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The Use of Accruals to Manage Reported Earnings: Theory and Evidence

Timothy W. Koch and Larry D. Wall

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Abstract: This paper develops a model in which firm managers maximize their own compensation by using accruals to manage reported earnings. The results of the model suggest that the form of the managerial compensation function and managerial time preferences may have an important influence on the relationship between accruals and latent earnings. Among the possible relationships suggested by the model are strategies we call Smooth Income, Occasional Big Bath, Live for Today, and Maximize Variability, each of which suggests a different reporting strategy pursued by managers. Most empirical tests of accruals are inconsistent with this and other theoretical models because they include a single earnings variable in a linear regression analysis. Instead, we document the reporting of accruals by two firms, Sunbeam and Citicorp, that is consistent with the "Live for Today" and "Occasional Big Bath" strategies.

JEL classification: G30, J33, M41

Key words: discretionary accruals, earnings management, executive compensation

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Please address questions regarding content to Larry D. Wall, Research Department, Federal Reserve Bank of Atlanta, 104 Marietta Street, N.W., Atlanta, Georgia 30303, 404-521-8937, larry.wall@atl.frb.org, or Timothy W. Koch, The Darla Moore School of Business, University of South Carolina, Columbia.

The Use of Accruals to Manage Reported Earnings:

Theory and Evidence

I. Introduction

After being named CEO of Sunbeam Corporation in June 1996, Al Dunlap brought about dramatic change in the firm's reported financial performance. In 1996, Sunbeam reported a loss in excess of $200 million --- followed the next year by net income of almost $110 million. When he accepted the CEO position, Dunlap negotiated a compensation package that included substantial stock grants, stock options, and a large salary and benefits. With the improved performance, Dunlap's salary and benefits package was increased further in 1998. In 1998 and 1999 Sunbeam reported losses and Dunlap was no longer CEO. According to Laing (1998), much of the variation in Sunbeam's financials reflected a discretionary use of accruals and other accounting ploys to move expenses to 1996 and increase reported net income in 1997.

During the second quarter of 1987, Citicorp announced that it was adding $3 billion to its allowance for loan losses in recognition that it would likely realize significant losses on some of the sovereign debt the bank owned. This quarterly allocation was more than 70 percent greater than the total size of the allowance at the beginning of the year. Zweig (1995) described the provisions reported by Citicorp as "the largest amount that Citicorp could set aside without being seriously wounded." In retrospect, it appears that John Reed, CEO of Citicorp, decided to formally recognize the entire understatement of the allowance in prior periods via a large provision during one brief period.

These dramatic examples of earnings volatility and the general use of accounting accruals to manage earnings have attracted the interest of both policymakers and academics. Securities and Exchange Commission (SEC) Chairman Levitt focused on the use of accounting accruals to mislead

investors in a talk he called "The 'Numbers' Game." In September 1998 Levitt argued that "the motivation to meet Wall Street earnings expectations may be overriding common sense business practices."[1] In the zeal to satisfy consensus earnings estimates and project a smooth earnings path, wishful thinking may be winning the day over faithful representation." His address pointed to five common accounting gimmicks. One of these "gimmicks" was what he called "Miscellaneous 'Cookie Jar Reserves,'" which included the use of "unrealistic assumptions" to estimate accruals such as sales returns, loan losses and warranty costs. He argued that firms using such practices "stash accruals in cookie jars during good times and reach into them when needed in the bad times."

The use of accounting gimmicks raises important questions, such as, What are the incentives to manage earnings? and What is the optimal reporting policy given these incentives? A firm's use of discretionary accruals is under the control of its senior management, especially the firm's CEO. The policy set by any CEO for determining discretionary accruals may be expected to be one which maximizes the CEO's utility. Theoretical analysis from Lambert (1984), Dye (1988) and Fudenberg and Tirole (1995) suggests that the shareholder wealth maximizing compensation contract offered by the firm to the CEO will induce the CEO to smooth earnings. Other theoretical analysis from Healy (1985) and Degeorge, Patel and Zechhauser (1999) suggests that for some compensation functions, the CEO will set a policy of hitting the earnings target via accrual management, if possible.[2] However, if accruals management will be insufficient to raise reported income to the target, the CEO will seek to minimize current reported expenses in order to provide additional discretion to boost future earnings. Thus, the existing theoretical literature finds that firms will attain their earnings target if possible, but it may disagree on what firms will do if they cannot attain the target.

This paper extends the existing literature by providing a more general analysis of how a firm's expense accrual management policies depend upon CEO compensation.[3] CEO compensation is allowed to depend on a fixed bonus for attaining a reported earnings target, a linear variable bonus for

exceeding the target, and a linear variable penalty for reporting income below the target. In addition, CEO time preference is allowed to vary between zero and infinity. The results suggest that simple variations on these four parameters are able to produce widely different earnings management policies. Our model incorporates the Healy and Degeorge, et al. results, which we call the "Occasional Big Bath," as one of four possible outcomes. Another outcome, "Smooth Income," produces a result similar to Lambert (1984), Dye (1988), and Fudenberg and Tirole (1995) in a setting similar to that of Fudenberg and Tirole.[4] A third possible result, which we call "Live for Today," is that managers may always maximize reported earnings by minimizing accruals. The fourth, possibly surprising, outcome is labeled "Maximize Variability" and arises when variable bonuses are not limited as in Healy, with the result that firms with sufficiently high or sufficiently low earnings will move away from their short-term net income target. The outcome that best describes the behavior of any single firm is a function of the manager's compensation function and time preference. Ours is the first research to provide a theoretical framework for the Live for Today and Maximize Variability outcomes, and a general model that characterizes all four outcomes dependent on the choice of key parameters.

We examine the implications of the model for the "Live for Today" and "Occasional Big Bath" strategies by documenting the reporting behavior of Sunbeam and Citicorp around key events in each firm's recent performance. The two case studies demonstrate situations where manager compensation and a firm's ability to meet its earnings target seemingly affect the reporting of accruals in a manner consistent with these outcomes.

The remainder of the paper is organized as follows. The next section develops the model. The third section develops the model's results. The fourth section presents the case studies and the paper concludes with summary remarks.

II. The Model

The model includes three agents, a manager, the firm's board of directors, and an auditor. The manager is risk neutral and discounts future earnings at the rate of r per period. The firm's directors set the manager's compensation contract, which provides the manager's objective function. The auditor specifies minimum and maximum levels of discretionary accruals, DA.

