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Paying People to Lie: The Truth About the Budgeting Process

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Abstract

This paper analyzes the counterproductive effects associated with using budgets or targets in an organization's performance measurement and compensation systems. Paying people on the basis of how their performance relates to a budget or target causes people to game the system and in doing so to destroy value in two main ways: 1. both superiors and subordinates lie in the formulation of budgets and therefore gut the budgeting process of the critical unbiased information that is required to coordinate the activities of disparate parts of an organization, and 2. they game the realization of the budgets or targets and in doing so destroy value for their organizations. Although most managers and analysts understand that budget gaming is widespread, few understand the huge costs it imposes on organizations and how to lower them.

My purpose in this paper is to explain exactly how this happens and how managers and firms can stop this counterproductive cycle. The key lies not in destroying the budgeting systems, but in changing the way organizations pay people. In particular to stop this highly counterproductive behavior we must stop using budgets or targets in the compensation formulas and promotion systems for employees and managers. This means taking all kinks, discontinuities and non-linearities out of the pay-for-performance profile of each employee and manager. Such purely linear compensation formulas provide no incentives to lie, or to withhold and distort information, or to game the system.

While the evidence on the costs of these systems is not extensive, I believe that solving the problems could easily result in large productivity and value increases—sometimes as much as 50 to 100% improvements in productivity. I believe the less intensive reliance on such budget/target systems is an important cause of the increased productivity of entrepreneurial and LBO firms. Moreover, eliminating budget/target-induced gaming from the management system will eliminate one of the major forces leading to the general loss of integrity in organizations. People are taught to lie in these pervasive budgeting systems because if they tell the truth they often get punished and if they lie they get rewarded. Once taught to lie in this system people generally cannot help but extend that behavior to all sorts of other relationships in the organization.

Keywords: Budgeting, Budgets, Compensation, Performance Measurement, Gaming, Lying, Loss of Integrity, Truthfulness, Sandbagging, Motivation, Productivity, Incentives, Control Systems, Accounting Irregularities, Fraud, Goldbricking, Channel Stuffing, Cooking the Books, Managing Earnings, Managing the Numbers

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Budgeting systems are ubiquitous. Long considered a necessary tool in managing a company, the budgeting process frequently consumes six months of management time in negotiations, planning, and target-setting. Such systems are intended to coordinate the activities of the units and motivate managers. They are used in simple organizations and in vast and complex enterprises.

And yet, the reality is that almost every company in the world uses a budget or target-setting system that rewards people for ignoring or destroying valuable information and punishes them for taking actions that benefit the company. These budget-based systems reward people for lying, and for lying about their lying, and punish them for telling the truth. These systems reward gaming while obfuscating the facts they are meant to summon: Facts that are necessary to help managers make the necessary trade-offs in allocating resources between projects, departments and initiatives.

Most line managers realize that these processes are a joke. They go to a lot of meetings, scope the extent of their problems, submit budgets they know will be

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unacceptable, then scramble to redo budgets to reflect the new level of earnings stipulated by senior management who are, in turn, driven by the earnings game they are involved in with Wall Street analysts. Senior executives, knowing that they do not have enough specific information about their markets and their customers to actually argue on the merits of the case, instead use their position and negotiating power to simply insist on higher and higher targets in an effort to meet the analysts' expectations. (See sidebar, "Let The Games Begin," for more on how this process plays out in many companies.)

Let the Games Begin: One Company's Budget Process

Gaming, wasted time, and poor decisions are rampant in most budget processes at most companies. Here is just one example.

Mid-May: The annual budgeting process begins. The Chief Financial Officer and the Chief Strategy Officer establish the overall after-tax net income target by working backwards from wall street analysts' estimates and adjusting for known (but not disclosed) circumstances which would impact the coming year. This target is then reviewed with the CEO who informs the SBUs of the overall target.

Early June: The head of each SBU prepares a preliminary forecast for the coming year with input from their business unit heads. The SBU challenge is to present a forecast that is not so ridiculous as to infuriate the CEO, but nevertheless has a high probability of being achieved.

Late June: Not surprisingly, the sum of the SBU forecasts don't come close to the overall target and the SBUs spend the next month defending their forecasts and explaining why it is impossible to produce a higher net income.

Early July: Patience wears thin and the CEO and SBU presidents begin to negotiate the allocation of the gap between the forecast and the overall target. This year, like every year, the SBU president who is the better negotiator is awarded a much smaller piece of the gap than the president who is not as good a negotiator.

Late July: Once the SBU targets have been agreed upon, a similar process to set targets for the business units within the SBUs begins. After another month of presentations defending initial forecasts, the President mandates the allocation of the overall SBU target. The business units then spend the summer trying to figure out how to meet their targets. Much time is spent arguing over internal allocations since in many business units as much as 60 percent of expenses come from other departments. Again, this year there is more to be gained from beating down a colleague or from changing the method of allocation than from focusing on how to grow revenues or reduce those expenses under your control--a fact that is not lost on the participants, acrimony and politicking flourishes.

Early September: In this environment it is, as usual, virtually impossible to agree on the funding of cross-organizational projects. One result is the creation of 14 different e-mail systems, none of which are

compatible. The eventual cost to connect these systems so that the company can co-ordinate its services is a substantial portion of the \$100 million project to connect the company's business units.

In September: The final negotiations begin. The SBUs present their business plan for the coming year to the senior management group (the CEO, CFO, CIO, CSO, HR, Legal, Risk). Each major business within the SBU presents the highlights of their business plan, (focusing on the reasons that they might not be able to meet the plan). The more convincing a business unit is, the more likely its plan would be adjusted downwards.

From a business unit perspective the strongest lever in the negotiations is the deferral or cancellation of so called strategic projects for which expenses are heavily loaded to the near term and benefits are loaded to the sometimes distant future. Many of these strategic projects are, however, essential if the firm is to remain in the business over the longer term. For example, since the mid-1990s one SBU had known that for security reasons and to comply with international standards it had to reengineer one of its products before December 31, 1999. For five years this "strategic project" was put forward as a reason for reducing the division's target and rejected, and thus never initiated. In 1998, the division incurred \$30 million in fraud costs, about one-half of which could have been avoided, if it had implemented the project.

In November: Top management presents the coming year's budget to the Board of Directors and it is approved.

The End Game:

A comparison of five years of actual earnings versus planned earnings showed that the only number the company ever achieved was the net income number. Revenues and expenses were at least 10% over or under. Most often revenues did not meet targets and spending (usually R&D and investment spending) was cut to ensure that net income targets were met. Bonuses, however, were paid because they were directly linked to meeting the net income target.

What's more, everyone at every level is so wrapped up in their budget systems that even though most dislike the budgeting process and perceive the damaging effects of the behavior it encourages, they cannot conceive of managing a company in any other way. Indeed companies that do without such budgeting systems run the risk of being considered poorly managed. The key to resolving these issues is not necessarily to throw out the budgeting process (although some would argue this is desirable¹), but to change the way we measure performance and the way we reward and punish people.

¹ See (Hope and Fraser 1997, 1999a, b, 2000; Kersnar 1999; Lester 2000; Thomas 2000) which summarize the experiences of a number of mostly Scandinavian companies including Svenska Handelsbanken (Sweden's largest bank which abandoned budgets in 1970), Air Liquide, SKF, Ericsson, Skania, Schlumberger, Skandia, Swedish Post, Tetrapak, Diageo, Borealis, Volvo Cars, IKEA, and Fokus Bank which have abandoned budgets or are in the process of doing so. The Consortium for Advanced Manufacturing International (CAM-I) has established a Beyond Budgeting Roundtable to understand and report on these developments.

Budget systems are based on the premise that managers should be rewarded for achieving their targets for the period and punished for missing them.² What every manager knows, but most fail to pay attention to, is the effect that such systems have on incentives. Tell a manager that he or she will get a bonus when targets are realized and two things are sure to happen. First, managers will attempt to set targets that are easily reachable, and once the targets are set, they will do their best to see that the targets are met even if it damages the company to do so.

Consider this example: Managers at a heavy equipment manufacturer were so set on making their budget targets and assuring their bonuses that they shipped their unfinished industrial products from their plant in England all the way to the Netherlands (so they could realize the sales revenues early). At great cost and inconvenience, they finished assembling them in a warehouse close to their customer. By doing so, they booked the sale in the necessary quarter, made their bonus, but lowered their company's profit overall. The budget had been met, the bonuses were assured, but the company was worse off for the effort. Examples like this are legion.

Such gaming, however, is considered part of business life, so much so that it often takes on a life of its own. As in the example above, managers game the realization of the targets. They also game the setting of targets in the first place. Both result in substantial damage to the company and lower its profits and value. How does this happen and what can we do about it?

² See Edwin A. Locke, "Motivation by Goal Setting," in *Handbook of Organizational Behavior*, 2nd Edition, Robert T. Golembiewski, ed. (Marcel Dekker, New York, 2001), for an excellent review of goal setting and budgeting. Locke discusses the counter productive effects of paying people for meeting goals and suggests three solutions to these problems. I return to them below. (Locke and Latham 1990) provide an excellent analysis of the theory and evidence on goal setting.

1. Gaming the realization of targets

A manager promised a \$100,000 bonus for reaching this year's target will go to great lengths to achieve it. Managers who run the risk of just missing the budget target will accelerate shipments and revenues from next year into this year and move expenses from this year to next year even though by doing so overall profits are reduced in the two years. Take the case where the manager loads the distribution channel with more product than it can handle because shipping the product allows realization of the profit this year. Managers do this even though they expect the product will be returned next year, and even though they know it makes it even harder to make next year's profit target.

And it is not unusual for the gaming to turn fraudulent. In one case managers shipped fruit baskets that weighed exactly the same amount as their product and booked them as sales. In another case, Informix, an internet software company, and its auditor paid \$142 million to settle lawsuits resulting from SEC charges for fraudulently increasing earnings by \$295 million in the 1994-1997 period. In its complaint the SEC charged that managers and sales personnel attempting "to meet or exceed the Company's internal revenue and earnings goals":

1. moved revenues from one quarter to the previous quarter by backdating sales agreements,
2. entered into secret side agreements granting rights to refunds and other concessions such as paying fictitious consulting or other fees to customers to refund their software license fees,
3. recognized revenue on transactions with reseller customers that were not creditworthy,
4. recognized amounts due under software maintenance agreements as software licensing revenues, and
5. recognized revenue on disputed claims against customers.³

³ See "In the matter of Informix Corporation," SEC Release No. 337788, January 11, 2000, <http://www.sec.gov/litigation/admin/34-42326.htm>.

