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Chicanery, Intelligence, and Financial Market Equilibrium

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Abstract

Chicanery, Intelligence, and Financial Market Equilibrium

In this paper, we provide perspectives on how disclosure policies and managerial intelligence interact to influence stock prices, firm values, and the liquidity of financial markets. In addition to the natural premise that intelligent managers positively influence firm values, we adopt two alternative perspectives on managerial intelligence. First, intelligent managers, precisely because of their intellect, are likely to be very successful in disseminating misleading impressions of a company's true value. Second, agents with intelligence have high reservation wages which increases their incentives to overstate firm value. These two features cause the incentive to make misleading disclosures to increase in managerial intelligence. We show that given feedback from stock prices to cash flows, such confounding actions may actually improve ex post firm values. We then show that agents may have inadequate incentives to investigate and acquire information in firms run by disingenuous but intelligent managers. This ensures that firms where managers fudge financial reports can be very liquid with little information asymmetry in financial markets but substantial information asymmetry between management and outside investors.

1 Introduction

Recent months have witnessed a spate of revelations about misleading financial disclosures. The Enron crisis, the WorldCom revelations, and other indications of chicanery by top management have all added to a concern that investors may lose confidence in the financial markets, which may threaten the viability of such avenues as a source of capital. While prominent finance academics believe that the bulk of the scientific evidence supports semi-strong efficiency (Fama, 1998, Schwert, 2003), recent ex post disclosures of managerial disingenuousness indicate that the information embedded in the financial and accounting statements of Enron and WorldCom was not properly interpreted by the financial markets. Overall, therefore, it is reasonable to assert that the market for assessing the health of companies functioned imperfectly in these and other high profile cases. In the Enron case, a specific concern has been that the intelligence of management was used in so ingenious a way that the dishonesty was simply not decipherable by outside investors (see, e.g., Partnoy, 2002).

Given the upsurge of cases involving misleading financial disclosures and chicanery, an analysis of the incentives for managers to make dishonest disclosures appears to be warranted.¹ In this paper, we consider theoretical perspectives on how managerial intelligence interacts with the incentive to disclose information, and, in turn, on how it impacts financial market prices. Our premises and assumptions are motivated not just by economic arguments, but by alluding to literature in psychology and related areas. In the context of stock market returns, Brennan (2001) argues that “[While using] radically different behavioral postulates to explain different phenomena...is the route to explaining asset prices in a statistical sense, it is clearly not a route to understanding them.” A contrasting argument in the rapidly emerging field of behavioral finance is that using concepts from fields other than economics is important to understand phenomena in financial markets. Our view is consistent with this latter approach; specifically, that using

¹In this paper, we interpret “managers” as executives as well as agents with close relationships to the firm (e.g., accountants hired to audit the company’s statements).

concepts from economics as well as other fields is important to develop an understanding of the spate of episodes in which managers appear to have violated canons of ethics and honesty.

Intelligence in the context of finance has previously been examined by Chevalier and Ellison (1999), who find that indicators of intellectual prowess (specifically, SAT scores) are positively related to managerial performance in mutual funds. However, to the best of our knowledge, there are virtually no theoretical studies on the effect of managerial intelligence on disclosure policies and firm valuations.² Yet, as suggested by Palia (2000), measures of CEO intellect do vary in the cross-section.

There also is good reason to believe that agents in the top echelons of corporate management and in auditing firms are more intelligent than average. For example, Hildreth (1934) and Eysenck and Evans (1998) indicate that business-oriented professionals (e.g., accountants and lawyers) have higher IQ's than agents in other walks of life. Further, a casual examination of GMAT scores of the admitted MBA pool at a top-ten business school such as Harvard or Wharton (that tend to produce large numbers of top managers) buttresses the view that managerial intelligence is likely far higher than average. Given that intelligence is a trait that is closely involved with business success, it appears desirable to conduct a first theoretical examination of how it influences disclosure incentives and stock prices.³

It is a straightforward premise that intelligent managers add value to companies.⁴ While we do consider this element, it is not our principal focus. Instead, we concentrate on two alternative premises on how intelligence can affect firm value and financial mar-

²A related line of research is the principal-agent literature, pioneered by Jensen and Meckling (1976). Such literature, however, does not explicitly consider the notion that agency problems may be a function of managerial intelligence levels.

³Intelligence and talent have also received attention in the popular press. For example, Ridderstale (2002) emphasizes the importance of retaining talented employees, while Gladwell (2002) argues that a focus on very intelligent "star" employees detracts from the notion that individuals within organizations have to combine well for the organization to succeed.