The model has two dates. At the first date, t, the manager determines DA given the predetermined level of the firm's latent earnings, LE_t. The combination of the fixed and discretionary items yields the firm's reported earnings, RE_t:

$$RE_t = LE_t - DA_t. \qquad (1)$$

The board of directors authorizes the manager to receive a salary, normalized to zero, and a bonus payment at time t, BP_t, which is a function of the relationship between the target earnings, TE_t, set by the board of directors and realized earnings. Although target earnings may differ between periods 1 and 2, the other terms of the bonus function are the same in both periods j, j=t, t+1:

$$BP(RE_j) = FB + VB(RE_j - TE_j) \quad \text{if} \quad RE_j \geq TE_j, \text{ and}$$

$$BP(RE_j) = VP(RE_j - TE_j) \quad \text{otherwise,} \qquad (2)$$

with

$$FB,\ VB,\ VP \geq 0.$$

where

FB = fixed-bonus payment,

VB = variable-bonus rate, and

VP = variable-penalty rate.[5]

The reported earnings of the firm at time t+1, RE_{t+1}, depend on a random component and a fixed component. The random component is the latent earnings of the firm from operations, LE_{t+1}, which has a probability density function of $p(LE_{t+1})$. The fixed component is the negative of the firm's

DA at time t added back to net income. The fixed component exists as a simplified way of operationalizing the assumption that current discretionary accruals constrain future discretionary accruals. If DA_t is positive, the subsequent recovery into income recognizes that excess accruals in one period provides a sort of hidden capital which will be taken back into income in a subsequent period. If DA_t is negative, adding DA_t back into income in t+1 recognizes that firms have reduced discretion in future periods.

The value of reported earnings at t+1, RE_{t+1}, including both the random and fixed items, is

$$RE_{t+1} = LE_{t+1} + DA_t \quad (3)$$

Thus, the manager's objective function is:

$$\max_{DA} \mathrm{E}(ME) = BP(RE_t) + \mathrm{E}(BP(RE_{t+1})) \,/(1+r) \quad (4)$$

where

ME = discounted value of managerial earnings, and

E = expectations operator.

The firm's auditors impose limits on management's choice of DA_t to maximize its objective function. These constraints take two forms:

$$MINA_t \leq DA_t \leq MAXA_t$$

where

$MINA_t$ = minimum DA_t permitted by the auditor, and

$MAXA_t$ = maximum DA_t permitted by the auditor.

Although auditors would rarely, if ever, publicly disclose their limits on discretionary accruals, the existence of such limits is consistent with regulatory behavior such as that evidenced by the SEC when it recently forced SunTrust to reduce its reported loan loss provisions.[6]

III. Model results

The model results are trivial in the extreme case where the auditors' constraints eliminate any discretion the manager has over loan loss provisions. In this case

$$DA_t = MINA_t = MAXA,$$

where

$MINA_t$ = minimum DA_t permitted by the auditor, and

$MAXA_t$ = maximum DA_t permitted by the auditor

The remainder of this subsection considers the problem when the manager has some discretion over the choice of DA_t. The first two parts analyze special cases in which the manager must attain the time t reported earnings target, and when the manager cannot attain the time t reported earnings target, respectively. Subsection 2.3 builds on the first two parts to consider the general problem of a manager's choice of DA_t.

A. Firm is constrained to attain the reported earnings target

Assume that latent earnings at time t are sufficiently high so that the firm will attain its time t earnings target for any value of DA_t that lies within the bounds set by the auditors. That is,

$$MAXA_t \leq TLE_t - LE_t$$

with

$$TLE_{t+1} = TE_{t+1} - DA_t$$

Where TLE_{t+1} represents latent earnings required to obtain the target for reported earnings at time $t+1$. In this case the manager's problem is:

$$\begin{aligned} \max E(ME) = \max(&B + VB(RE_t - TE_t)) \\ &+ \frac{1}{1+r}\int_{-\infty}^{TLE} VP(RE_{t+1} - TE_{t+1})\, p(LE_{t+1})\, dLE_{t+1} \\ &+ \frac{1}{1+r}\int_{TLE}^{-\infty} (B + VB(RE_{t+1} - TE_{t+1}))\, p(LE_{t+1})\, dLE_{t+1} \end{aligned} \qquad (5)$$

subject to:

$$MINA_t \le DA_t \le MAXA_t$$

If an interior solution exists, it must satisfy the following condition:

$$\partial E(ME)/\partial DA_t = -VB + (1/(1+r)) \begin{bmatrix} \int_{-\infty}^{TLE_{t+1}} VP(p(LE_{t+1}))dLE_{t+1} - \\ VP(TLE_{t+1} - TE_{t+1})\,p(TLE_{t+1}) + \\ \int_{TLE_{t+1}}^{\infty} VB(p(LE_{t+1}))dLE_{t+1} + \\ (FB + VB(TLE_{t+1} - TE_{t+1}))\,p(TLE_{t+1}) \end{bmatrix} \qquad (6)$$

$$= 0$$

where the value of DA_t must also satisfy the constraints on DA's minimum and maximum values. A value for DA_t may exist that satisfies this condition within the constraints, but such a result is not guaranteed. For example, as the manager's discount rate r approaches infinity, the value of this derivative will be negative for *all* values of DA_t, unless either the time t+1 bonuses, *FB* or *VB*, or the marginal penalty, *VP*, also goes to infinity. Consider the case where a manager plans to retire before time t+1. The manager would choose the lowest (largest negative value) discretionary accrual permitted by the auditor, which may go to infinity. In this case, all managers, even those at firms with unusually "high" earnings, would use their discretion to minimize loan loss provisions and raise net income.

Alternatively, the derivative could take on a positive value for all values of DA_t. Such a case could occur if the variable bonus, *VB*, was zero, but either the fixed bonus, *FB*, or the variable penalty, *VP*, was non-zero.