Similarly Sabratek, a developer and seller of remote healthcare equipment has been sued for revenue enhancing fraud including the alleged sale of products to entities that had not ordered them, inventory parking arrangements, and widespread stuffing of the distribution channel.⁴ In another case the *Wall Street Journal* reported on 4/9/2001⁵ that PricewaterhouseCoopers found that the Korean unit of Lernout & Hauspie Speech Products NV was found to have reported fictitious sales equal to 70% of its nearly \$160 million in sales between September 1999 and June 2000. “In an effort to clinch rich bonuses tied to sales targets, the Korean unit’s managers used highly sophisticated schemes to fool L&H’s new management. One especially egregious method involved funneling bank loans through third parties to make it look as though customers had paid when in fact they hadn’t.” One of the executives involved earned \$25 million in sales target bonuses before being fired. L&H “one of Europe’s high-tech stars, filed for bankruptcy protection late last year after admitting to widespread accounting irregularities.” And the news media⁶ has recently reported on questions of accounting irregularities (a common manifestation of this gaming problem) in many well-known firms⁷ including Bankers Trust, Cendant,⁸ W.R. Grace, Livent, Sunbeam, Waste Management, Rent-Way⁹ Xerox¹⁰, Compaq,¹¹ CISCO,¹² Gillette,¹³ Kroger,¹⁴ Rite Aid,¹⁵

⁴ See Paul Larson (TMF Parlay), “Sabratek Saga Cliff Notes” FOOL PLATE SPECIAL: An Investment Opinion, August 26, 1999 <http://www.fool.com/news/1999/foolplate990826.htm?ref=newreg>, (April 23, 2001), and Herb Greenberg, “*Update* Amended Lawsuit Alleges Accounting Irregularities at Sabratek,” 6/15/99, <http://www.thestreet.com/comment/herbonthestreet/756299.html>, (April 23, 2001).

⁵ John Carreyrou, “Lernout Unit Booked Fictitious Sales, Says Probe,” *Wall Street Journal*, 4/9/2001, p. B2, and John Carreyrou and Mark Maremont, “Lernout Unit Engaged in Massive Fraud to Fool Auditors, New Inquiry Concludes,” *Wall Street Journal*, 4/6/2001, p. A3.

⁶ *Reuters* “Corporate Accounting Woes Puts Fund Managers on Alert,” February 13, 2001 <http://www.forbes.com/newswire/2001/02/13/rtr184059.html>, (April 23, 2001).

⁷ See Carol J. Loomis, “Lies, Damned Lies, and Managed Earnings,” *Fortune*, August 2, 1999. “Accounting: Book Cookers, Beware! Audits are Improving,” *Fortune*, April 16, 2000.

⁸ See “Cendant Case Scorecard: Government 3; Book-Cookers 0,” *Fortune*, July 10, 2000.

⁹ See Queena Sook Kim, “Rent-Way Details Improper Bookkeeping: Expenses were artificially cut by \$127 million, Report Says,” *Wall Street Journal*, June 8, 2001, p. C1.

Computer Associates,¹⁶ and Lucent.¹⁷ The *Wall Street Journal* reports that about 40 of the SEC's accounting-fraud investigations involve companies in the Fortune 500. Indeed, the SEC's enforcement chief, Richard Walker, commenting on the magnitude of the problems said recently: "If we had nothing else to do, the accounting investigations alone could keep us busy for the next five or 10 years. The size and magnitude are crushing." (Schroeder 2001)

¹⁰ See Xerox Press Release, "Xerox Releases Details from Independent Investigation of Mexico Accounting Issues," February 1, 2001, http://biz.yahoo.com/bw/010201/ct_xerox.html, (April 23, 2001). James Bandler and John Hechinger, "Xerox Executive Challenges Its Accounting, and Is Fired—Query Into Mexican Unit's Books Snowballs," *Asian Wall Street Journal*, Feb. 7, 2001. Reuters "Update 1-Xerox Accounting Woes Resurface, Shares Tumble," April 3, 2001, <http://www.forbes.com/newswire/2001/04/03/rtr227376.html> (April 23, 2001). Reuters "Xerox Hit With Shareholder Lawsuit," February 21, 2001 <http://www.forbes.com/newswire/2001/02/21/rtr189312.html>, (April 23, 2001).

¹¹ Gordon Kelly and Jo Ticehurst, "Compaq denies 'channel stuffing' claim," December 12, 2000, <http://www.vnunet.com/News/1115296>, (April 23, 2001).

¹² See Andrew Bary, "Half-Point Rate Cut Is Worth 10% to the NASDAQ," *Barrons Online*, April 23, 2001.

¹³ See Daniel Golden, "Gillette Co. Misses Estimates, Citing Excess Inventories," *Wall Street Journal*, 4/19/2001. "Chief Financial Officer Charles Cramb acknowledged that the company oversupplied batteries and older razor systems to retailers during the year-end holiday season and misread its market share, leaving it with trade inventory backlogs in excess of three weeks."

¹⁴ See "Kroger Co. to Restate Results after Finding Improper Accounting," *Wall Street Journal*, 3/6/2001, p. B10. "Gary Rhodes, a spokesman for Kroger, said the restatements stem from 'accounting entries that were made to manage Ralph's earnings.' In quarters for which actual results exceeded budget expectations, he said, some executives of Ralphs would inappropriately record the extra money in a variety of accounts instead of reporting it as income. . . . All of the executives who were directly involved in the questionable bookkeeping have left Ralphs in the past year, Mr. Rhodes added, and Kroger has reported the matter to the SEC."

¹⁵ See Mark Maremont, "Lawsuit Details Rite Aid's Accounting Woes," *Wall Street Journal*, 2/28/2001, p. C1.

¹⁶ See Alex Berneson, "A Software Company Runs Out of Tricks," *N. Y. Times*, April 29, 2001, Section 3, p. 1, and Alex Berneson, "Computer Associate Officials Defend Accounting Methods," *N. Y. Times*, May 1, 2001, Section C, p.1.

¹⁷ See Dennis J. Berman and Rebecca Blumenstein, "Behind Lucent's Woes: Push To Meet High Revenue Goal," *Wall Street Journal*, March 29, 2001. Stephanie N. Mehta, "Lessons from the Lucent Debacle," *Fortune*, Feb. 5, 2001. Tom Murphy, "SEC Continues Lucent Probe," February 19, 2001, <http://www.electronicnews.com/issue/RegisteredIssues/2001/02192001/z8f-1.asp>, (April 23, 2001). Reuters, "Chronology: Key Events in Lucent's Recent Trouble," April 24, 2001, <http://www.forbes.com/newswire/2001/04/24/rtr242259.html>, (April 24, 2001).

Years ago I witnessed top management of a durable goods manufacturing company with target-based bonuses struggling to reach their bonus targets before the year-end close of the books. In September they announced to their board and customers that product prices would increase 10% effective as of Jan. 2 of the next year. Now it may well be that a price increase was the right action at this time for this firm. But it was not in line with competition at the time, nor was it very likely that Jan. 2, of all possible dates, was the optimal time for the increase. But, announcing an effective date of Jan. 2, of course, would motivate the firm's customers to order product in advance of their normal order cycle to avoid the price increase. This would thereby aid management in reaching the bonus level for the year—but at the expense of next year's profits. Moreover, when it became clear in November that the firm would not reach the bonus targets management announced the largest quarterly loss in the history of the company. This is consistent with the notion that managers realizing they will not meet this year's targets, move revenues to next year and expenses from future years to the current year (write-offs) because it costs them nothing to do so in this year's bonus and it makes it easier to reach targets in future years.

2. Gaming the setting of targets

Managers have information that is important in setting their budget targets for next year. However, once a budget-target reward system is in place managers have no interest in seeing such information accurately incorporated in budget targets. Indeed, as Ichak Adizes so accurately summarized it in his 1989 book: “The more people lie about how much they cannot do, the more they are rewarded.”¹⁸ Being aware of this, superiors are then led to lie about how much their subordinates can do to counterbalance this bias.

¹⁸ Ichak Adizes, *Corporate Lifecycles* (Prentice Hall, Englewood Cliffs, NY), pages 90-91.

But now no one in the system has incentives to accurately estimate what the budgets should be, and at all levels information critical to the budget-setting process is hidden, destroyed or polluted. There are two major effects of this on companies.

- Budgets play a critical role in coordinating disparate parts of a company so that their actions lead to harmonious interactions, high output, low cost, high quality, low inventories and satisfied customers. But, once we establish a budget-targeting process that hides and destroys critical information regarding what various parts of the organization can do and how they will do it, this critical coordinating role of budgets is severely hampered. Uncoordinated, chaotic actions that lead to high cost, low quality, missed opportunities, and dissatisfied customers are the result.
- Honesty and integrity are eroded throughout the organization because once managers are taught that they must lie and conceal information to succeed in the budget-target game they soon begin to extend such out-of-integrity behavior to all parts of an organization's management system and even its relationship to outside parties. The budget game inevitably gets extended to the firm's relationship with the capital markets as the CEO and CFO become enmeshed in a game with financial analysts over meeting financial targets. "Managing the numbers" as it is often called, is commonly considered part of every top managers job¹⁹—along with denying that this dishonest behavior is going on. It shows up at the board of director's level as management misleads the board, as the board endorses misleading reports to shareholders and other outside constituents, and as managers mislead customers, suppliers and employees about all sorts of important information about the state of the company.

¹⁹ For excellent discussions of this phenomenon, see (Collingwood 2001; DeGeorge, Patel, and Zeckhauser 1999).

3. Stopping the vicious cycle and restoring integrity

I believe that almost no one in this system consciously believes he or she is lying or behaving without integrity. Indeed, in most corporate cultures much of this behavior has become expected of responsible managers and board members. It is also undiscussable. To stop the gaming of budgets and targets and restore integrity to the planning and management process we must begin not by telling managers to stop lying, nor by eliminating the use of budgets, but by eliminating the use of budgets and targets in compensation formulas and promotion systems.