⁴Of course, there is scholarly debate on how to measure intelligence (e.g., Jones and Day, 1997, and Wagman, 1996). In this paper, we eschew this debate and take the view that intelligence can be measured by a standard scale such as that of Wechsler (1958).

ket liquidity. First, we take the position that very intelligent but dishonest managers, precisely because of their intellect, are likely to be more successful in disseminating misleading impressions of a company's true value than less intelligent ones. To canvass support for this view, we invite the reader to consider the passages from Partnoy (2002) that we quote in Appendix B. While it is clearly the case that not all intelligent individuals would have used those methods of creative accounting, it seems reasonable to assert that a necessary condition for those methods to even occur to the brain of top management is that they be intelligent. That is, disingenuous methods of corporate accounting can be successful only if those methods are complicated enough to avoid detection by outside investors, which requires intelligence.

Further, psychological research on "Machiavellian intelligence" is based on the premise that human intellect has evolved to deal with obtaining success in a complex, hierarchical society. The studies in Byrne and Whiten (1988) provide examples of how primates practice deception while mating in order to avoid attracting the wrath of other potential mates higher in the social hierarchy. Extrapolating from this notion, one could argue that this evolutionary basis for intelligence would predispose intelligent individuals towards creative disingenuousness. In support of this view, early research on the relation between IQ's and personality indicates that highly intelligent people are more prone to indulge in chicanery (see Hollingsworth, 1940).

Our second link between intelligence and chicanery takes the position that the more intelligent the manager, the greater his reservation wage, and the greater the payoff required for his retention. This naturally implies that the greater is managerial intelligence, the stronger is the incentive of the manager to misrepresent disclosures.

Based on the above premises, we consider a managerial policy of providing misleading disclosures by fudging, for example, an accounting report. We find that the incentives to indulge in such a policy increase with managerial intelligence, and further, that such a policy can increase ex ante expected stock prices so long as investors place undue faith in the honesty of the manager. We propose that this under-assessment can occur due to

biases such as the prevalence of theological beliefs and social mores that call for trusting fellow human beings.

We consider an expanded version of our basic model where a manager can take an ex ante action to improve the true expected value of the firm. We find that the greater the intrinsic tendency of the manager towards dishonesty, and the smaller the penalty for fudging disclosure, the less is the effort spent on increasing true expected firm value. This illustrates the role of vigorous and timely prosecutions by regulatory authorities, and also emphasizes the importance of staffing these entities with intelligent agents who can uncover cases of disclosure with efficacy.

We next explore a setting where stock prices can positively influence corporate investment. We show that confounding actions by managers may actually improve ex post firm values because firms with disingenuous managers attract more capital than those with honest managers. The finite life of a managerial career is a disincentive towards eschewing such techniques to boost value.

We examine the impact of misleading disclosures on information acquisition and liquidity. Here, we assume that the cost of acquiring a signal that reveals true value is increasing in managerial intelligence. This assumption can be motivated by anecdotal evidence which suggests that the Enron accounting subterfuges were the product of highly intelligent minds. We argue that dishonest but intelligent managers may be so successful at concealing true value that potentially informed agents may find it prohibitively costly to produce value-relevant information, even if they follow the firms of these managers on a regular basis. This ensures that true value is not revealed through analysis, and firms where managers fudge financial reports are liquid with little information asymmetry in the financial markets, but with large information asymmetry between managers and outside investors.

Our analysis of managerial intelligence also provides other cross-sectional implications. We predict that the impact of managerial intelligence on firms that are relatively

narrowly focused will be constructive and aimed at improving true value, while such intelligence may be focused more on dishonest activity in broadly diversified firms with many lines of business. We also raise the issue that exogenous costs of being disingenuous may affect firm values. Of course, if managers never fudge because of intrinsic (or theologically-driven) motivations to be scrupulous, then firm disclosures are always true reflections of performance. However, when such exogenous honesty dissolves in some managers, a good firm with an honest manager trades at a discount relative to its true value because the market does not trust the manager. A “disingenuousness premium” may therefore be embedded in financial market returns.

The remainder of this paper is organized as follows. Section 2 presents the basic model. Section 3 considers the costs as well as the benefits of intelligence. Section 4 examines the impact of feedback from stock prices to cash flows when managers act disingenuously. Section 5 extends the model to incorporate costly information acquisition, and Section 6 concludes. Unless otherwise stated, propositions are proved in the appendix.

2 The Basic Model

Consider a firm with a value v that can equal H or L , with $H > L$. The value of the firm is revealed at time 1. The probability of the firm having a value H is denoted by q . There is a risk-neutral manager who learns the true value and subsequently releases a public disclosure, e.g., an accounting report, pertaining to the firm’s true value, at time 0. The term “manager” in this paper not only represents executives of the corporation but also ancillary agents involved in the disclosure policy, such as accounting firms who are hired to audit the financial statements of the firm, and lawyers who advise the firm on the legality of proposed disclosures. The report released by the manager can be interpreted as a possibly fudged accounting statement that is not decipherable with accuracy. There is a continuum of risk-neutral outside investors who hold shares in the corporation, and

the total quantity of shares is normalized to unity.