B. Firm is constrained to miss its reported earnings target

A second case is that in which latent earnings at time *t* are sufficiently low so that the firm will not be able attain its time *t* reported earnings target for any value of DA_t that lies within the bounds set by the auditors and regulators. That is, assume

$$MINA_t \geq TLE_t - LE_t.$$

In this case, the manager would maximize

$$\begin{aligned}\max E(ME) = \max(&VP(RE_t - TE_t) \\ &+ \frac{1}{1+r}\int_{-\infty}^{TLE} VP(RE_{t+1} - TE_{t+1})\, p(LE_{t+1})dLE_{t+1} \\ &+ \frac{1}{1+r}\int_{TLE}^{\infty} (B + VB(RE_{t+1} - TE_{t+1}))\, p(LE_{t+1})dLE_{t+1})\end{aligned} \tag{7}$$

subject to:

$$MINA_t \leq DA_t \leq MAXA_t$$

with

$$TLE_{t+1} = LE_{t+1} - DA_t\ .$$

If an interior solution exists, it must satisfy the condition that

$$\begin{aligned}\partial E(ME)/\partial DA_t = &-VP + (1/(1+r)) \\ &\left[\begin{array}{l}\int_{-\infty}^{TLE_{t+1}} VP(p(LE_{t+1}))dLE_{t+1} - \\ VP(TLE_{t+1} - TE_{t+1})\, p(TLE_{t+1}) + \\ \int_{TLE_{t+1}}^{\infty} VB(p(LE_{t+1}))dLE_{t+1} + \\ (FB + VB(TLE_{t+1} - TE_{t+1}))\, p(TLE_{t+1})\end{array}\right] \\ &= 0\end{aligned} \tag{8}$$

where the value of DA_t at this point must also satisfy the constraints on DA_t's minimum and maximum values. This derivative may be zero for some value of DA_t. However, as is the case where the manager is guaranteed a time t bonus, the derivative may be either strictly positive or strictly negative for all values of DA_t. The case where the derivative is strictly positive would occur when the marginal penalty for missing the time t target is greater than the marginal gain from increasing the probability of attaining the time t+1 target. The case where the derivative is strictly negative occurs when the time t penalty is less than the marginal gain from increasing the probability of attaining the time t+1 target.

Thus, we do not necessarily obtain the result that the firm will always engage in income smoothing. The problem is that the time *t* variable bonus and penalty may be strictly greater than or less than the expected net present value of the time *t*+1 bonus and penalty. Whether time *t* or time *t*+1 considerations dominate depends on four factors. First, the rate of time discounting from time *t* to *t*+1 makes payments made at time *t* more valuable than comparable payments at time *t*+1. This tends to make the derivative negative encouraging the firm to take a smaller loan loss provision at time *t*. Second, an increase in the probability of obtaining the constant bonus at time *t*+1 tends to make the derivative positive. The increased probability of a *t*+1 bonus encourages the firm to take a larger loan loss provision at time *t*. The third factor is the effect of DA_t on the probability that the firm will attain its time *t* target. Finally, the time consideration depends on the relative magnitudes of the marginal variable bonus, *VB*, and marginal variable penalty, *VP*.

C. General results

The previous two sections present special cases that may be combined to analyze the general problem facing the firm. Such a general case would allow for the possibility that the manager's choice of DA_t determines whether the firm will attain its time *t* earnings target. That is,

$$MAXA_t \geq TLE_t - LE_t \text{ ³ } MINA.$$

The solution procedure in this case involves solving equations (5) and (7) subject to appropriate boundary conditions. In particular, the manager would solve for the value of DA_t that maximizes the value of managerial earnings if the firm attains the time t earnings target; that is, solve equation (5) subject to:

$$DA_t \leq TLE_t - LE_t$$

$$DA_t \geq MINA_t$$

and subject to the first-order conditions given in equation (6). The manager would solve for the value of DA_t that maximizes the value of managerial earnings. If the firm does not meet its time *t* earnings target, the manager would solve equation (7) subject to:

$$DA_t < MAXA_t$$

$$DA_t \geq TLE_t - LE_t.$$

where the first-order conditions are now given by equation (8). This would yield two candidates for the value of DA_t that maximizes the discounted value of managerial earnings. The manager would select whichever value is greater.

Either equation (6) or equation (8) or both may have an interior solution. However, if neither equation has an interior solution, there are four possible outcomes as illustrated by Table 1. Each of the four quadrants may be reached with a variety of combinations of parameter values.

1. "Live for Today" due to an infinite discount rate

The manager following the "Live for Today" strategy always minimizes discretionary accruals and, thus, maximizes reported net income. This case is most easily obtained by assuming that the manager has an infinite discount rate and that the marginal variable bonus and penalty coefficients are positive, $VB, VP > 0$. In this case the manager maximizes time *t* net income, and time *t*+1 income does not enter the decision because it is subject to an infinite discount rate. The "Live for Today" solution to the manager's problem may be more easily seen in a graphical presentation. To simplify the presentation, expected discounted managerial earnings are assumed to be a linear function of DA_t in the region between the constraints.

Figure 1, labeled "Live for Today," illustrates the problem facing the manager when the effect of DA_t on time *t* income dominates the change in the discounted value of time *t*+1 fixed and variable bonuses. An example of this may be when the manager is going to retire after time *t* and, hence, places an infinite discount on time *t*+1 earnings. The vertical axis on Figure 1 is the discounted value

of managerial earnings while the horizontal axis is the manager's choice of DA_t. The discontinuity in the line occurs at a value of DA_t^*, at which managers just attain their time *t* earnings target, such that at higher values of DA managers receive no bonuses. The value of DA_t in this case will take the lower bound set by the auditor on DA_t. In this setup, the firm will seek to minimize DA_t and maximize time *t* earnings because the manager's objective is to maximize current period expected earnings.

2. "Smooth Income" due to a non-zero variable penalty

Figure 2 illustrates the effect of DA_t on managerial earnings in the income smoothing strategy. Managers will exactly attain the reported net income target if possible under this strategy. If reported earnings cannot be set exactly equal to the target, the manager will maximize DA_t if latent time *t* earnings are above the target but will minimize DA_t if latent earnings are below the target. This strategy is implicit in many empirical papers that include earnings in a linear regression model. This result may be obtained with: (1) a finite discount rate, (2) a fixed bonus equal to zero, (3) a marginal variable bonus equal to zero, $VB = 0$, and (4) a variable penalty coefficient VP that is positive. In this case, if reported earnings exceed the target, the manager will reduce reported earnings to minimize the expected time *t* penalty. However, if earnings are below the target, the manager will increase reported earnings to reduce the time *t* penalty. An increase in DA_t increases expected discounted managerial compensation even though it increases the expected penalty at time $t+1$ for two reasons: (1) the time $t+1$ penalty is discounted at the manager's rate of time preference, and (2) the manager may exceed the time $t+1$ reported earnings target and owe no penalty.