Eliminating the use of targets or budgets in compensation systems solves the problem because if your bonus or promotion is a function of what you accomplish, not whether you meet or exceed a budget or target, you have no monetary incentive to hide information or lie in the budget/target-setting process. Budgets can be used for planning and coordinating as they were intended, and a major cause of the erosion of integrity in organizations is eliminated.

A. Analysis of the fundamental sources of the incentives to game the system

To see why this behavioral problem is a problem with the compensation system, not the budgeting system, let us structure the analysis a little more. We start by defining a pay-for-performance profile which plots the total compensation of an individual vs. his or her performance. Consider the fairly standard pay-for-performance profile in Fig. 1.

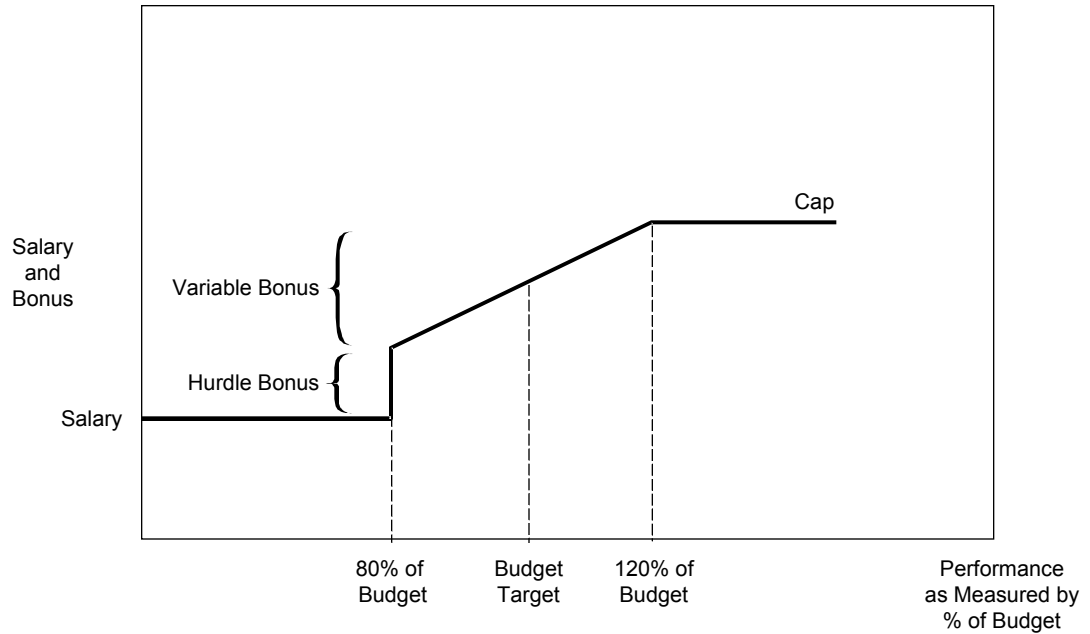


Fig. 1

Typical pay-for-performance profile of an executive compensation scheme.

Fig. 1 illustrates the common practice in which a manager's salary plus bonus is constant until a minimum hurdle performance is reached—commonly 80% of the targeted or budgeted performance level. For our purposes we need not specify what the measure of performance is, but it might be profits, sales, quantity of output or any number of other things including the growth rate of some measure. At about 80% of the budgeted performance the manager receives a bonus for making the hurdle target. This bonus can often be substantial, and as performance increases above this hurdle the bonus increases until it is capped at some maximum (120% of the budget or target is common). Performance above this upper limit generates no additional bonus.

Consider managers' incentives when they are struggling to reach the minimum hurdle. In this situation as long as they believe they can make the minimum, managers will engage in actions to increase the performance measure, and this can be done by legitimate or illegitimate means. When the measure is profits, or some variation of profits, managers have incentives to increase this year's profits at the expense of future

year's profits by moving expenses from this year to the future (by delaying purchases, for example) or by moving revenues from future years into this year by booking orders early (as we described above by announcing future price increases, or by giving special discounts this year, or guaranteeing to repurchase goods in the future, and so on). When these actions simply move profits from one year to another the adverse impact on firm value is probably small. But, it can pay managers today, to engage in actions that reduce the total value of firm cash flows by moving profits to the current period even when future profits are dramatically reduced. Obviously policies that encourage long-term employment in a manager's current job tend to reduce (but not eliminate) the incentives to beggar the future to boost the present-year bonus.

When managers conclude that they cannot make the minimum hurdle, their incentives shift dramatically. Now they have incentives to do the opposite of what we just described, that is to move profits (if that is the performance measure) from the present to the future. They will do this by moving expenses from the future to the present period (by prepaying expenses, taking write-offs for restructuring, etc), and by moving revenues from the present to the future.²⁰ This is the big bath theory.

As we can see from Fig. 1 if the manager is going to miss the bonus this year anyway, there is no further reduction in compensation from performance that is even farther away from the lower hurdle amount (subject always to the condition that the manager is not fired). But moving future expenses to the present and current revenues to the future will increase the likelihood of a bonus in future years and increase the bonus amount at that time if they are in the payoff range. Thus, it pays managers to take what would be a small loss now and turn it into a big loss now so as to advance their future bonus interests. This undoubtedly plays a role in exaggerating the apparent decline in

²⁰ For an excellent analysis and empirical study of the effects of bonus schemes on managers' choice of accounting policies see: Paul M. Healy, "The Effect of Bonus Schemes on Accounting Decisions." *Journal of Accounting and Economics* 7 (1985): 85-107.

profits during times of recession as we are in now in 2001 as company after company decides to take huge write-offs to their earnings. We can bet that much of this behavior overstates the current losses while setting the stage for higher measured performance in the future. In times like the present this behavior can become so pervasive that it affects macroeconomic statistics and even public policy. Similarly we can predict that during boom times the fortunes of firms will be overstated as managers stretch to live up to unrealistically high expectations of analysts and other participants in the financial markets.

Finally, manager's who are within reach of the bonus cap have incentives to not exceed the maximum because they get no rewards beyond that point (and these perverse incentives are even stronger if this year's performance is used in setting next year's targets). In this situation managers have incentives to move expenses from the future to the present and revenues from the present to the future to increase bonuses in future years. And again, they have incentives to do this even if it imposes real losses on the company to do so.

B. The source of the gaming problems

Thus, we see that the source of the gaming problems and the costs they create in organizations is not the budgeting system itself, but the way in which we pay people. The source of the problem is in the relation between the compensation of people and the budget. In general, we see that any time managers are within shooting distance of a kink (or in general any nonlinear segment) in the pay-for-performance function, the firm is rewarding them for taking actions that are harmful. As long as the kinks are present there is no way around these incentives except direct monitoring. But such direct monitoring is often difficult because the specific knowledge required to observe it lies with the

managers, not their monitors.²¹ If managers in a particular firm have few if any opportunities to make decisions that can shift results to conform to the kinks, there is little cost. But in most cases managers, as the examples given above illustrate, have many opportunities to do these things, and they are often very difficult to observe from above and therefore to monitor.

C. The solution to budget gaming problems

Fig. 2 shows graphically how to solve the budget gaming problems. If we make the pay-for-performance function a straight line, the actual bonus that a manager receives is independent of where the budget target is set. To see this note that if the budget is set at Target #1 and actual performance is as noted, the bonus paid to the manager is exactly the same as it would be if the budget target were set at Target #2. Thus, the linear bonus

²¹ For example in the Lernout & Hauspie Speech Products NV (L&H) case mentioned earlier, John Carreyrou in the *Wall Street Journal* reported:

L&H's new chief executive, Philippe Bodson, said that upon learning of Pricewaterhouse's findings he "was very impressed by the level of sophistication" of the fraud and "the amount of imagination that went into it." Speaking at a news conference in Brussels Friday, Mr. Bodson said the fraud at L&H Korea should become a case study in business schools. . . .

To fool auditors, L&H Korea used two types of schemes, Pricewaterhouse's sleuths found. The first involved factoring unpaid receivables to banks to obtain cash up front. Side letters that were concealed from KPMG gave the banks the right to take the money back if they couldn't collect from L&H Korea's customers. Hence, the factoring agreements amounted to little more than loans.

The second, more creative scheme was set in motion after auditors questioned why L&H Korea wasn't collecting more of its overdue bills from customers. L&H Korea told many customers to transfer their contracts to third parties. The third parties then took out bank loans, for which L&H Korea provided collateral, and then "paid" the overdue bills to L&H Korea using the borrowed money, Pricewaterhouse found.

The upshot is that L&H Korea was paying itself. When the contracts were later cancelled, L&H Korea paid "penalties" to the customers and the third parties to compensate them "for the inconvenience of dealing with the auditors," the Pricewaterhouse report said.

The probe also found that the bulk of L&H Korea's sales came from contracts signed at the end of quarters, so managers could meet ambitious quarterly sales targets and receive multi-million-dollar bonuses. For instance, 90% of the revenue recorded by L&H Korea in last year's second quarter was booked in 30 deals signed in the final nine days of the quarter. But L&H Korea was forced to subsequently cancel 21 of those contracts because the customers—most of them tiny start-ups—didn't have the means to pay. (John Carreyrou, "Lernout Unit Booked Fictitious Sales, Says Probe," *Wall Street Journal*, 4/9/2001, p. B2)

schedule rewards people for what they actually do, and not what they do relative to what they say they can do.²²