2.1 Misleading Disclosure

There are two classes of outside agents who draw inferences from the manager's disclosure: the board of directors (BOD) and outside investors. The BOD sets the wage of the manager, and outside investors determine the stock price. The manager's report is examined by an agent termed an analyst, who neither invests in the firm nor is involved in its governance. The specific objective of the analyst is not explicitly modeled for simplicity. It is assumed that for a fixed exogenous wage the analyst appraises the report and releases a signal, denoted by s , which conveys his opinion about the firm. The signal s can equal H or L , and is observed by the BOD as well as the outside investors. We represent the probability with which the analyst concludes that a firm worth L (H) is actually worth H by p (p'). We assume that these probabilities are control variables for the manager. This captures the notion that the manager is able to control the degree of fudging by various means (disingenuous statements, off-balance-sheet partnerships, and so on).

The firm's stock price at time 0 is the shadow price of homogeneous, risk-neutral investors, and therefore equals the expected value of the firm conditional on s . We also assume that if the expected value of the firm conditional on s is greater than L , the manager obtains a wage of W , whereas if the expected value conditional on s is L , the wage is L , with $W > L$. If we further suppose that the manager has outside employment opportunities only when the firm is assessed at a value greater than L , then W can be interpreted as the reservation wage of the manager in a competitive labor market. We do not model the precise rationale for why the wage is this function of valuation. Nevertheless, one could appeal to standard arguments such as the dependence of managerial compensation on stock prices (for example, by way of stock options) that would justify this rule.

We incorporate an explicit cost of being disingenuous into the model as follows. We

suppose that an external regulatory agency can investigate manager dishonesty following the final release of the firm's value at time 1. While the costs and benefits of the agency are not modeled, we suppose that if the manager is found to have fudged, the penalty incurred (e.g., the reputational and monetary costs, as well as the cost of incarceration) is a $C_r > 0$.⁵ The probability of being discovered as having fudged is r . The expected reduction in the manager's payoff is thus rC_r . In addition, we assume that the probability r is increasing in p . The notion is that an overly optimistic and disingenuous assessment (but dishonest) one. For tractability we assume that the relationship between r and p can be represented as $r = kp$, where k is a constant such that $0 < k < 1$. The specification of the cost of being dishonest ensures that when the firm is worth H , the manager announces H by way of the report without any fudging, so that $p' = 1$.

Now consider the case where the manager learns that the firm is worth L . In this case, it is evident (and formalized later) that if the manager learns that the firm is worth L and releases a fudged report (i.e., sets $p > 0$), the conditional expected value of the firm when the signal s is H exceeds that when s is L . The manager thus chooses p to maximize his expected payoff, which can be given as

$$pW + (1 - p)L - kp^2C_r,$$

which yields

$$p = \frac{W - L}{2kC_r}, \tag{1}$$

so long as the exogenous parameters are such that p lies between zero and unity; from this point on, unless explicitly stated to the contrary, we assume that the parameters W , k , C , and L are such that p indeed lies in this range. Our basic premises on how intelligence affects disclosures can be represented by the following notions. First, we propose that k is a function of an intrinsic tendency to be dishonest and is also decreasing in managerial intelligence because intelligent individuals are more likely to be able to

⁵Consistent with the notion that fudging corporate disclosures is not a heinous crime, the penalty C_r is assumed to be finite.

conveying misleading impressions without being discovered.⁶ Second, the parameter W is increasing in managerial intelligence because intelligent managers will have higher reservation wages. Both of these premises imply that, holding the intrinsic tendency to be honest constant, the optimal p is increasing in managerial intelligence.

Consider now the assessment of the firm's expected value by the outside agents (the BOD as well as the outside investors). A simple application of Bayes' rule yields

$$\Pr(v = H|s = H) = \frac{q}{q + p(1 - q)},$$

and that

$$\Pr(v = L|s = H) = \frac{p(1 - q)}{q + p(1 - q)}.$$

Therefore the expected value (and also the stock price) conditional on an assessment of H is

$$E(v|s = H) = \frac{qH + pL(1 - q)}{q + p(1 - q)}, \quad (2)$$

which is greater than L , and it also follows that

$$E(v|s = L) = L. \quad (3)$$

From (2), we have

$$d[E(v|s = H)]/dp = \frac{q(1 - q)(L - H)}{[q + p(1 - q)]^2} < 0,$$

so that the stock price of the firm when the signal is assessed as H decreases in the probability p . This is intuitive: if the probability p is unity, the ex ante expected firm value when $s = H$ is $qH + (1 - q)L$ and it increases monotonically to H as p goes to zero. Furthermore,

$$d[E(v|s = H)]/dq = \frac{p(H - L)}{[q + p(1 - q)]^2} > 0,$$

so that the stock price of the firm when $s = H$ increases in the probability of the firm being worth H .