3. "Occasional Big Bath" due to a positive fixed bonus

The manager following the "Occasional Big Bath" strategy, illustrated in Figure 3, will seek to obtain the time *t* reported earnings target if possible. However, if the constraints prevent the firm from obtaining the target, the manager selects the maximum value of DA_t permitted. This strategy would result if: (1) the discount rate is positive and finite, (2) the same positive fixed-bonus is paid to

the manager for meeting the reported earnings target in both periods, and (3) $VB = VP = 0$. In this case, the manager will seek first to obtain the time t reported earnings target because the discounted value of meeting the time t target exceeds that of meeting the time t+1 target. However, the manager would prefer to attain the time t target at the highest possible value of DA_t in order to maximize the probability of obtaining the time t+1 target. Further, if the manager cannot attain the time t target due to the constraints, he maximizes his probability of attaining the t+1 target by setting the maximum value of DA_t, or by taking a "Big Bath."

4. "Maximize Variability" due to a positive variable bonus

The manager following the "Maximize Variability" strategy illustrated in Figure 4, will generally set values of DA_t that move the firm away from its time t target for reported earnings. This result may be obtained with: (1) a finite discount rate, (2) a fixed bonus equal to zero, (3) a marginal variable bonus equal to zero, $VB = 0$, for all values of reported earnings, and (3) the marginal variable penalty coefficient is positive, $VP > 0$.

If latent earnings are above the reported earnings target, the manager maximizes discounted expected earnings by minimizing $DA_{t,}$ thereby maximizing reported earnings and the time t variable bonus. The manager prefers to increase the time t bonus rather than boost the time t+1 bonus because two "penalties" reduce the benefits of shifting reported net income to time t+1: (1) the time t+1 bonus is risky because the firm may not have sufficiently high latent earnings so that the manager would exceed the time t+1 earnings target, and (2) the time t+1 bonus must be discounted at the manager's rate of time preference.

If RE_t is less than the target, the manager's variable bonus is equal to $VB(DA_t - (TE_t - LE_t))$, so the manager pays a "cost" to maximizing the time t bonus in the form of having part of the discretionary accrual used to increase reported earnings to the target. At DA_t^{**} the "cost" of minimizing DA_t exactly equals the penalty exerted by risk and time discounting in maximizing DA_t.

Finally, if latent earnings are sufficiently below the target (labeled DA_t^{**}), the manager maximizes discounted earnings by maximizing DA_t and, thereby, maximizing the expected time $t+1$ variable bonus.

D. Extension to stock based compensation.

Table 1 lists four possible strategies from the model for managing accruals depending on whether latent earnings are above or below the earnings target. The analysis is Section C shows that any one of these four strategies is possible if managers are compensated according to reported accounting earnings. However, managers' compensation often depends on more than reported earnings, such as compensation that depends on the firm's stock price, which can be substantial. An important issue is whether the results of Section C persist in a model where variable compensation depends on the firm's stock price? In particular, would the results persist in a model where the only variable element of compensation depended solely on the firm's stock price?

Stock compensation of managers may take a variety of forms, such as a stock grant or alternatively options on the stock. The amount of the grant may be fixed or may depend on the firm's performance. The holder of the stock or options may be able to immediately convert the stock or options to cash, the grant of the stock may be deferred, or the options may have a distant exercise date. Alternative forms of the relationship between the stock price and the manager's earnings may themselves generate different strategies for the use of accruals by managers. In order to focus on the simplest case, assume that the only variable element of compensation is the manager's stock holdings, which may be sold by the manager at any time.

The effect of a manager's stock ownership on the use of accruals depends on how a firm's stock price responds to discretionary accruals. One possibility is that markets can separate nondiscretionary accruals from discretionary accruals and discretionary accruals have no impact on firm value. This case would occur if markets were perfectly efficient. If manager's only variable

compensation is stock-based and discretionary accruals have no effect on a firm's stock value, then managers would be indifferent about the level of discretionary accruals.

The extreme opposite assumption is that markets cannot distinguish nondiscretionary from discretionary accruals. In this case lower discretionary expense accruals in the first period would boost the first period's reported income and stock price. However, when the nondiscretionary accrual is reversed in subsequent periods, the firm would report lower earnings and its stock price would be reduced. The implication for the management of accruals is similar to that of assuming a combination of a variable bonus and penalty of equal magnitude in the above model.

An intermediate assumption is that shareholders value the use of discretionary accruals to smooth reported net income. Subramanyam (1996) finds evidence consistent with this hypothesis. If shareholders value discretionary accruals used for income smoothing, market participants must correctly conjecture that most firms engage in income smoothing. Yet, if managers use their control over total accruals solely to smooth income, the interesting question about discretionary accruals becomes 'why do managers use their control to smooth income?'. While a variety of hypotheses may be possible, one hypothesis based on the above results is that managers are penalized for failure to smooth income. If the only form of variable compensation is stock compensation, it would imply that investors "punish" firms that use discretionary accruals to send misleading signals about future earnings.

Thus, the specific results generated from including stock based compensation are likely to depend upon the form of the compensation and the response of market participants to discretionary accruals. Incorporation of these elements may add additional richness to the above model that focuses exclusively on variable compensation tied to reported earnings. However, the model already generates results that span the possible set of possible responses of discretionary accruals conditional on the

relationship of latent net earnings to target earnings. Thus, adding stock-based compensation to the basic model seems unlikely to alter the insights developed from the model.

IV. Use of Accruals in Practice

The general model developed above shows the relationship between a firm's latent earnings and its use of accruals to manage reported earnings. However, the model also indicates that ambiguity regarding what amount of accruals will be reported can be resolved by examining the incentives of the senior manager. Specifically, managers will follow the incentives contained in both their formal compensation contract and their informal contract with the board of directors. Thus, applying a one-size-fits-all type model to accruals management may understate the extent of such management because not all managers have the same incentives. A better way to examine accruals management is to focus on situations where the incentives provided to each firm's senior management are well understood. The cleanest way to capture both the formal contract and informal relationship of the manager to the board is to focus on situations where all managers are in similar positions and on case studies where the manager's incentives can be examined in detail.

One type of research that focuses on managers facing generally similar incentives looks at the decisions of CEOs in their final years in office. Dechow and Sloan (1991) refer to the mismatch in CEO's limited tenure and the long life as the 'horizon problem.' They specifically investigate the relationship between research and development (R&D) expenditures during a CEO's final years in office and the form of CEO compensation. The choice of R&D expenditures is similar to the choice of discretionary accruals in terms of the potential impact on reported earnings. GAAP stipulates that although the benefits of R&D may accrue far in the future, the expenditures should be expensed when they are incurred. CEOs whose compensation is based on near-term earnings performance may successfully increase their near-term compensation by cutting back on R&D expenditures. Implicitly, this strategy suggests that firms may reject positive net present value investments such that their

reported earnings are reduced in the long-run. A substantive difference with accruals management, however, is that R&D expenditures are real as they impact cash inflows and outflows, while accruals are non-cash.