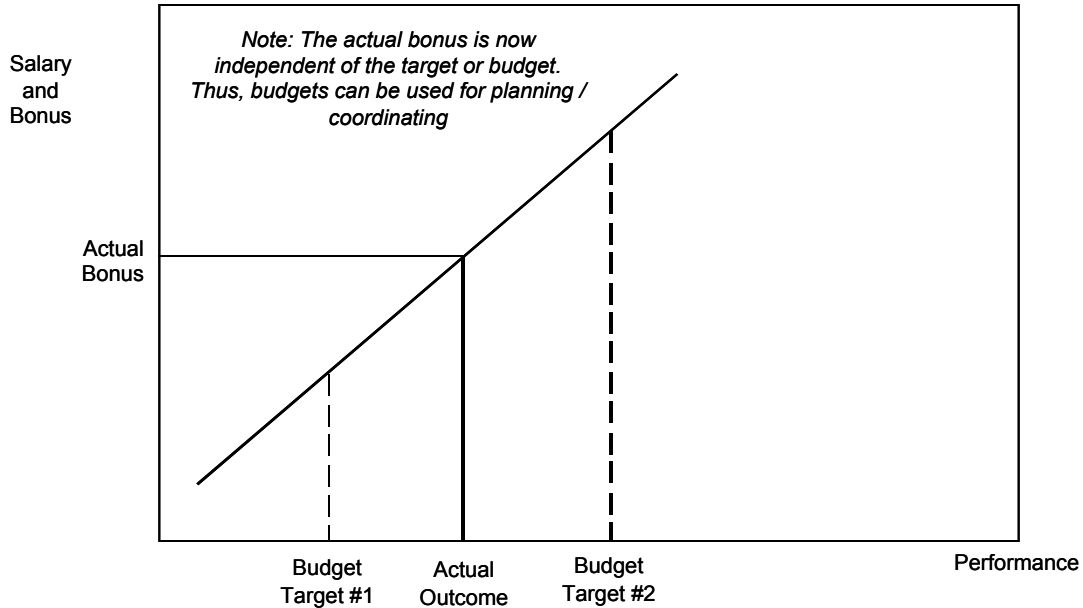


Fig. 2

The solution to the budget gaming problem: Remove all kinks, discontinuities and curvilinearity from the pay-for-performance function. Straight-line pay-for-performance functions eliminate the incentives for managers to game the budget-setting process. Note that the bonus for actual performance at the denoted “Actual Outcome” in the figure (the Actual Bonus) is the same whether the budget target was set at #1 or at the higher #2 level. Therefore, managers have no incentive to lie about what they can or cannot do in the budget setting process.

Let me be clear at this point how linearizing the pay-for-performance schedule will change the incentive to lie and game the system. Once the system is linearized there is no incentive for a manager to lie about what he or she can do in the budget-setting process. Once lower level managers really believe it, this means that top-level

²² Locke (2001, pp. 52-53), suggests similarly that two solutions to this behavior are to “Motivate by goals but reward by performance,” and to “use multiple goal and reward levels“. Recent work by (Schweitzer, Ordonez, and Douma 2001) indicates that the psychological rewards associated with meeting preset goals are sufficient to induce the gaming behavior we are discussion even in the absence of monetary rewards. See the discussion in Section 4 below. The latter tiering of rewards can reduce but not eliminate this behavior.

management will be getting unbiased measures of what can be done in the future, and the quality of planning and coordination can go up considerably.

The benefits associated with eliminating the costs associated with ineffective planning and coordination can be considerable. In one case a large beverage company ran out of its core product in one of the largest regions in the country for an important holiday season because of gaming by one of its managers. In gaming the bonus system the VP of sales in that region dramatically underpredicted market demand for the quarter (so he could easily exceed it) and insisted the estimate was accurate. But the price for his little white lie was extremely high: When the operations people took his word for it the entire region ran out of product for the holiday selling season.

Moreover, as we can see from Fig. 2 there is no undue incentive to make value-destroying tradeoffs in the performance measure through time. Since there are no kinks or other non-linearities or discontinuities the only incentive a manager has to move things around in time is his or her time rate of preference or the interest rate.

Since pay will still go up as performance improves, dishonest managers may still try to lie about their numbers in order to increase their bonus. That, of course, is a risk that companies have always had to watch out for. A linear bonus schedule does not reduce the need for good control systems and attentive executives. As long as managers think they will not be caught or that the penalties for such lying will be small it will pay them to take actions that will overstate their actual performance. There is no solution to this problem other than having good control systems that get the measures right, and high penalties for those who get caught taking such actions.

D. The costs of budget gaming activity

I believe the total costs imposed on companies and the economic system by the misuse of budgets and targets in reward systems is very large. To my knowledge there are no high quality aggregate estimates of these costs. The best example of estimated costs

due to this gaming activity is that by Donald Roy in his article, “Goldbricking In a Machine Shop”. (Roy 1952) Roy worked in machine shop for almost a year that used a piece rate incentive system for lathe operators that (with the exception of the hurdle bonus) was close to that portrayed in Fig. 1. Roy surreptitiously kept records of his own and co-workers behavior and output, and describes their gaming behavior vividly and carefully. Based on his records, Roy estimates that eliminating the goldbricking due to the target-based reward system with caps in his shop would increase productivity from 33% to 150%.²³ Since programs like these are common even today to measure and motivate employees, including production line workers, sales forces, managers and top level executives, I believe the costs to the economy are huge. If Roy’s estimates of losses are approximately correct, and I believe they are, by solving these problems we could generate increases in productivity approximating 50 to 100% in the places where they exist.

E. Stretch Goals and the Role of Top Managers in Motivating Lies

But the incentive and pressure to manipulate the system to attain some stretch goal comes not only from the desire of lower level managers to realize their bonuses but also from top managers’ collaboration with the gaming. This occurs when top managers pressure lower-level managers to make the plan at any cost, and refuse to be realistic about whether it is even feasible to make the goal. The result can be another strong source of incentives to lie, manipulate, and game the system, at the expense of the organization’s integrity. And the cost of attempting to call attention to and stop this behavior can be extremely high as evidenced by claims in recent lawsuits against Lucent and Xerox.

²³ See Roy (1952, pp 441-442).

Nina Aversano, a former Lucent vice president who ran North American sales, claims in her lawsuit that Rich McGinn, the CEO of Lucent, forced her to retire in the fall of 2000. She further claims that this happened after “she warned McGinn that growth projections were too high“ and “presented material showing that 2001 sales in her region would fall short of growth targets, in part because of discounts promised to customers in December of 1999 “to make purchases they might otherwise have postponed until a quarter later.” (Mehta 2001, pp. 146 and 148)

In his wrongful termination lawsuit against Xerox James F. Bingham, former Assistant Treasurer of Xerox “claims he was fired in retaliation for his ‘efforts to rectify (Xerox’s) fraudulent accounting and financial reporting practices’” (Bandler and Hechinger 2001) “As assistant treasurer, he was one of the finance managers the company called on to help guide it through tough economic times. To bolter deteriorating results, he says he practiced creative accounting with gusto, even inventing a few new twists. ‘I fed the beast,’ he says.” “But eventually Mr. Bingham balked,” because he believed “it was his responsibility to speak out at Xerox because ‘we were driving ourselves into bankruptcy’ with bad business decisions based on faulty accounting.” He thought ‘the logic of my arguments and the correctness of my data were so strong’ that top Xerox executives would change course. ‘Maybe I was a little bit naïve.’” (Bandler and Maremont 2001)

Xerox had been faced with declining business results. “Inside Xerox 's finance department, there was growing pressure to compensate for the poor results with accounting gimmickry, Mr. Bingham told SEC investigators last December. Xerox executives frequently assigned accountants numerical goals to produce profits through ‘accounting actions,’ he said, according to a transcript of his testimony. ‘It just became standard operating procedure that, you know, you look to the accountants to find income.’ At first, Mr. Bingham was an enthusiastic participant in these intricate accounting maneuvers, saying he enjoyed them because they were intellectually

challenging. According to his 1999 annual performance review, he took the 'lead role' in a series of transactions with banks in which Xerox packaged short-term rental agreements for copiers in Brazil and elsewhere as if they were long-term deals, which are generally treated for accounting purposes as sales. This enabled Xerox to book immediately much of the future rental revenue." (Bandler and Hechinger 2001)

"Last month, Mr. Bingham finally received some vindication. After months of calling his claims 'baseless,' Xerox restated its results for the past three years and acknowledged that it had 'misapplied' accounting rules in a variety of ways, including improperly using a \$100 million reserve to offset unrelated expenses -- precisely one of Mr. Bingham's criticisms. To correct the reserve error, Xerox cut its 1998 and 1999 pretax profits by \$100 million, while adding \$6 million to 2000's pretax figure. Xerox also gave credence to Mr. Bingham's main claim, that it had used aggressive accounting to secretly bolster results in the late 1990s. In the footnotes of an SEC filing, the company revealed for the first time that its pretax profits in 1998, 1999 and 2000 had been boosted by a total of \$845 million through a series of one-time transactions and changes in accounting "estimates." That was a hefty chunk of the \$2.1 billion in pretax profits reported for the three years. Xerox maintains its accounting for these items was appropriate, and no steps to adjust for the transactions were included in the restatement." (Bandler and Hechinger 2001)

F. Curvilinear bonus schemes provide unproductive incentives as well

Fig. 3 provides the basis of an analysis of a bonus scheme in which the pay-for-performance curve increases at an increasing rate. The argument for doing this is that an organization may want to reward its managers for improved performance at an increasingly higher rate. Unfortunately, by application of Jensen's inequality, this scheme too provides managers with an incentive to take counterproductive actions. I have found in dealing with managers on these issues that inevitably when I fail to discuss this issue

(because I originally thought it was too technical and esoteric and therefore unnecessary to cover), it comes up as a favored policy option in the new compensation system.

Consider the case in which a manager could indeed meet the targeted budget each year. Doing so would yield the manager a bonus of \$12,000 every year. But if he could at no cost move things around so that the performance would fluctuate from 80% of budget in one year to 120% of budget in the next year he would be better off.