⁶Of course, a completely honest manager can be represented by $k \rightarrow \infty$, which implies that $p \rightarrow 0$.

It is evident that fudging increases the stock price when the firm is worth L . In particular, under fudging, the firm worth L is priced at

$$p \left[\frac{qH + pL(1 - q)}{q + p(1 - q)} \right] + (1 - p)L,$$

which is greater than L . Of course, a similar argument shows that the firm worth H is valued and priced at less than H . The relevant issue is whether fudging can increase the ex ante expected stock price across H and L realizations. The next subsection considers this issue.

2.2 Fudging and Ex Ante Expected Stock Price

If the manager does not misrepresent the firm ($p = 1$), the ex ante expected stock price is $qH + (1 - q)L$, which is the same as the ex ante expectation of the true value of the firm. Denote $\gamma \equiv \Pr(v = H | s = H)$. Then, if there is fudging ($0 < p < 1$), the ex ante expected value (also the expected stock price) becomes

$$[q + p(1 - q)][\gamma H + (1 - \gamma)L] + (1 - p)(1 - q)L.$$

Noting that $\gamma = q/[q + p(1 - q)]$ (from (2)), the above expression reduces to $qH + (1 - q)L$. Hence, in this case, fudging has no effect on the ex ante expected stock price.

The above argument assumes that outside investors update in a rational manner. There is ample evidence, however, that investors exhibit psychological biases as well as poor portfolio performance (e.g., Odean (1998, 1999)). This is suggestive of their naïveté. Motivated by this evidence, consider now a scenario where investors are biased towards cynicism or excessive trust in the manager, which causes their assessment of the probability p to deviate from its true value. Further suppose their optimism or pessimism causes their assessment of q to also be different from the true quantity. Denote these incorrect assessments as p' and q' , respectively. An assessment $p' < p$ denotes excessive trust in the manager, and $q' > q$ denotes excessive optimism. The expected stock price

prior to the observance of s (denoted by E_a) then becomes

$$E_a = [q + p(1 - q)] \left[\frac{q'H + p'(1 - q')L}{q' + p'(1 - q')} \right] + (1 - q)(1 - p)L \quad (4)$$

Straightforward calculations show that the difference between the true expected value, $qH + (1 - q)L$ (which is also the expected stock price without fudging), and the right-hand side of (4) is positive if and only if

$$\frac{q'(1 - q)}{q(1 - q')} > \frac{p'}{p} \quad (5)$$

It is evident that the tendency for (5) to hold is strong when q' is high (optimism) and p' is low (excessive trust). Psychological and theological evidence indicates arguments for why these conditions are likely to hold. The optimism bias is documented in the literature (e.g., Schweizer, Beck-Seyffer, and Schneider, 1999). We propose that a bias towards placing undue trust in a manager can occur due to the prevalence of theological beliefs and cultural mores that call for trusting fellow human beings.⁷ Indeed, the positive interlinkages between religion and trust have been demonstrated and discussed, for example, by Begue (2002), Kinsella (1997), Larzelere (1984), Pargament, Tyler, and Steele (1979), Riccards (1971), Rotter (1967), and Tracy (1967).⁸ While many Americans are not overtly religious, the impact of such mores on social attitudes and beliefs is likely substantial. In addition, it is common medical advice to be less cynical, since scientific evidence suggests that cynicism predisposes one to adverse health outcomes (Greenglass, 1996), and, from an anecdotal standpoint, self-help bestsellers propose eschewing criticism of people (e.g., see Carlson, 1997, pp. 123-124). A further motivation to believe the best in others relates to the psychology literature wherein it shown that the optimism bias mentioned earlier makes people more trusting (Uslaner, 1998). We

⁷As an example of this phenomenon, in much of the scholarly world, authors are implicitly trusted to accurately and honestly report analyses. It appears that since there are extremely few requests by referees to cross-check authors' work, the potential reward for disingenuous authors is quite large. A similar analogy applies in the corporate world.

⁸From an anecdotal standpoint, a common interpretation of the Ninth Commandment "thou shalt not bear false witness against thy neighbor" discourages against thinking and speaking ill of others. See, for example, <http://www.themiracleofstjoseph.org/tencmds2.htm> or <http://www.stjohndc.org/command/9208.htm>.

argue that within a people characterized by the above features, there would be a natural disinclination towards believing that a manager deliberately fudges company value.