Dechow and Sloan (1991) focus on the behavior of firms where the CEOs expect to leave in the near-term and thus have a short-run focus on maximizing earnings. This perspective is similar to the strategy described previously as 'Live for Today.' CEOs may increase compensation in the short-run by reducing R&D expenditures and increasing reported earnings as well as cash flow.[7] The authors empirically examine hypotheses related to these arguments and conclude that, on average, the growth in R&D expenditures declines for two years prior to a CEO's departure and increases during the first year of a new CEO's term in office.[8]

The remainder of this section discusses two case studies in which we incorporate information about the incentives facing the existing CEO to manage accruals and the CEOs' responses to those incentives.

A. Sunbeam Corporation and "Live for Today"

After a tumultuous couple of years, in 1999 the Board of Directors of Sunbeam Corporation replaced Al Dunlap as CEO due to general mismanagement.[9] Previously, Dunlap had earned the nickname "Chainsaw Al" for his skill as a workout specialist. In 1994, he was named CEO of Scott Paper, which was experiencing financial and strategic problems. Dunlap immediately downsized the firm's workforce, consolidated operations, and in 1995 sold the remaining entity to Kimberly-Clark for a substantially higher price than the market value of Scott Paper at the time he took control. Stockholders of Scott Paper who held on to their shares, new investors, and Dunlap himself were handsomely rewarded for the quick turnaround and sale. Sunbeam's Board of Directors named Dunlap CEO in July 1996 under similar circumstances. However, this time the outcome was quite different.

Sunbeam Corporation's financial results in 1996 and 1997 are consistent with managers who follow the "Live for Today" strategy introduced earlier. Specifically, the firm reported 1997 net income of $109.4 million that, in retrospect, appears to be highly inflated, after reporting a loss in excess of $200 million in 1996.[10] In terms of accruals, a manager following the "Live for Today" strategy minimizes discretionary accruals in order to maximize reported earnings. This outcome follows from the assumption that the manager's marginal bonus is positive, the marginal penalty is negative, and the discount rate for next period's earnings is infinite. Under an employment agreement filed with the SEC, Sunbeam granted Dunlap one million shares of restricted stock and options on 2.5 million shares of Sunbeam stock at an exercise price of $12.25. Both the stock grant and options fully vested in the event of a change in control. In addition, Dunlap bought $3 million of Sunbeam stock with his own money. Dunlap stood to gain substantially if Sunbeam's stock price increased with each $1 of share value over the exercise price worth at least $3.5 million if Dunlap could sell the firm. Dunlap's eventual dismissal as CEO of Sunbeam indicates, at least ex post, that Dunlap faced a substantial penalty for poor performance. Having succeeded at Scott Paper along with the positive press and run-up in Sunbeam's stock price after the announcement of his appointment at CEO, Dunlap likely gave any potential negative penalty a very low probability. Thus, the conditions for a manager to follow "Live for Today" seem to have applied to Dunlap in 1997. According to Laing (1998), the reported earnings in 1996 and 1997 reflect the outcome suggested by "Live for Today."

Given Dunlap's reputation as a turnaround specialist, investors immediately bid Sunbeam's stock price higher after the announcement that Dunlap would be CEO. In June 1996 Sunbeam's stock traded at $12.50 a share on the day that Dunlap took control only to increase to $53 a share in March 1998 just prior to Sunbeam reporting a large quarterly loss.[11] In 1996, market participants likely believed that Dunlap would try to quickly restructure Sunbeam and improve its operating performance in order to sell the firm, similar to what occurred with Scott Paper. In fact, it was widely known that

management tried to find a buyer for Sunbeam during the last part of 1997 without success, perhaps because Sunbeam's stock price was perceived to be too high.[12] Thus, management may have had a short-term profit maximization objective.[13] Sunbeam needed to report profits quickly regardless of what would come later in order to effect a sale. In addition to the stock grant and options described previously, early in 1998 Dunlap further negotiated an increase in salary from $1 million to $2 million and a corresponding increase in benefits. This is consistent with a variable bonus that is positively related to reported earnings. Given that Sunbeam reported a large loss in both 1998 and 1999 and Dunlap lost his job, the variable penalty was negative ex post.[14]

Laing (1998) identifies a series of discretionary accounting representations that had the effect of raising reported earnings in 1997. First, even though Sunbeam's sales increased by 18.7% in 1997, the firm's allowance for doubtful accounts and cash discounts dropped from $23.4 million to $8.4 million from year-end 1996 to year-end 1997. In contrast, the allowance increased in the preceding years. Second, Sunbeam's prepaid expenses fell from $40.4 million to $17.2 million from 1996 to 1997, which is consistent with Sunbeam prepaying a portion of normal operating expenses for 1997, presumably because 1996 was already a loss year given that Sunbeam was taking a $337 million restructuring charge. Third, Sunbeam normally set aside reserves for product warranties and other items. Such reserves were reduced in 1997 unlike prior periods. Fourth, management lowered the reported value of fixed assets and trademarks by $92 million in 1996 as part of the restructuring charge, yet fixed assets grew by $21 million in 1997. Laing (1998) argued that Sunbeam was effectively capitalizing some marketing and advertising expenses that would normally be deducted as operating expenses. Finally, management appears to have inflated reported 1997 earnings by accruing revenues for questionable sales. Specifically, Sunbeam reported sales under "early buy" programs that allowed customers to delay payment for as long as six months, and further offered terms on sales that allowed customers to return items at no cost.

The net result of these accounting representations was to generate a reported net income of $109.4 million for Sunbeam in 1997. In comparison, Laing (1998) estimated that questionable accounting treatment artificially increased Sunbeam's earnings by $120 million in 1997 such that actual operating earnings were negative.

B. Citicorp and the "Occasional Big Bath"

On February 20, 1987, Brazil announced a debt moratorium in which the government suspended interest payments owed to foreign banks. This announcement was widely seen as a signal that foreign banks would suffer losses from their holdings of loans to Brazil and potentially to other less developed countries. At the time of the announcement, Citicorp, one of the largest U.S. bank holding companies, held $4.6 billion in sovereign debt to Brazil, which represented an exposure equal to 36 percent of its primary capital. Of this outstanding debt, a small amount was identified as nonperforming. The bank's aggregate loan exposure to less developed countries was far higher.

