epsilon}(1 - \lambda)$$

(20)

The first order conditions in (18) and (20) guarantee a maximum value for the objective function given that the second-order conditions are satisfied.

2.3   Interpretation of Optimal Earnings Management Levels

We now discuss and interpret the optimal levels of earnings management in periods one and two, i.e., α_1^* and α_2^* for the cases of accruals and real activities earnings management each in turn.

<u>**Case 1 - Accruals:**</u> $\lambda \leq 1$

The case of $\lambda \leq 1$ implies a partial or full reversal of period 1 earnings management activities in period 2, and is thus applicable to accruals channeled earnings management. If $\lambda \leq 1$, then from (18) and (20), we have: $c'(\alpha_1^*) > c'(\alpha_2^*)$, which immediately translates to $\alpha_1^* > \alpha_2^*$. This scenario therefore results in predictions that are similar to those of the classical Holmstrom career concerns model, with managers exerting more effort when they are young in order to improve the labor market's perceptions of their abilities.

Case 2 - Real Activities: $\lambda > 1$

The numerous cases discussed below, each with $\lambda > 1$ and thus implying more than full reversal of period 1 earnings management activity in period 2, are applicable to value-destroying real activities earnings management.

<u>Sub-case 2.1</u>: $1 < \lambda < 1 + \frac{1}{\beta}\frac{h_\epsilon}{h_0+h_\epsilon}$

Under this scenario, $c'(\alpha_1^*) > c'(\alpha_2^*)$ and thus $\alpha_1^* > \alpha_2^*$ still holds. As a consequence, the model suggests that, provided the real activity earnings management is not *very* value-destroying, younger managers' desire to impress the labor market early on will dominate the (discounted) negative impact of the amplified reversal in the second period. that is, the reversing nature of the first period activities is not sufficient to overturn the standard career concerns result of higher early period effort.

<u>Sub-case 2.2</u>: $1 < \lambda = 1 + \frac{1}{\beta}\frac{h_\epsilon}{h_0+h_\epsilon}$

Under this scenario, $c'(\alpha_1^*) = c'(\alpha_2^*)$, implying $\alpha_1^* = \alpha_2^*$. Thus, when the value destroying effect of a particular real earnings management reaches a specific level, a younger manager exerts neither more nor less earnings management effort in her earlier career relative to her later years. This is the tipping point at which the benefits of managing earnings more when the manager is young are exactly offset by the (discounted) negative impact of reversal when she is old.

<u>Sub-case 2.3</u>: $1 + \frac{1}{\beta}\frac{h_\epsilon}{h_0+h_\epsilon} < \lambda < 1 + \frac{1}{\beta}\frac{h_0+2h_\epsilon}{h_0+h_\epsilon}$

Under this scenario, $0 < c'(\alpha_1^*) < c'(\alpha_2^*)$, leading to $0 < \alpha_1^* < \alpha_2^*$. In other words, when real activity earnings management is *very* value-destroying, the younger manager's desire to impress the labor market yields to her concerns regarding the anticipated negative reversal in the later years of her career. Thus, the results run contrary to the standard career

concerns model; managers will engage in *less* real earnings management activity when they are young.

Sub-case 2.4: $1 + \frac{1}{\beta}\frac{h_0 + 2h_\epsilon}{h_0 + h_\epsilon} \leq \lambda$

In this case, $c'(\alpha_1^*) \leq 0$, leading to the corner solution of $\alpha_1^* = 0$. Thus, in the situation where real activities management is extremely value-destroying, younger managers will refrain from doing any such activity because even low levels of this kind of earnings management will lead to a loss of utility.

2.4 Discussion

The key insight from our model is that the extent to which the predictions of the traditional career concerns model prevail in an earnings management setting (i.e., whether the manager exerts more effort towards earnings management in their early versus their later years) is critically dependent upon the rate at which the period 1 earnings management reverses (i.e., λ). Figure 1 provides a graphical depiction of this relation between the equilibrium levels of earnings management at different career stages (i.e. α_1^* and α_2^*) and the extent to which the early career stage earnings management reverses prior to the manager's retirement (i.e., λ) .