The following proposition obtains from the above discussion.⁹

- Proposition 1**
1. *Fudging increases (decreases) the ex ante expected stock price of a firm whose true value is L (H).*
 2. *Fudging has no effect on ex ante expected stock prices across H and L realizations so long as investors update rationally.*
 3. *When investors are over-optimistic and place undue trust in the honesty of the manager, fudging increases the ex ante expected stock price prior to the observance of s.*

The bias towards trusting people can also be used to justify why investors do not lose trust in a disingenuous manager even after the true value is revealed. While we do not explicitly model this issue, it may be that investors prefer to believe that they were wrong in assessing value than surmise that the manager deliberately misled them, thereby ensuring the survival of the manager. It is interesting, however, to speculate beyond the above result on what happens after a few instances of corporate chicanery are *conclusively* exposed by regulators. We conjecture that in this scenario, investors would set aside their bias towards trust and move their assessed probability p' towards its true value. This should serve to reduce stock prices, as seen in recent dips in the stock market following the Enron and World Com revelations.

Having made the point that biases consistent with the psychological literature can positively influence ex ante expected stock prices, we now assume proper updating as per Eqs. (2) and (3). This is done purely for convenience; the analysis readily accommodates the alternative case where investors are over-optimistic or too trusting.

⁹In the proposition, the term “fudging” refers to a set of exogenous parameters that yield a strictly positive p , and the implicit comparison is to a case where $p = 0$.

2.3 Dishonesty Discount

In this subsection, we show that disingenuousness can lead to a valuation discount (or return premium) that penalizes good firms. We consider two firms with independent but identical value distributions of the type introduced in the previous section. Suppose that the first firm has a true value realization of H . As already noted in the previous subsection, this manager has no incentive to lie, hence he announces a value of H through the report. Consider that the second firm has a dishonest manager who follows a fudging strategy detailed in Section 2.1.

We assume that investors can freely invest in both firms, but that they cannot discern which firm is truly good and which one's manager is dishonest and fudges. Then, conditional on both firms being assessed at $s = H$, since the market cannot distinguish between which firm is truly good and which firm's manager is dishonest, the first firm will sell for the valuation as the second. Assuming a risk-neutral investor attaches equal probability of picking a good firm and a firm with a dishonest manager, the difference in expected stock prices between honesty and dishonesty will be

$$(1/2)[E(V|s = H) + H] - H = \frac{qH + pL(1 - q)}{2[q + p(1 - q)]} - \frac{H}{2},$$

and therefore will equal

$$-\frac{p(1 - q)(H - L)}{2[q + p(1 - q)]},$$

which is negative.

We can view the above quantity as a discount for disingenuousness; note that its magnitude increases in p . Furthermore, since we have assumed that p increases in the intelligence of the manager, the dishonesty premium increases in the intelligence of the manager. The intuition is that the greater the intelligence of the manager, the smaller the chance he will be discovered as having fudged, and the greater the value the manager must receive as expected compensation from the firm. For both of these reasons, greater managerial intelligence implies more obfuscation in the disclosure.

3 Benefits and Costs of Intelligence: Cross-sectional Links Between Managerial Intelligence and Firm Value

The previous analysis has not accounted for the notion that intelligence can also influence firm values in a positive way. To address this issue, we now envision a scenario where both p and q are functions of the intelligence of a manager. In other words, an intelligent manager can influence the true probability of the firm being worth H (i.e., q), as well as the probability p . Suppose that a manager can influence q prior to when he learns whether the firm is worth H or L . The cost of increasing q is given by χq^2 , where $\chi > 0$. We assume that χ is decreasing in managerial intelligence. From an ex ante standpoint, the manager maximizes

$$qW + (1 - q)[pW + (1 - p)L - kp^2C_r] - \chi q^2$$

taking p as fixed. This yields

$$q = \frac{W - [pW + (1 - p)L - kp^2C_r]}{2\chi}$$

again assuming that the exogenous parameters are such that the right-hand side of the above equation lies between zero and unity. The proposition below then follows.

Proposition 2 *The optimal q chosen by a manager is given by*

$$q = \frac{W - L}{2\chi} \left[1 - \frac{W - L}{4kC_r} \right], \quad (6)$$

and is increasing in k (the likelihood of being discovered as having fudged) and in C_r , the penalty for fudging. Further, the optimal q is decreasing in the cost parameter χ .

The above expression for q indicates how the motives for being dishonest feed into the efforts expended at improving true expected value. As can be seen the greater are the incentives to fudge disclosures (measured by a low k), the smaller are the incentives to

expend efforts at improving true firm value, measured by a lower optimal q . Further, given that χ is related to managerial intelligence, more intelligent managers choose greater q 's.

In order to develop cross-sectional implications, we proceed as follows. We first propose that the ability to influence q can vary across firms. It seems plausible that χ would be smaller for focused firms where specialized human capital and skills are more likely to be important, and less readily in diversified firms, where broad management skills are more important. For example, it seems reasonable that an intelligent manager can directly influence a focused software company's expected cash flows than those of a very diversified firm such as Enron (this influence in our case is represented by an increase in q). Then it is clear that the ex ante expected value of such focused firms would be enhanced by managerial intelligence.