On May 19, 1987, Citicorp announced that it was adding $3 billion to its allowance for loan losses primarily related to the sovereign debt it held. The bank's allowance at the end of 1986 was slightly below $1.7 billion, such that $3 billion represented an increase in the reserve of more than 75 percent. From February 20, 1987 through May 19, 1987, Citicorp's common stock price fell from $58.25 to $50.63, or 13 percent. Interestingly, the day after Citicorp's announcement of the increased allowance, the bank's stock price increased by $2.50 per share, or almost 5 percent.[15]

A key issue is whether management made an unbiased forecast of its actual losses ex ante. While we cannot assess this directly, Citicorp's decision to increase its allowance for loan losses by $3 billion is consistent with managers who follow the "Occasional Big Bath" strategy introduced earlier. Specifically, analysts, investors, and other market participants knew of Citicorp's sovereign debt problem and the difficulty it provided management in reporting credible earnings. In fact, well before Brazil's decision to impose a debt service moratorium, market participants were familiar with the

general international debt crisis and the potential impact on lenders. At one point, Paul Volcker, Chairman of the Federal Reserve System, strong-armed many of the largest U.S. banks into refinancing debts of Latin American countries even though many were initially unwilling.[16] By not formally recognizing the potential loan problems and setting aside specific reserves, Citicorp's prior earnings were clearly too high, but the magnitude was not known, especially by outsiders.

A manager following the "Occasional Big Bath" strategy generally attempts to achieve the periodic earnings target, if possible. In Citicorp's case, no published earnings target was credible to outsiders because management provided no information regarding its potential problem assets and the true value of its debt. Thus, Citicorp could not attain its reported earnings target for the current period without providing an estimate of problem loans and loan losses. Once Reed decided to increase provisions by a reasonable amount, there was little chance that Citicorp would report positive earnings. Because the 1987 earnings target was likely unattainable, Citicorp's management could maximize the probability of attaining subsequent periods' earnings targets by setting the maximum value for loan loss provisions in mid-1987.[17] This outcome may have been driven by Citicorp's inability to meet its earnings target.

The bad loans to less developed countries came under the management of Walter Wriston and not John Reed at Citicorp. Thus, Reed was likely not concerned that his job or compensation would be affected by the reported provisions. Still, the outcome follows from assuming that the discount rate applied to future earnings be positive, the same fixed bonus be paid in the current and subsequent periods, and that any change in reported earnings will not trigger a variable bonus or penalty. These assumptions seem plausible given Citicorp's dominant leadership role among large U.S. banking organizations and the fact that most other banks with substantive exposure followed Citicorp's lead in setting aside reserves.[18]

Using annual data from the FRY-9 reporting form filed with the Federal Reserve, Figure 5 shows that Citicorp's reported provisions for loan losses relative to the previous year's net loans were substantially higher in 1987 than in any other year. The finding is consistent with Citicorp's 1987 provision for loan losses representing a "Big Bath." Note also that in 1988 the ratio took its lowest value over the entire time interval. This is consistent with managers choosing a sufficiently large value of discretionary accruals in 1987 to where the bank would be better situated to meet management's earnings target in 1988. Finally, the ratio generally rises from 1989 through 1992 when it again reaches a relative peak. In the 1988 annual report, Reed reported that "There were a number of unusual items in 1988 that should be noted. We recorded $333 million of interest from Brazil that more properly belongs in 1987." Ex ante, management thus appears to have overstated its loss in 1987.

The pattern in provisions suggests that Citicorp's large provision in 1987 was not a regular event, but is consistent with the view that it was an occasional outcome.[19] This view is reinforced by anecdotal evidence. Horowitz (1987) quoted Reed as saying "The move (concerning provisions) also takes away the need for significant future reserve building … . The chairman of the nation's largest bank sounded almost gee-whiz about the write-offs the bank might take and the implications of the reserve buildup. He labeled as 'flaky' and 'very judgmental' his estimate that over the next two to three years the bank may draw about $1 billion from the … reserve." Zweig (1995) also suggests that the 1987 reserves were on the high side to boost future earnings, noting "But some harbored serious doubts whether 1988 earnings were for real. The 1988 provision for loan losses was $1.33 billion, $500 million less than the 1986 level, was artificially low, according to one knowledgeable Citibank source."

C. Implications

The fundamental implication of these examples is that managers can potentially select discretionary accruals to manage the firm's reported earnings and thereby maximize their own compensation. In the case of Sunbeam, management attempted to minimize current accruals in order

to maximize current earnings. Citicorp's occasional large provision for loan losses was potentially driven by management's inability to meet a current earnings target and subsequent intent to take the largest provision possible to better position the bank to meet its next year's earnings target. Not all managers and firms have an incentive to smooth earnings.

V. Conclusion

Several papers using different models have produced two general implications for managing earnings; firms should always smooth earnings or they should sooth except when the target is unattainable --- in which case they should take a big bath. This paper shows that both results may be obtained in the same model by changing a few parameter values. Moreover, we show that two other policies, Live for Today and Maximize Variability not previously found in the theoretical literature, may also be generated within the same model. Our results may be of assistance in developing models that link optimal compensation policy to earnings management by illustrating how the different elements in compensation systems influence earnings management. Our results may also assist empirical work on earnings management by highlighting the need to understand management compensation.

We also examine circumstances surrounding the use of accruals at Sunbeam in 1996-1997 and at Citicorp around its 1987 dramatic one-time increase in provisions for loan losses. We find that these firms' management of earnings was consistent with our theory, in particular, that their respective management compensation policies for the CEO encouraged earnings management that is consistent with the Live for Today and Occasional Big Bath strategies, respectively.

Endnotes

1. The remarks by Chairman Levitt were to the NYU Center for Law and Business on September 28, 1998. See Loomis (1999) for a discussion of the SEC's overall efforts to address corporate earnings management.

2. A potential weakness of the studies of Healy (1985) and Degeorge, Patel and Zechhauser (1999) is that they may use suboptimal compensation functions because the parameters of their compensation function are not determined in an explicit model of shareholder wealth maximization. However, the type of compensation functions analyzed by Healy and Degeorge, et al. are of more than theoretical interest as these types of functions are observed in practice. The models by Lambert (1984) and Fudenberg and Tirole (1995) are no more general because the form of their compensation function is determined outside the model with at most a few parameters determined endogenously. Dye (1988) does allow for a general compensation function, but the more realistic version of his model may result in increased income variability. Dye defines income smoothing as the firm managing earnings to boost income in one period and reduce it in the following period, or vice versa. In the first version of the model, the manager cannot shift consumption from one period to another and income smoothing follows directly (for his definition of smoothing but likely to hold under most definitions.) In the second model, Dye demonstrates that the manager would shift income across periods if the manager could borrow or save provided that the cost of borowing and return to savings are not equal to the expected return from shifting income from one period to the next. The second version leaves open the possibility that the manager might always boost first period income or might always defer first period income. This result qualifies as income smoothing under Dye's definition, but would fail under many other reasonable definitions.