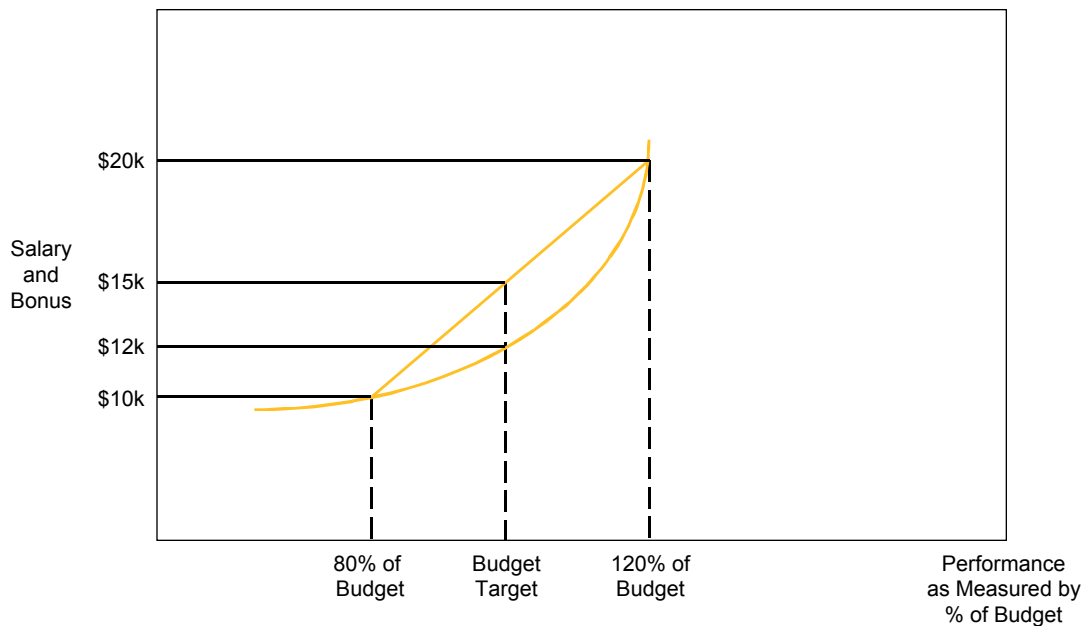


Fig 3

Curvilinear pay-for-performance functions encourage managers to increase the variability of year-to-year performance measures if they provide for larger increases in bonus for a given increase in performance at higher levels of performance (i.e., convex as they are in this example), and to decrease the year-to-year variability if they are concave.

In the low 80% year he would receive a bonus of \$10,000 and in the 120% year his bonus would be \$20,000. The total for the two years would be \$30,000 and the average, \$15,000. He thus has incentive to artificially increase the variability of performance under this compensation scheme. Moreover, he has incentives to do so even if the costs of doing it reduced overall performance in both years. As I alluded to above it is easy for managers or analysts to mistakenly believe that these effects will be small and unimportant. It was exactly this type of compensation plan that Chrysler introduced to

motivate its dealers in January of 2001, and that caused Chrysler to experience an 18% decline in sales in April 2001. See section 5.1 below for a detailed discussion of the Chrysler situation.

The opposite, of course, would be true if the curve were concave rather than convex. In this case the manager would have incentives to artificially reduce the variability of outcomes to increase his average bonus payment.

G. In summary

Let me say again: If every element of a manager's compensation (including bonuses and promotions) is independent of the budget or target, then he or she has no monetary incentive to game it and to lie or omit information in constructing it. The result: organizational integrity can be restored and budgets can be constructed and used not for gaming, but for making the tradeoffs that lie at the heart of management coordination of enterprise activities. This means that the relation between pay and performance has to be a straight line. When there are no kinks, no non-linearities, and no discontinuities in the relation between pay and performance the bonus does not depend on the target in any way. Therefore, managers have no monetary incentive to lie or hide information. By the way, this means promotions or other means of rewards also cannot be a function of the target or budget. While this is conceptually easy to do, it is tough to implement in systems where managers cannot imagine another way to manage. Competitiveness will be enhanced as we change such managerial mindsets.

4. The hidden costs of stretch goals

Many managers will react to my proposal in the following way: While a linear bonus schedule would remove the incentive to game the target-setting system, it will also remove the incentive effects of stretch goals. Indeed, Edwin Locke (2001, p. 48) in his

summary of goal setting concludes that the empirical evidence strongly indicates that goal setting increases performance:

“There have been more than 500 studies of goal setting on work tasks. It has been studied in at least eight countries. Goals have been set for many different types of outcomes, including sales, R&D, cost control, productivity, quality, and efficiency. The time spans studied have ranged from 1 minute to 25 years. It works in both laboratory and organizational settings and with both individuals and groups. About 90% of goal-setting studies have achieved positive results. One survey revealed that the average performance improvement attained by goal-setting studies in real organizations was +16%, although in some cases the improvement was over 50%.“

Let us assume that these studies accurately measure the effects of stretch goal setting. I believe it is very difficult and in some cases impossible to estimate the costs of gaming that accompanies such goal setting procedures. It is especially difficult to measure the costs of gaming in a laboratory setting where the amounts at issue are small, the time involved is too short for people to figure out the multitudes of clever ways to game the system, and the costs of gaming would usually be difficult to measure because the long run effects would be unobserved. And unless it was explicitly designed into the experiments the costs of poor information in the planning and coordination process would be difficult if not impossible to observe because of the artificiality and incompleteness of the laboratory environment.

Indeed, in the large and robust literature on goal-setting I have found only one study that attempts to measure the effects of goals on unethical behavior. In their as yet unpublished paper, (Schweitzer, Ordonez, and Douma 2001) find in their laboratory study that subjects regularly lied about their performance. For example, in their clever study the authors find that even in situations where there was no monetary reward for meeting a goal, merely setting such a goal that subjects accepted resulted in subjects lying about their performance 34.8% of the time when they were otherwise close to meeting it. This compared to instances of lying of 14.8% in similar circumstances when

subjects were not given a goal but only asked to “do your best” and 48% when they were being rewarded for meeting the goal. These results imply that even if we linearize the compensation plan but still use targets to motivate people as Locke suggests (see footnote 22) we are still going to observe gaming in the system. Even in the absence of monetary rewards for meeting a goal it appears that the psychological rewards for doing so are enough to cause people to lie about making the goal.

Those who argue for the effectiveness of stretch goals must believe that the gaming costs associated with these systems are less than the benefits. This means that the costs due to the loss of critical information in the planning and coordination process (imagine an entire region running out of a company’s major product during the major holiday selling season), and the damage caused by the gaming aimed at realizing the goals once set must be less than the increased output that results from the stretch goals. (For one CEO’s experience with stretch goals see the accompanying side bar: “Stretch Goals and Kinked Compensation: A Hard Lesson Learned”.)

More formally, let P be the amount of performance that would come from a purely linear pay-for-performance system such as that in Fig. 1, and $P^* > P$ be the higher level of performance under the stretch goal system without taking the costs of gaming into account. Let G be the costs associated with the degradation of the planning and coordination function resulting from the gaming involved in setting the targets and in the costs of gaming involved in the realization of the targets of the goal system. If the stretch goal system is to generate positive value, the present value of $P^* - G$ must be greater than P . I do not believe we have good formal statistical evidence on this question, but we will have it in the future as managers and management scientists begin to look at the costs and benefits of these systems more carefully. As I indicated above, my guess is that we will find that the costs of these systems far outweigh their benefits in most cases. And I emphasize again that in considering these costs we must take explicit account of the

effects of precedents set in the budgeting/target setting and compensation system on the loss of integrity in the rest of an organization's systems.

Stretch Goals and Kinked Compensation: A Hard Lesson Learned

The newly appointed CEO of a large and prominent multinational corporation was furious with the degree to which sales and profit growth was slowing due to what he saw as the unwillingness of his executives to set "stretching" goals. In fact, he felt they were becoming expert at setting goals low enough to ensure making.

Like most firms, budgets played a key role in the life of his firm. Managers earned significant bonuses for achieving budget, none for missing budget and little, if any, additional bonus for exceeding budget. Each year a long and involved process of budget setting ensued.

The new CEO liked the budget system because it ensured strict "accountability" something he held near and dear to his heart. However, he did not like the way that managers set low budget goals and managed accordingly. He blamed two factors. First, he saw the cultural tradition of the firm as not aggressive enough in pushing for stretch targets. Second, he saw the existing organizational structure as being too complex, and this blurred the lines of accountability, allowing managers to avoid taking personal responsibility for success or failure.

As a consequence, he attacked these two problems. First, he embarked on the biggest and most wide-ranging reorganization in the long history of the firm. Almost every manager in the firm was effected by the changes. All of the existing budgets needed to be rearranged and redistributed. Second, he made it clear in his own management style that he was going to insist on stretch goals, stretch targets, stretch attitudes.

He left the critical features of the compensation scheme largely untouched. Budget achievement was still the critical performance measurement. There remained a pronounced kink at achievement of budget. A nuance that changed was that managers were allowed to give out gifts of stock to employees seen to have gone above and beyond the call of duty.

The result? Disaster almost immediately. Since achieving budget was the critical element in performance measurement, managers spent much of the first year lobbying to have the reallocation of budget targets to them minimized as far as possible in order to ensure meeting budget. Those that were unable to get a favorable target, complained vociferously that they had been treated unfairly in the reallocation process and they should be given relief. In addition, managers sought to have their actions seen as exemplary — whether they were or not — in order to earn special share awards.

Within months, everyone realized that the new stretch budgets imposed upon them in the reallocation were not going to be met. Managers then gave up, let the year fall into the tank and waited to have expectations reset to a lower level for the following year's budgets. However, this reality was obscured from the CEO until the last minute, causing him enormous capital market embarrassment resulting in his dismissal. He learned the lesson the hard way that maintaining a compensation curve kinked around the budget while pushing harder for stretch will not produce more stretch but rather more dishonesty.

5. Three things to get right in a linear compensation plan

In moving to a non-target-based compensation system it is important to get it close to right in the first year, and this is not easy. There are three things a company has to get right in moving to a new linear compensation plan:

1. The measure of performance
2. The intercept of the bonus line
3. The slope of the bonus line

Together these three factors define the payoffs for the plan and the incentive effects of the plan

1. The Measure of Performance

There are many interesting and important things to be weighed in the choice of performance measure including, among others, the time interval over which measures are made, the entity that is being measured, the number of measures, and the nature of the measure itself. We limit our brief discussion here to these.

First, as we reduce the time interval over which the measures are made they become more relevant to ongoing decision-making. Imagine waiting 10 years for a performance measure. However, as we make the time interval shorter it becomes easier for managers to game the system by moving results from one period to another. Consider the ease of postponing vehicle sales from one month to the next as Chrysler found out recently when it introduced a new incentive program for its dealers.