Insert Figure 1 here

As shown, for any λ less than $\lambda^* = 1 + \frac{1}{\beta}\frac{h_\epsilon}{h_0 + h_\epsilon}$, the traditional career concerns effect dominates and managers engage in more income-increasing earnings management when they are young. The opposite prediction holds, however, once λ exceeds the tipping point, λ^*. Beyond this point, the manager's concerns over the negative impact of reversal on her *future wage* dominates her desire to signal her quality to the labor market in the early years such that the younger manager will engage in less of this type of earnings management. Once λ reaches $1 + \frac{1}{\beta}\frac{h_0 + 2h_\epsilon}{h_0 + h_\epsilon}$, such concerns become so prohibitive that the manager does not engage in *any* such real activities earnings management early on.

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We make a few additional observations regarding the model. First, while the optimal amount of earnings management in period 1, α_1^*, is monotonically decreasing with λ, the optimal amount of earnings management in period 2, α_2^*, is a constant that is independent of λ.[9]

Second, we note that the magnitude of the tipping point, $\lambda^* = 1 + \frac{1}{\beta}\frac{h_\epsilon}{h_0+h_\epsilon}$, is negatively related to both β (the discount factor) and the ratio of the precision of prior information to the precision of new information ($\frac{h_0}{h_\epsilon}$). Intuitively, a larger β implies that damage on future wages that arises from reversal are discounted less (i.e., the costs of future reversals are weighted more heavily) and therefore it takes a lower value of λ to flip the equilibrium from a traditional career concerns result with higher earlier career efforts to one where the concerns over the negative impact of reversals dominates such that there is lower early stage earnings management. Furthermore, greater values of h_0 relative to h_ϵ, imply that priors are relatively more informative than new information, and thus new information does not weigh heavily in the market's assessments of the manager's quality. Accordingly, when the market has more (less) precise prior information and less (more) precise new information, there is less (more) propensity for the manager to engage in earnings management activities in order to influence the labor market's perceptions and thus a smaller (bigger) value of λ^* is needed to reach the tipping point.

Lastly, because the manager's wages are assumed to be determined at the *beginning* of each period based upon *expected* output, the model effectively assumes away the role of *explicit* compensation contracts. The latter entail compensation being paid at the *end* of the period based upon *realized* output. Accordingly, all of the model's predictions derive solely from managers' career concerns, which are characterized by *implicit* incentives and *implicit* contracts.

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[9]The monotonically decreasing relation between α_1^* and λ is established by $c'(\alpha_1^*) = \beta\frac{h_\epsilon}{h_0+h_\epsilon}+\beta^2\frac{h_\epsilon}{h_0+2h_\epsilon}(1-\lambda)$ while the independence of α_2^* is implied by $c'(\alpha_2^*) = \beta\frac{h_\epsilon}{h_0+2h_\epsilon}$.

3 Conclusion

We analytically investigate the impact of managers' career concerns on their earnings management decisions. Largely building upon the classic work of Holmstrom (1982, 1999), we incorporate the unique reversing feature of earnings management and generate important predictions. The key message conveyed is that not all earnings managements are created equal. Settings where the magnitude of a particular earnings management reversal is smaller yield outcomes that are similar to traditional career concerns results (i.e., more effort will be expended toward this activity in the early years). By contrast, settings in which a particular real activity earnings management is very value destructive lead to the opposite outcome of lower levels of early career stage earnings management. Our findings are novel to the literature and help to bridge the disconnect between survey evidence that documents that executives prioritize implicit contracting (i.e., labor market based career concerns) when making earnings management decisions (Graham et al (2005)) and the extant literature's focus on explicit contracting as an explanation for earnings manipulation.

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Figure 1: The earnings management levels at equilibrium (α) versus the magnitude of earnings management reversal (λ)

$$\alpha_1^* = \alpha_2^*$$

$$\alpha_1^* > \alpha_2^* \qquad \alpha_1^* < \alpha_2^* \qquad \alpha_1^* = 0$$

α

Traditional career concern effect dominates

The concern over the reversal damages dominates

α_1^*

α_2^*

λ^*

λ

$$1 + \frac{1}{\beta} * \frac{h_\varepsilon}{h_0 + h_\varepsilon} \qquad 1 + \frac{1}{\beta} * \frac{h_0 + 2h_\varepsilon}{h_0 + h_\varepsilon}$$