3. The model may also be applied to revenue increasing accruals by interpreting these accruals as negative expenses.
4. The setting is similar in that both frameworks depend on the manager being subject to a penalty for underperforming.
5. The inclusion of a variable penalty for missing the earnings target seems inconsistent with the manager earning a fixed salary. One way of interpreting this penalty would be that the probability that the manager would be fired is an increasing function of the amount by which the firm misses its earnings target.
6. See Brooks (1998) who documents circumstances surrounding the SEC's requirement that SunTrust restate its loan loss provisions to lower its loss allowance.
7. Dechow and Sloan (1991), also argue that the reduction in R&D expenditures is less likely if the CEOs' compensation and/or wealth is also tied to firm value. Thus, if CEOs have contracts that provide stock-based compensation, it is less likely that they will lower firm R&D expenditures. Their empirical results are consistent with this hypothesis. R&D expenditures are generally reduced less during a CEO's final years if the CEO owns stock and stock options in the firm. These results would not necessarily carry over to accruals management because there is not necessarily a direct relationship between the strategic change in discretionary accruals and firm value. Accruals management does not change the firm's investment policy, unlike R&D expenditures. Thus, stock and/or stock option ownership may not mitigate the effects of discretionary accruals.
8. Dechow and Sloan (1991) also investigate whether the same relationships hold true for accounting accruals, but find no statistical relationship. One interpretation of this result is that CEOs do not manage accruals any differently as they approach departure. However, the empirical analysis only looks at the growth rate of total accruals and lacks any control

for the non-discretionary elements of accruals. Thus, their inability to find accruals management may simply reflect a lack of power in their tests. Dechow and Sloan (1991) also rovide a case study of CEO turnover at Merck & Co. Their evidence on overall accruals is mixed, possibly reflecting a lack of controls for non-discretionary accruals. However, the one accrual that they specifically mention, pension liabilities, was changed by management in a way that boosted reported net income in the year of CEO retirement.

9. Business Week (1998) reported that Dunlap demanded the support of the Board of Directors of Sunbeam and got angry when he failed to get it stating, "Either we get the support we should have or Russ (chief financial officer) and I are prepared to go….Just pay us." Dunlap has filed a lawsuit against Sunbeam requesting payment for lost services.
10. Jonathan Laing (1998) identifies numerous strategies that Sunbeam presumably followed to shift expenses to 1996 and shift income to 1997. See "Dangerous Games," Barron's, June 8, 1998.
11. In October 2000, Sunbeam's stock was trading around $1 per share.
12. In October 1987, Dunlap hired Morgan Stanley Dean Witter to help Sunbeam find a buyer according to Business Week (1998).
13. This analysis of Sunbeam concentrates on its management of accruals because it is the focus of the research and is not intended to imply that the firm's subsequent difficulties were due to accruals management. Sunbeam's fate was almost entirely determined by the operating decisions made by management during the period before and after Dunlap's tenure as CEO.
14. Although Dunlap stood to make substantial gains if he had turned the firm around and sold it, the losses he incurred on his personal investment in Sunbeam stock appear to have exceeded his earnings while he was CEO of Sunbeam.

15. Using standard event study methodology, Musumeci and Sinkey (1990) document conditions surrounding Citicorp's announcement and the reaction of common stock prices of the 25 largest U.S. bank holding companies around the time of the announcement.
16. Zweig (1995) claims that John Reed, CEO of Citicorp, was angry at Volcker for forcing Citicorp to participate in the refinancing.
17. Musemici and Sinkey (1990) argue that Citicorp's management was signalling both future loan charge-offs and a more aggressive posture in negotiating terms for paying off debt to less developed countries. These objectives may also be consistent with maximizing managers' compensation.
18. Musemici and Sinkey (1990) demonstrate that most of the top 25 banking organizations increased their loan loss allowances immediately following Citicorp's decision. In general, it would have been difficult not to set aside additional reserves unless the bank had already written down the loans to a value near what Citicorp and other banks deemed appropriate because regulators and accountants would have required it.
19. Similar results for 1987, 1988 and the 1990-1992 period are obtained for the ratios of loan loss provisions to the previous year's allowance for loan losses, and the ratio of provisions to the current year's net charge-offs. Figures demonstrating these relationships are availabe upon request.

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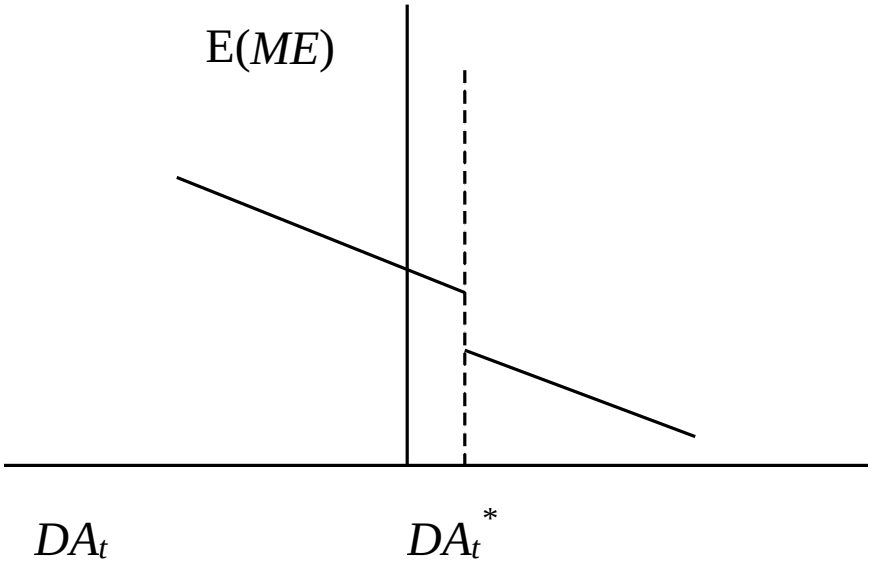
Figure 1

"Live for Today"



Strategy: A manager always minimizes discretionary accruals.