Conversely, we conjecture that managers of diversified firms such as Enron have a smaller likelihood of being discovered as having fudged financial statements than managers of focused firms, because regulatory agencies are less able to decipher the complicated accounting statements of diversified firms with many lines of business. In formal terms, we believe that the parameter k in (1) is smaller for more diversified firms. In this case, p will be greater (but q will be smaller) for such firms.

In sum, we propose that the ability to influence q (p) is bigger for focused (diversified) firms. In turn, this implies that cases of obfuscated disclosures are more likely to arise in large diversified firms than in small, focused firms. Anecdotal evidence, of course, partially supports this implication, because firms which were found to have misled investors in a significant way (Enron and WorldCom) are large and complex.

The explicit link to intelligence, of course, can be analyzed further by obtaining measures of the intellect of auditors as well as managers. Palia (2000) proposes one such publicly available measure: the venue of college education. Indeed, he shows that this measure exhibits considerable variation in the cross-section. Our analysis indicates that

cases of obfuscated disclosure would be greater in well-diversified firms¹⁰ which are run by intelligent managers and/or auditors, whereas relatively few cases of misleading disclosures would occur in firms which are focused, and where managerial talent is relatively limited.

Our analysis also suggests implications for the link between misleading disclosure and the length of the manager’s career. For example, it is plausible to assume that C_r is decreasing in the number of years left in the manager’s career (the notion being that the reputational loss due to conviction and incarceration are minimal for a manager towards the end of his career).¹¹ This implies that managers towards the end of their careers would have the greatest incentives to make the most misleading disclosures (represented by a high p).

4 Feedback

The previous section considered the possibility that managers could improve expected stock prices by fudging corporate valuations. We now show that when there is feedback from stock prices to cash flows (as in Khanna and Sonti, 2001; Subrahmanyam and Titman, 2001; or Hirshleifer, Subrahmanyam, and Titman, 2002), fudging can also improve the *ex post* valuation of a firm.

We embellish the basic setting of Subsections 2.1 and 2.2, where q is exogenous. The project that pays off either H or L is now termed the “assets-in-place.” We also assume that there two additional projects the firm can take on. The first project pays off $G_1 = \kappa v - 0.5\kappa^2$, where v , as before, is the final value of the assets in place, and κ is the

¹⁰See Lang and Stulz (1994) and Comment and Jarrell (1995) for empirical measures of corporate diversification.

¹¹A manager who fudges can potentially suffer a reputational penalty when the firm’s true value is revealed. We assume, however, that the manager only suffers reputational costs when he is investigated and then convicted by the regulatory agency. This may happen because outside investors may be biased towards trusting the manager (as mentioned in the previous subsection), and because conviction attracts more publicity which allows more agents beyond the firm’s investors to become aware that the manager is dishonest.

amount of capital required for the project. The capital allocation is determined ex ante at date 0, and suppliers of capital are risk neutral. The firm's governance mechanism (e.g., its board of directors) provides the manager the objective of maximizing the expected value of G_1 at date 0. If E is the ex ante expected value of the assets-in-place, as assessed by the suppliers of capital for G_1 , it follows that the optimal amount of capital contributed is $\kappa = E$.

Note that while the above modeling approach captures the intuition that capital contributions depend on assessed expected value of the firm, it does not capture the notion we seek to capture: that the ex post value of the firm is positively related to the ex ante expected value of the assets in place. Indeed, the ex post value of the growth opportunity at the optimal level of capital, E , is $Ev - 0.5E^2$, which is increasing in E only if $v > E$, but $v \leq E$ when $v = L$. Intuitively, the value of the growth opportunity is non-monotonic in the amount of capital because the value added due to capital is linear but the cost of capital is convex in the amount of capital contributed.

To explicitly capture the positive relation between ex post value and ex ante assessed value, we also assume that there is a second opportunity complementary to the first one, which pays off $G_2 = \delta(H - L)$ so long as a minimum amount of capital, κ^* , is invested in the first project, and zero otherwise. This opportunity can be viewed as an expansion strategy that becomes successful if product market conditions are favorable, provided enough capital is invested in the firm (e.g., into expansion of production capacity). The variable δ can be viewed as the systematic or industry-wide component of cash flow, and can take on the values 0 or 1. This multiplicative representation may be viewed as cash flows that are realized only if the aggregate economy does well. Examples could be increases in GDP leading to increased retail sales, and decreased unemployment leading to increased consumer spending. We assume that these projects are not publicly traded, and that cash flows from G_2 , if any, are retained as cash within the firm.