Chrysler's program paid the dealers a bonus depending on how many cars they sell relative to a monthly sales target. The function was an increasing piece-wise linear function with a bowl shape like that portrayed in Fig. 3. "Under the plan, Chrysler gives dealers cash based on the percent of a vehicle sales target they meet. If they sell fewer than 75% of the sales target, "they get nothing. If they sell from 75.1% to 99%, they get

\$150 for each vehicle sold: 100% to 109.9%, is \$250 and anything more than 110% nets \$500 per vehicle” (Suhr 2001). Begun in January, 2001 the program backfired in April, 2001 when dealers saw they were not hitting the sales target early in the month and cut back on sales and inventory. It is a good bet that as Chrysler dealers saw they were unlikely to earn the \$500 per car payments in April (when industry sales as a whole were down 10%) they took actions to delay sales from April to May (undoubtedly losing some in the process) to increase the total bonus payments they received for the two months taken together.²⁴

The result (according to the May 1 *N. Y. Times* article, “Incentive Plan Hurts Chrysler”): “A Chrysler program intended to reward dealers who meet sales goals backfired in April, as dealers worried about missing the goals ordered fewer vehicles, Chrysler’s chief executive said today.” Chrysler’s sales fell 18%, 80% worse than the industry average and the CEO announced that it was due to “complication(s) in understanding how the new sales reward program works.” (New York Times 2001)

Chrysler revised the program in May to give dealers “two more months to make up for any missed sales target for a given month”. The underlying cause of the problem, which cost Chrysler dearly, is the non-linear reward function that (as explained in Section 3.F above) pays managers for increasing the variability of performance even if it reduces overall performance. Moving to a 90-day interval will help Chrysler reduce the problem because it is easier to push the sales of vehicles around 30 days or so than it is to move them 90 days, but it will not eliminate the problem.

Second, if you wish to encourage cooperation between people, use group measures of performance (such as for an entire team), not purely individual measures of

²⁴ (Hyde 2001) “Dick Withnell, a Dodge dealer in Salem, OR, said when sales started to fall off in early April below targets, dealers started cutting back on orders. ‘Not very many guys hit it (the sales goal) in April,’ he said. ‘When the guys aren’t hitting it they start being conservative with inventory. It becomes a self-fulfilling prophecy,’”

performance. It will be desirable to do this when one person's actions significantly affect the productivity of others and those effects are not easy to measure and incorporate in the person's performance measure. This would make it more desirable to measure performance for the team as a whole and compensate members of the team on the performance of the whole. This, of course, will encourage free riding of individual team members, but this can be controlled if the size of the team is small or we can induce self-monitoring by the team.

Third, we must decide how much subjectivity will be involved in each performance measure. In considering this we must recognize that every performance measurement system in a firm must involve some important amount of subjectivity. The reason, as my colleague George Baker has pointed out, is that any activity whose performance can be perfectly measured objectively does not belong inside the firm. If its performance can be adequately measured objectively, it can be spun out of the firm and contracted for in a market transaction.²⁵ Thus, one of the most important jobs of managers, complementing objective measures of performance with managerial subjective evaluation of subtle interdependencies and other factors, is exactly what most managers would like to avoid. Indeed, it is this factor along with efficient risk bearing is at the heart of what gives managers and firms an advantage over markets.

Fourth, do not give people or units multiple performance measures without specifying the tradeoffs between them. Doing so leaves managers with no purposeful way to choose an action. For example, suppose we tell a manager to both increase profits next year and increase market share. If the world is such that after some point market share can only be increased by decreasing price and therefore decreasing profits, the manager has no purposeful way to decide what to do. For a detailed analysis of this issue and how

²⁵ For an excellent discussion of closely related issues see (Baker, Gibbons, and Murphy 1997).

it relates to stakeholder theory as well as a critical failing in the balanced scorecard, see (Jensen 2001).

Fifth, in general it is counterproductive to measure performance with a ratio. My rule of thumb is: *If it is a performance measure and it's a ratio, it's wrong.* I have never found a counterexample. The problem with using a ratio as a performance measure is that those who are attempting to maximize it can do two things. They can increase the numerator or decrease the denominator. Firms that use ratios as performance measures generally implicitly assume that managers will increase (or decrease) the numerator. But that of course is not true, and the results can be truly perverse. Two simple examples will suffice here.

If we measure someone's performance by the sales margin, measured as a percent of sales (a ratio), the individual in maximizing this measure can cut back production or sales (the denominator) to sell only those units with the highest margin rather than increasing the margin on the units currently being sold. The result: total dollars of profit and value will fall.

The same is true if we measure people by percentage return measures—say return on assets (ROA). We want people to continue maximize the return on each asset and to invest in assets until the profit on the investment in the last asset is zero, and this will be when the return on the marginal asset is equal to the cost of capital.

But someone rewarded for increasing the ROA measure will have incentives to invest in only the highest returning asset. If the cost of capital is 10% a 40% ROA on an asset which costs \$1,000 yields an economic profit of $\$400 - \$100 = \$300$. However, a 20% return on an asset that costs \$10,000 with the same 10% cost of capital, yields a much greater economic profit of $\$2,000 - \$1,000 = \$1,000$. If the two return streams are perpetuities the first asset has a value of $\$3,000 = 300/.1$ in excess of its cost, and the second asset has a value of $\$10,000 = 1,000/.1$ in excess of its cost. It is obvious that the best investment if the two are mutually exclusive is the latter, and if they can both be

taken the best decision is to take them both. But doing either of these actions will result in a reduction of the ROA measure and a destruction of value. Yet that is what we are rewarding managers for doing when we measure their performance by ROA or ROE.

There is usually a way to constrain decision rights in each situation to make a ratio measure work, but most firms do not do this. In the ROA example it could be made to work if we fix the level of investment at \$10,400. But this solution, of course, assumes away one of the reasons why we have a manager in this job in the first place—to determine the optimal level of investment. It also presumes that the specific knowledge necessary to make the total investment decision lies higher in the hierarchy, and that we have that higher-level manager's performance measured properly.

My favorite period-to-period measure of performance is economic profit or what Stern Stewart calls Economic Value Added (EVA). It is not a ratio, and therefore has none of the problems of ratio measures. It is a flow measure, however, and thus not perfect. Using economic profit as a measure of period to period performance we still have to figure out how to motivate managers to make those value creating decisions that will generate negative economic profit in the early years while returning large positive economic profit in later years. What we ideally want is a stock measure of total value added over the life of the investment, but there is no simple mechanical way to measure this. It must be estimated and checked against the evolution of value over time.

2. The intercept of the bonus line

The intercept determines the location of the bonus line and works in conjunction with the slope of the bonus line to determine the total bonus for any given level of performance. Increasing the intercept increases the difficulty of achieving any given level of bonus. There is a strong tendency of organizations and managers to be short run oriented in their setting of the intercepts of the bonus line. Summarized succinctly the theory goes as follows:

Lets take away the benefits of exceptional effort this year by using this year's performance as the base for next year's bonus.

This reduces the risk that managers will be overcompensated for overly conservative projections of performance (high bonuses in one year make it harder to get high bonuses the next year), but it also reduces incentives for increasing performance and reintroduces gaming into the system. It does so by making the intercept and/or slope of the compensation function depend on last year's performance. Understand that when we do this we then introduce a kink or non-linearity in the compensation function as manager's recognize that next year's compensation for any degree of performance will be lower when this year's performance is higher. Managers and other employees quickly learn to take this into account in limiting the performance reported this year so as not to set benchmarks for the future that are too high.

Suppose, for example, that in order to increase performance a manager can exert more effort to increase performance by 10% over the current level, and that it takes considerable effort every period in the future to maintain that increase in performance. In this case managers will perceive that it takes effort every single period to maintain the one time increase in performance but they are rewarded only in the first year for the improvement. Unless the current year's bonus is very substantial most managers will think twice before engaging in this effort. In effect this policy establishes a discontinuity/kink in the future compensation function at the level of this years performance. And since this shift in the future compensation line depends on the manager's actions today it therefore will affect managers decisions to take those actions. A better way is to look further out, setting bonus lines for a number of years out based on longer-term growth and profitability projections. This is harder to do, but it reduces the potential for gaming.

On the other side, low performance this year that reduces the level of performance required to earn any given payoff next year will be factored in to managers' decisions to

take large baths this year in the event of otherwise poor performance. Taking a bath this year makes next year's bonuses higher for any given level of true performance. In a truly linear pay system this would not induce gaming, but it will if, as is often true, the large writeoffs are not included in this year's performance measures or there are lower bounds on compensation that limit negative bonuses.

Fig. 4 gives an illustration of how the linear compensation lines can be shifted out to meet, for example, some growth estimate for a number of years. This is obviously a more challenging plan than one that does not adjust for some future growth. Many managers want to do this to avoid overpaying in the future. As long as it is all put in place at the beginning and does not make the shifts a function of present or future performance such shifts in the intercept will not generate gaming behavior. Unfortunately, while this is easy to say it is not easy to do. I think realistically there is no perfect solution to this problem of adjusting the bonus lines over time to take into account competitive conditions and changes in the growth of the market. Equity compensation does not shift the difficulty over time. It pays managers for what happens, and except for the kink at the point of bankruptcy induces few gaming problems.

- *Compensation lines developed each year by projecting minimum growth for a number of years*
 - *Lines will not change based on actual vs. projected performance over time*
 - *Lines will shift outward to reflect yearly growth projections*

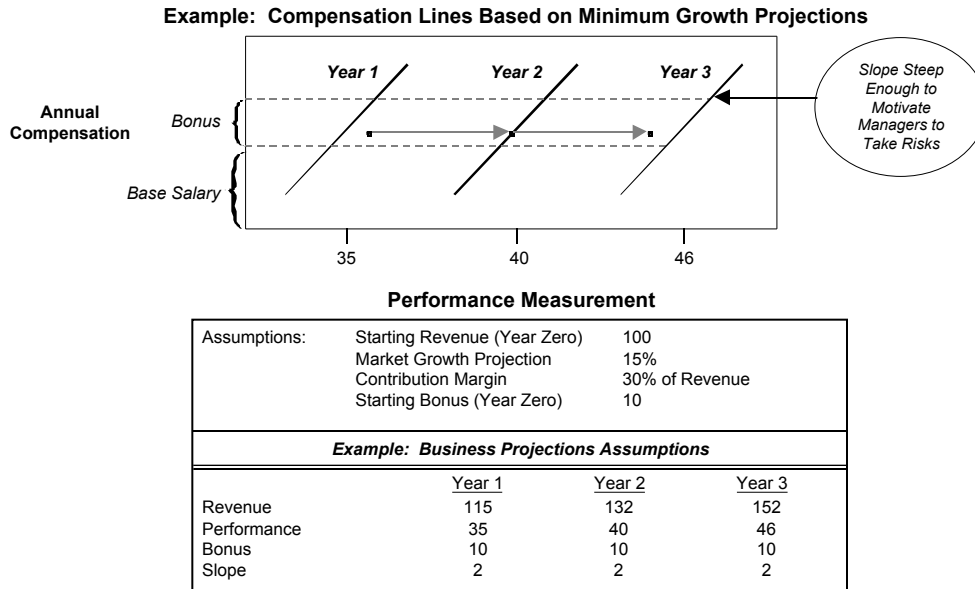


Fig. 4

Example of how compensation lines can be set to change at initiation according to a fixed formula. If the formula does not depend on future performance it will not have adverse affects on incentives by causing gaming. (Source: Adapted from client work of Jennifer Lacks-Kaplan)

3. The slope of the budget line.

The slope of the bonus line must be high enough to reward managers for taking risks and to reward them for the extra effort and creativity to produce incremental performance. There is no simple rule that will tell us what the slope should be. Choosing a slope involves assessing the benefits that come from higher rewards for outstanding performance from managers and employees versus the costs of doing so. The more risk averse managers and employees are the lower the slope will have to be.