where

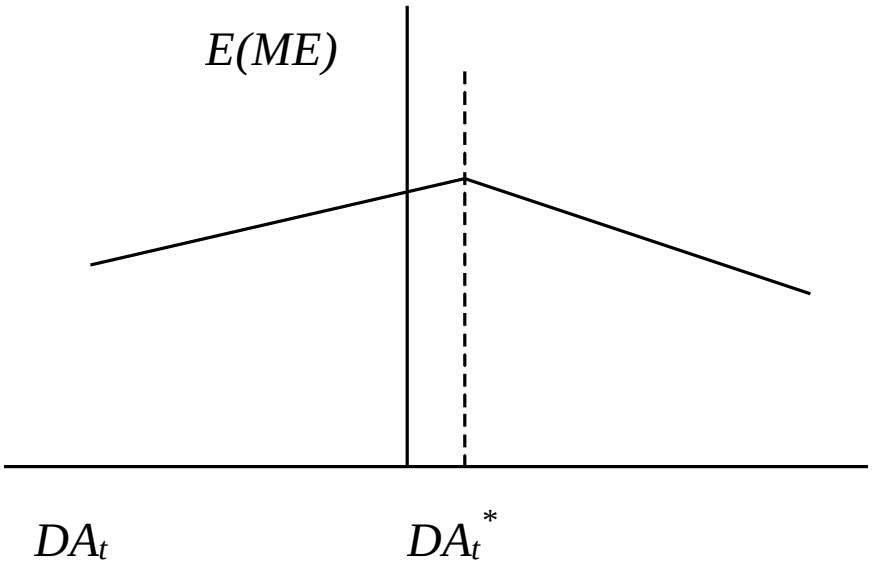
ME = discounted value of managerial earnings, and

DA_t. = discretionary loan loss provisions at time t,

DA_t^* = the level of discretionary loan loss provisions such that managers exactly meet their time t earnings target.

Figure 2

"Smooth Income"



Strategy: If possible, a manager will exactly attain the net income target.

- If latent earnings are above the target, a manager will maximize DA.
- If latent earnings are below the target, a manager will minimize DA.

where

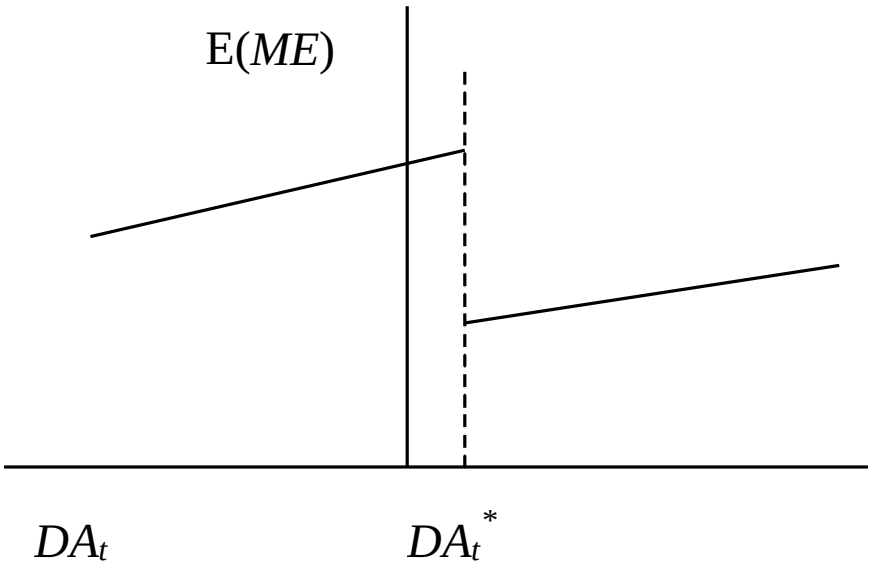
ME = discounted value of managerial earnings, and

DA_t. = discretionary loan loss provisions at time t,

DA_t^* = the level of discretionary loan loss provisions such that managers exactly meet their time t earnings target.

Figure 3

"Occasional Big Bath"



Strategy: If possible, a manager will always attain the net income target.

If it is not possible to attain the target, a manager will always report the maximum DA permitted.

where

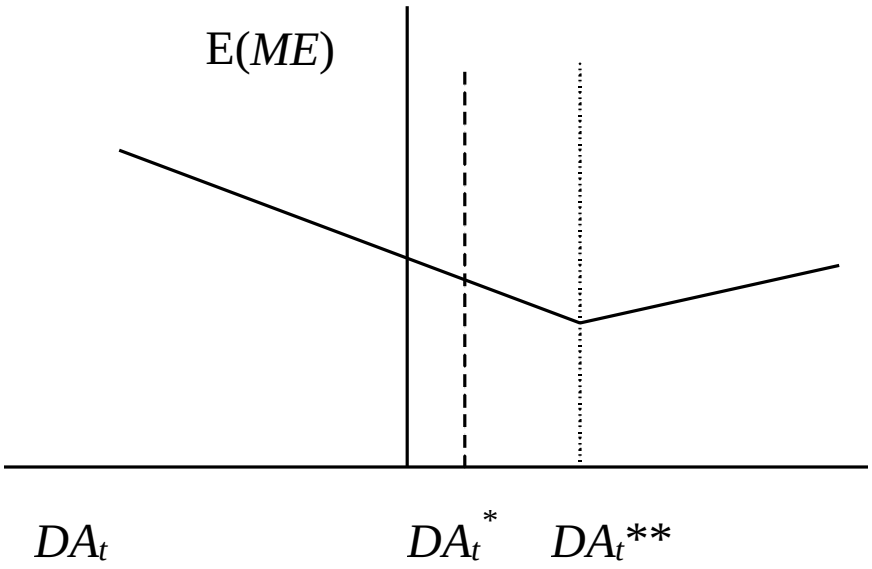
ME = discounted value of managerial earnings, and

DA_t. = discretionary loan loss provisions at time t,

DA_t^* = the level of discretionary loan loss provisions such that managers exactly meet their time t reported earnings target.

Figure 4

"Maximize Variability"



Strategy: A manager will select DA in order to move the firm farther away from it's net income target.

where

ME = discounted value of managerial earnings, and

DA_t. = discretionary loan loss provisions at time t,

DA_t^* = the level of discretionary loan loss provisions such that managers exactly meet their time t earnings target.

Table 1
Possible Outcomes in the General Case

		Latent Earnings Above Target	
		Minimize Discretionary Accruals	**Maximize Discretionary Accruals**
Latent Earnings Below Target	**Minimize Discretionary Accruals**	**"Live for Today"**	**"Smooth Income"**
	Maximize Discretionary Accruals	**"Maximize Variability"**	**"Occasional Big Bath"**