Consider a firm that is worth L . We consider two cases, one which an interior solution for p (from (1)) exists, and another in which when the manager exogenously abstains

from fudging (e.g., due to intrinsic or theological desires to be honest).¹² If the manager misrepresents his firm ($p > 0$), then the expected value of the firm is

$$E_r = pE(v|s = H) + (1 - p)L, \quad (7)$$

where $E(v|s = H)$ is given by (2). Of course, if the manager is always truthful (i.e., his $k \rightarrow \infty$, so that $p = 0$), the value of the firm is simply $E_{nr} = L$. One can immediately see that $E_r > E_{nr}$. It also be seen that the greater the E_r , the more likely it is that the company can find capital to fund the second growth opportunity. This leads to the following proposition:

Proposition 3 *So long as $E_{nr} < K^* < E_r$, the manager's forecast of δ is unity, and*

$$L + 0.5L^2 < H + L \left[p \frac{qH + pL(1 - q)}{q + p(1 - q)} + (1 - p)L \right] - 0.5 \left[p \left\{ \frac{qH + pL(1 - q)}{q + p(1 - q)} \right\} + (1 - p)L \right]^2, \quad (8)$$

the manager of a firm whose assets in place are worth L is able to achieve a higher ex post valuation by fudging the company's value.

The left-hand side of (8) represents firm value when there is no fudging. In this case, the firm is unable to generate enough capital to fund G_2 . The right-hand side represents firm value when the manager fudges and is able to attract enough capital to fund G_2 . It can be seen that condition (8) can be satisfied by a sufficiently large H .

The following comparative statics results are also worth noting:

Proposition 4 *1. The value assessed of the assets-in-place under fudging, E_r , is increasing in the probability p , so that the larger the p , the larger is the parameter space under which the growth opportunity G_2 is funded.*

2. The right-hand side of (8), which is the combined value of the two growth opportunities provided G_2 is funded, is decreasing in the probability p .

¹²The exogenous motivation to be honest can be justified by alluding to Duska (1999), who argues that a central tenet of the Judeo-Christian tradition is an insistence on being ethical in business dealings.

The above proposition indicates that increasing p expands the parameter space under which the firm is able to fund G_2 and thereby add value, but *given* that G_2 is funded, an increase in p decreases the right-hand side of (8), because the firm is in the range where added contributed capital decreases the total values of both growth opportunities. So the value-enhancing role of fudging is to fund the expansion project G_2 .

As per condition (8), fudging can yield increases in ex post cash flows provided aggregate economic conditions are favorable.¹³ Our result is relevant to the stock market boom (and, in particular, the internet boom) over past few years where, in terms of our model, there were successive realizations of positive δ 's, which led to high market valuations, and in the most visible cases, it was the management of very highly-valued companies, e.g., Enron and WorldCom,¹⁴ that was ultimately found to have indulged in chicanery.

5 Information Acquisition

In this section, we consider the incentives for financial market investors to investigate and acquire information about the firm, given that the manager fudges. We extend the setting of Subsection 2.2 by considering a market where risk-neutral informed and liquidity traders submit orders to risk-neutral market makers (as in Glosten and Milgrom, 1985), who quote bid and ask prices. We assume that trading takes place after the market maker observes the signal s , but before the true value v is revealed. Each trader can trade exactly one share, liquidity traders are equally likely to buy or sell and the probability that an informed trader arrives to the market is denoted by α .¹⁵

¹³An issue we do not address in the model is how market realizations affect investigations and exposes of corporate chicanery. It may be that after being disappointed by poor earnings, investors start paying closer attention to the financial statements of firms, thus learning about the true nature of the firm's operations. How earnings surprises influence investor scrutiny of firms is an interesting topic for future research.

¹⁴At their peak values during the period 1998-2001, the P/E ratio and market capitalization for Enron reached 70 and \$80 billion, while those for WorldCom reached 28 and \$46 billion, respectively (information obtained from American Express Financial Advisors at finance.americanexpress.com).

¹⁵For technical convenience, we assume that unlimited short-sales are possible, and that informed traders get only a single chance to trade.

Suppose that at a cost of C , the potentially informed trader can discern the true value of the company (H or L). The cost involves the effort the informed investor has to invest in deciphering the financial statements, among other activities, to learn the true value of the firm. We assume that the more intelligent the manager, the more the artful obfuscation in the financial statements, so that the greater the effort that has to be invested in deciphering true value. Specifically, we postulate that C is increasing in manager intelligence I , and that the inverse mapping from C to I is represented as $C^{-1}(\cdot)$.¹⁶

The above assumption can be motivated by alluding to the manner in which Enron hid the true nature of its operation from investors. In particular, as the extract from Partnoy (2002) in Appendix B demonstrates, Enron’s “special purpose entities” were set up with such disingenuousness that ex ante, it would have been extremely difficult to detect such subterfuge. In addition, the studies on Machiavellian intelligence cited in the introduction indicate that intelligence evolved to deal with social complexities of the human species. As per this theory, intelligent individuals would be more effective at disseminating disingenuous financial statements that are hard to decipher.