Given a trial value of the intercept and slope of the bonus line a firm must estimate through simulation the bonus payoffs to its managers and employees for all

relevant levels of performance and make sure that it is comfortable that the economics of the system work. We cannot create a system that turns all a firm's cash over to its managers and employees without destroying the ability of the firm to invest and raise capital. And if we create a system that does not reward employees enough for outstanding performance we will lose them to competing firms.

Finally it is obvious but worth saying anyway, that it is important to think through all aspects of compensation, including the effects of promotion and non-pecuniary reward systems to make sure that non-linearity and target-based rewards and punishments have not crept back into the system.

6. The difficulties of managing without targets

A. Good managers always set targets and reward those who meet them and punish those who don't

It will not be easy for most firms to switch to a linear compensation system. These target-based systems are so ingrained in the minds of managers and in the managerial code of most organizations that even those managers who wish to change will find it very difficult to do so. People have to learn to think in a fundamentally different way about these systems. Getting managers to give up target-based bonuses is hard, but then getting them to give up promotions or reputational rewards for "meeting or beating budgets" is even harder. And once managers become intellectually convinced of the desirability of these steps, they often wish (unwittingly) to reintroduce the problem by putting upward kinks or non-linearity in the system by increasing the bonuses more rapidly after the targets are met as in Fig. 3. The psychological mindset seems to be that both managers and employees feel unrewarded unless they "get something more" after they have achieved budget, and this easily leads to increasing the piece rate in the linear

compensation system and reintroducing all of the attendant problems of non-linear compensation profiles discussed in the context of Fig. 3.

B. Strong allegiance to minimum and maximum limits on compensation

It is sometimes difficult for an organization to present its managers and employees with fully linear pay-for-performance schedules because of employee cash constraints. Employee financial commitments such as mortgages, college tuition and so on make it valuable for people to have a limited downside, and some companies may be forced by market conditions to impose lower limits on the downside. But as long as we can keep the lower limits (or upper limits) out of the relevant range of likely outcomes the incentive effects should be small.

One way to help move the lower limit out of the relevant range is to follow Bennett Stewart's suggestion to institute a bonus bank in which managers are not paid their entire bonus in the year earned. (Stewart 1990) One example is to pay it out over 3 years with the balance held in a virtual "bank", paid interest, and available for payout in future years. But if the next year's bonus is negative (that is below the lower limit of salary plus bonus) it would be charged to the bonus bank and would reduce future bonus bank payouts.

There are other strong forces that limit the ability of organizations to truly make compensation linear. It is difficult for organizations and the human beings that make them up to manage without maximum limits on compensation. People have a strong tendency to attribute large positive outcomes to good luck, and there is a strong tendency for managers to wish to limit the payoffs from such "luck". But luck is often extremely difficult to distinguish from talent and a few critical choices that managers can make or not make. Jealousy plays a role in this, and so does pride, two of the least desirable qualities of human beings.

Running a linear compensation system with no maximum limits means that up and down the hierarchy managers have to be willing to see some employees and/or managers that report to them getting bonuses that are much larger than their own. How many CEOs can tolerate paying a salesperson or technical expert more than they get themselves? Wise ones are both willing and able to do this and willing to encourage managers under themselves to do it. But because the pay-for-performance system will give levels of total compensation in any given year that do not rise linearly as we go up the hierarchy, ego and jealousy play important roles in undoing the system and putting kinks back into it.

I recently witnessed a large technical firm that wished to revise its compensation system to cause its stock price to double in 3 years reimpose maximum payoffs on the system. This change, of course, was directly inconsistent with their desire to release unlimited upside incentives on the part of their managers to bring about extraordinary organizational performance.

One of the benefits of entrepreneurial organizations is that the equity ownership is close to the decision-making power and managers stand or fall on the stock price performance of the company. Such systems are often associated with intense energy and commitment, and can reward or penalize intensively on both the upside and the downside. Note that as long as a company is out of range of bankruptcy, equity gives its managers a linear pay-for-performance system with no upside limits. And it is more difficult to take back the equity gains than it is when all that is necessary is a revision of the bonus formula.

C. The fear of turnover vs. the benefits of new blood

When moving to a linear system managers will worry whether the intercept and slopes of their compensation lines are correct. Are they too rich and will they pay off too

much to insiders and leave too little to shareholders? Are they too risky for managers and employees?

In addition, because of the power of self selection, organizations must recognize that moving from a typical low sensitive pay-for-performance system with lower bounds and caps, kinks, and gaming, to a linear system such as that suggested here will create turnover among their employees and managers. Although this will generally be a good thing in the long run, it can be very disturbing in the short run because those people who are unhappy with the risks and promised rewards in the new system will not leave without first making life uncomfortable for many others. In addition, ex ante, it will generally be difficult to see how they will be replaced, and the fear among top managers and board members will be that the firm will lose so much specific knowledge with the turnover that the firm's operations will be threatened. This is a legitimate concern, but such costs are often overemphasized. My general impression is that the unexamined alternatives (to current managers) are almost always substantially undervalued.

If the changes are well designed, the long-term self-selection benefits can be valuable to the firm as poorer performing employees voluntarily leave the company. In addition, a firm that has too little turnover does not benefit from the new ideas and ways of thinking that can be brought in by new hires that are not yet captured by the firm's culture and standard ways of thinking. Because new blood brings benefits the optimal turnover rate is not zero.

Fig. 5 shows a simple example of how a change from a purely bureaucratic no-pay-for-performance system to a steep pay-for-performance system will cause low talented, less risk taking employees and managers to go to competitors with no-pay-for-performance systems and for highly motivated risk taking people to be attracted to our firm. Or put another way, Fig. 5 shows that when we opt for no pay-for-performance we are putting into place systems that tend to attract and keep in our employment people who are less talented, more risk averse and less productive than the average in the market.

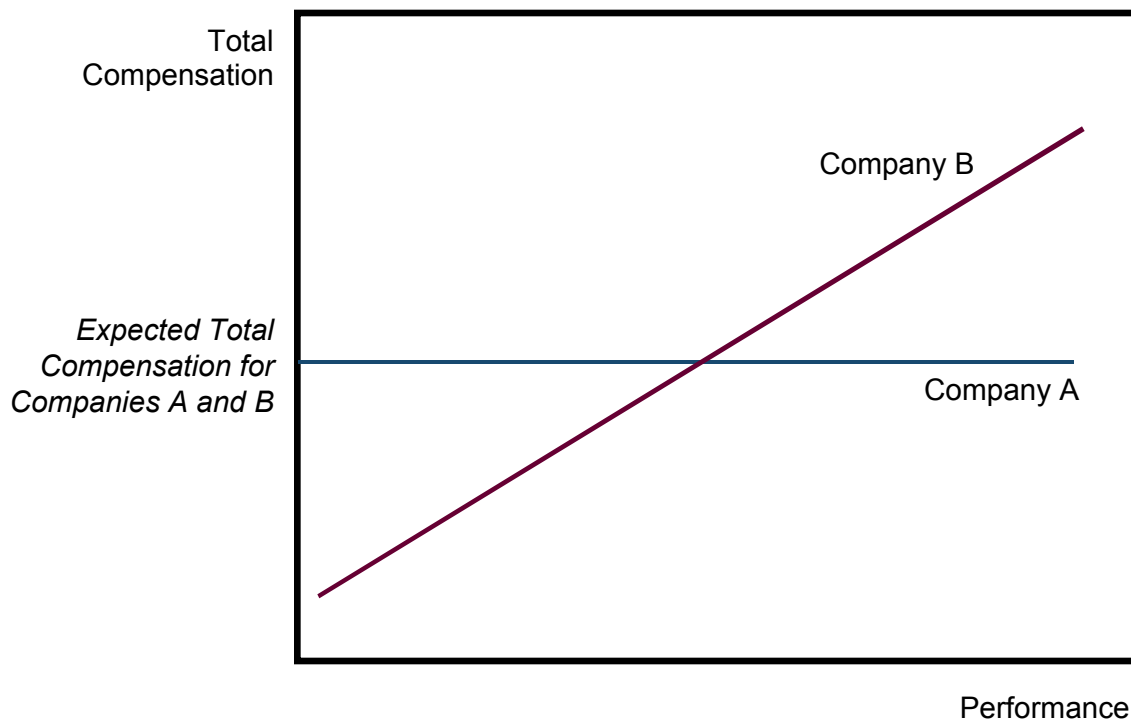


Fig. 5

The shape of the compensation plan affects how hard a person works and what they work on. The shape also creates self-selection into or out of a company. All those employees and managers in Company B in the lower end of the performance dimension who expect to earn more in Company A with the bureaucratic no-pay-for-performance system will migrate to Company A. Those at the higher end of the spectrum will stay or be recruited into Company B.

D. The dynamics of the system over time

A company must deal with how the system will change over time, and here we face another set of difficult challenges because, as I point out in section 5, we cannot make the location or slope of future bonus lines depend on this year's performance without indirectly introducing non-linearities and kinks back into the system. And we must be careful to avoid making what will seem to be arbitrary changes in the system as we go forward in the future. If we do this we can gut the system of its incentive effects.

If managers and employees come to believe that we will revise the system downward to avoid or take back large bonuses paid in the current year they will correctly

conclude that the system has kinks in it, even though they are informal and not explicit. They will estimate where those kinks are and hold back effort to restrict future performance so they are not triggered. See Roy (1952) for some powerful examples of this behavior that are all too common today as well.

This means we also have to resist the strong pressures from managers and employees to abandon the bonus system when its payoff is low because of poor performance. The threat of strikes or resignations by managers and employees in periods of hard times can be very difficult to resist. But, if a company is to gain the benefits of self-selection discussed above its top managers must be willing and able to endure the turnover that will result. This may be one of the most difficult tasks for many companies to accomplish successfully.

E. The importance of education

Any company making substantial changes in its compensation system will have to devote considerable resources to educating its managers and employees about exactly how the new systems will work and why. If people cannot understand what drives the payoffs in a new system they will not be properly motivated even if it is well designed system. This education will take time and effort and will have to overcome the natural tendency of human beings to resist change. Compensation is a fundamental element in each person's life, and any compensation change program must recognize two facts about human behavior: 1. almost everyone believes that they are experts on compensation and 2. almost everything that they believe about compensation is wrong.

Thus, getting the new system right and getting over the change period to a point where people are fully adjusted to and comfortable with the new system is a major managerial challenge. And we must not be surprised when we find that even people who will benefit in the new system will end up opposing it (at least initially) for a variety of these reasons.

F. Lead from the top

Given the complexity of designing a new pay system, as well as the controversy it inevitably sets off, CEOs will feel a natural desire to hand off leadership for the effort to the human resources department. That would be a mistake, and probably a fatal one. HR has neither the standing, the influence, nor the decision rights to make a fundamental business change that will have a profound impact on the business decisions of line managers. And that's exactly the kind of change that I'm talking about: Everyone in the organization will have to shift their thinking about the role and use of both budgets and incentives. Performance measures will have to be changed, and the functional form of bonuses will have to be revised. Since these issues are as politically charged as any within a company, strong CEO leadership is essential. Only the CEO has the credibility to make the business case for the changes and to rally the troops behind them.

The CEO should recognize that the new plan will meet with intense resistance, even at the highest reaches of the organization. HR cannot be expected to be an enthusiastic supporter of the new system because almost nothing in the new system will make the HR department's job easier. To the contrary, life in HR will be tougher in the new system. The firm will face higher turnover throughout the firm as more risk averse and less qualified people fight the changes and eventually leave. There are risks to be taken in redesigning the system and the HR department won't see great payoffs from rocking the boat.

Some of the strongest objections, I have found, tend to come from the CFO and his or her team. Finance executives naturally fear that reducing the importance of budget targets in motivating line managers will make it more difficult to control results and avoid surprises. It will be up to the CEO to make sure the CFO, not to mention Wall Street analysts, understands that the new approach will improve the quality of both the information provided by the line and the incentives provided to managers. And better information and better incentives will lead to better results. Yes, there may be greater

uncertainty in quarter-to-quarter results—as there will no longer be the incentives to set artificially low targets and then do everything possible to meet them—but the long-run profits will be superior. In effect giving up the illusion of control that comes from quarterly and annual budget targets will effectively increase managerial control.

In addition, every major line manager will have to understand the new system and the theory behind it and be prepared to explain it and defend it against opposition and opportunism from the ranks. There are no shortcuts through the education process. Organizations don't change overnight, particularly when the very frame through which we see the business is involved. Remember, it has taken many years to weave lying and deceit into the fabric of our businesses; cleansing the fabric will take time as well.

G. Don't abandon traditional controls completely

Finally, companies should be careful not to put too much emphasis on the new bonus system. People are incredibly creative and given time and incentives they will find innovative ways to operate within any new system to make themselves better off. We must plan for the mistakes we will inevitably make in designing a new system and leave room to adjust it, and we must have other controls in place to ensure that we don't inadvertently run off the tracks because we forgot to attend to one or another detail. Incentives, as powerful as they are, cannot do everything.

7. Restoring reality; restoring integrity

The effects of gaming are pervasive in organizations. They extend well beyond the internal setting of goals and move towards demeaning the whole organization. As I mentioned above, the budget game inevitably gets extended to the firm's relationship with the capital markets as the CEO and CFO become enmeshed in a similar game with

financial analysts over meeting financial targets.²⁶ This is a game that managers can only lose in the long run and a game that reinforces and exacerbates the internal managerial budget-target games. Managers can take actions that make it appear that the company is meeting its targets and analysts expectations, just as they can in their internal systems. Thus they are almost universally drawn into a short-run game with the analysts in which they manipulate the numbers to satisfy the markets. This strategy must fail in the end because every company faces a certain amount of uncertainty that cannot be controlled. Like a balloon, if you push it down here, it pops up somewhere else—eventually.

The cost of such gaming cannot be measured in numbers alone. As I've pointed out above, this "gaming" ultimately erodes the integrity of the entire organization. Consistent with the recent lawsuits against Lucent and Xerox by Aversano and Bingham discussed in Section 3.E, above, Barbara Toffler describes the issue well in her excellent article "When the Signal Is 'Move It or Lose It.'"²⁷ She quotes an unnamed executive who describes the "move it philosophy" as "when the boss tells a subordinate to move it—just get it done, meet the deadline, don't ask for more money, time or people, just do it—and so it goes on down the line. That . . . is the heart of unethical practice in business." Toffler comments: "An insidious twist in the move-it demand is that it allows no challenge. Saying that a command is unrealistic or impossible is likely to trigger a retort like: 'You're paid to get it done, so do it,' or 'If you can't do it we'll find somebody who can.' Indeed, a decision to stand one's ground may be tantamount to putting one's job on the line. It should be no surprise that unethical behavior creeps in. Most cases of unethical management practice I have seen occur when basically decent people get caught in the move-it grind. . . For American companies, this peril from within is as serious as outside threats from competitors."

²⁶ See for example, Carol J. Loomis, "The 15% Delusion," *Fortune*, Feb. 5, 2001.

²⁷ Toffler (1991)

Everyone can benefit by bringing this game to an end, and I believe it starts by eliminating the use of targets in compensation systems, and in particular by eliminating the use of budgets as targets in compensation systems. Simply put this means creating linear pay-for-performance compensation systems.

References

- Baker, George P., Robert S. Gibbons, and Kevin J. Murphy. 1997. "Relational Contracts and the Theory of the Firm." Unpublished Manuscript, Harvard University, no. December,
- Bandler, James and John Hechinger. 2001. "Xerox Executive Challenges Its Accounting. and Is Fired-Query Into Mexican Unit's Books Snowballs." *Asian Wall Street Journal*, no,
- Bandler, James and Mark Maremont. 2001. "Seeing Red: How Ex-Accountant Added Up to Trouble for Humbled Xerox." *Wall Street Journal*, June 28, p. A1.
- Collingwood, Harriss. 2001. "The Earnings Game: Everyone Plays, Nobody Wins." *Harvard Business Review*, no: pp. 65-74,
- DeGeorge, Francois, Jayendu Patel, and Richard Zeckhauser. 1999. "Earnings Management to Exceed Thresholds." *Journal of Business* 72, no. 1,
- Hope, Jeremy and Robin Fraser. 1997. "Beyond budgeting: Breaking Through the Barrier To "The Third Wave"." *Management Accounting* December, no,
- Hope, Jeremy and Robin Fraser. 1999a. "Beyond Budgeting White Paper, Beyond Budgeting Round Table: Fraser Hope Associates, CAM-I Consortium for Advanced Manufacturing, International.
- Hope, Jeremy and Robin Fraser. 1999b. "Beyond Budgeting: Building a New Management Model for the Information Age." *Management Accounting—London* 16, no,
- Hope, Jeremy and Robin Fraser. 2000. "Beyond Budgeting." *Strategic Finance* 30, no. October 1,
- Hyde, Justin. 2001. "Chrysler's Reward Program Backfires." *The Globe and Mail*, no: p. B14,
- Jensen, Michael C. 2001. "Value Maximization, Stakeholder Theory, and the Corporate Objective Function." *European Financial Management Review*, V. 7, No. 3, Sept. 2001, pp. 297-317. Forthcoming in *Business Ethics Quarterly*, Vol. 12, No.1, Jan 2001, and the *Journal of Applied Corporate Finance*, Fall 2001. Available from the Social Science Research Network eLibrary at: <http://papers.ssrn.com/paper=220671>, no, An earlier version of this paper appears in *Breaking the Code of Change*, Michael Beer and Nithan Norhia, eds, Harvard Business School Press, 2000.
- Kersnar, Janet. 1999. "Re-Inventing the Budget." *CFO Asia*, July/August.
- Lester, Tom. 2000. "Monday Management: Managers Count Blessings As Budgets Begin To Lose Currency—Some Firms Long for Freedom from the Burden of Budgeting." *Irish Times*.
- Locke, Edwin A. 2001. "Motivation by Goal Setting," in ed. Robert T. Golembiewski, *Handbook of Organizational Behavior*. New York: Marcel Dekker.
- Locke, Edwin A. and G. Latham. 1990. *A Theory of Goal Setting and Task Performance*: Prentice Hall, Englewood Cliffs, NJ.
- Mehta, Stephanie N. 2001. "Lessons from the Lucent Debacle." *Fortune*, February 5, 2001.

- New York Times. 2001. "Incentive Plan Hurts Chrysler." *New York Times*, May 1, p. 5.
- Roy, Donald. 1952. "Goldbricking in a Machine Shop." *American Journal of Sociology* 57, no: pp. 427-442,
- Schroeder, Michael. 2001. "SEC List of Accounting-Fraud Probes Grows." *Wall Street Journal*, July, 6, p. C1.
- Schweitzer, Maurice, Lisa Ordonez, and Bambi Douma. 2001. "The Dark Side of Goal Setting: The Role of Goals in Motivating Behavior." In Whartan School, University of Pennsylvania Working Paper. Philadelphia, PA.
- Stewart, G. Bennett. 1990. "Remaking the Corporation from Within." *Harvard Business Review* 68, no. 4: pp. 126-137,
- Suhr, Jim. 2001. "Chrysler Revises Dealer Quotas." *AP Online*, May 7.
- Thomas, Tony. 2000. "Toss Your Budget Out the Window." *Business Review Weekly*, September 8.
- Toffler, Barbara. 1991. "When the Signal Is 'Move It or Lose It'." *New York Times*, November 17, 1991.