Now, it is obvious that if $s = L$, both the ask and bid prices equal L , and there is no informed trading. However, if $s = H$, informed trading is possible, and the bid-ask spread can be positive. Our interest is in determining the conditions under which the informed trader will find it worthwhile to collect and trade on the information. In solving for this condition, we assume that the informed trader takes the market maker’s response into account when determining his information acquisition strategy.

Let $e \equiv pH + (1 - p)L$. The following proposition is proved in Appendix A.

¹⁶We assume that the cost C is non-stochastic from the perspective of the potentially informed trader, which implies that the intelligence level of the manager is known to the informed trader. Since CEO education levels are, at least in part, publicly available (see Palia, 2000), this appears to be a reasonable assumption.

Proposition 5 1. *So long as*

$$I > C^{-1} \left[\{1 - \alpha\} \left\{ \frac{p(H - e)}{1 - \alpha + 2\alpha p} + \frac{(1 - p)(e - L)}{2\alpha(1 - p) + 1 - \alpha} \right\} \right],$$

information about the firm is not acquired and the financial market is infinitely liquid (i.e., the bid-ask spread equals zero).

2. *The argument of the function on the right-hand side of the above condition, which is the threshold level of cost above which information is not collected, is maximized at $p = 0.5$.*

The first part of the above proposition introduces the notion that the cost of information acquisition is linked not just to factors exogenous to the firm (e.g., technology, regulatory disclosure requirements) but also to managerial attributes. In particular, very intelligent managers may fudge statements so effectively that informed traders may find that learning about true value is prohibitively costly.¹⁷ The “market discipline” that is supposed to keep disingenuous managers in check thus fails for managers with high intelligence.

It is worth noting from the second part of the above proposition that the expected profit from being informed (which also represents the threshold level of cost above which information is not acquired) are maximized at an intermediate level of p (i.e., 0.5). This happens because when p is at an intermediate level, there is maximal obfuscation of value, which benefits financial market agents with true information. Thus, the optimal p from the perspective of the manager, which is governed by (1), can diverge from the p that maximizes the parameter space under which the bid-ask spread is zero (and the financial market is perfectly liquid).

A direct empirical implication of our analysis is that (holding intrinsic honesty constant) liquidity will be higher in firms run by more intelligent managers, while an indirect inference is that stock prices of firms run by intelligent managers will move more when

¹⁷We do not allow for intelligence to vary across potentially informed agents. In an extension where different analysts have different intelligence levels, there may be cross-sectional implications for how the intelligence levels of analysts varies across different industries in equilibrium.

annual disclosures are announced (since little useful information would be produced on such firms prior to their information releases). Further, a point worth noting is that in our setting, outside investors who anticipate liquidity shocks will find it more worthwhile to invest in the shares of companies that are run by intelligent managers, not because these managers take better projects, but because such managers may remove incentives of agents to acquire information and thereby preserve the liquidity of financial markets.¹⁸

Overall, our arguments suggest that sufficiently intelligent and intrinsically dishonest managers will find a way to fudge and indulge in chicanery in ways that would be very difficult to detect by common investors. Thus, we propose that financial markets have to rely on managers to be motivated by an exogenous sense of ethics and morality in order for accurate valuations to be conveyed by market prices. If managers are not intrinsically honest, then regulatory agencies need to be staffed by relatively intelligent personnel who can ferret out the disingenuousness embedded in corporate financial reports with efficacy.

6 Conclusion

In this paper, we make an attempt to understand some of the recent episodes of misleading financial disclosures and financial chicanery. Specifically, we analyze how managerial intelligence interacts with disclosure strategies and, in turn, on how it influences firm values and the incentives to acquire information in financial markets.

Continuing the recent trend in the literature, we propose that the study of financial phenomena can allow for analyses outside the context of the economic paradigm. Indeed, recent episodes of managerial disingenuousness reveal an imperfect functioning of the market for financial analysis, and would thus seem to point towards non-economic causative factors. Therefore, the premises of our analysis are drawn from economic arguments as well as psychology and other fields.

¹⁸Of course, if managers learn from the information revealed by share prices, lack of information acquisition may harm the efficiency of corporate investment. This is a countervailing force to the phenomenon we describe.

While we consider the notion that intelligence has a direct positive influence on value creation, our principal emphasis is on some negative aspects of intellect. We propose that agents with high intellect are also likely to indulge in and be adept at conveying misleading perceptions about firm values. This assumption is justified by intuitive reasoning, and by alluding to the psychology literature. Specifically, as we mentioned in the introduction, the concept of Machiavellian intelligence (Byrne and Whiten, 1988) suggests that intelligence has evolved precisely to address the complexities associated with living in evolved human society. Therefore, intelligent people not only may be more effective at deception but may be predisposed towards it (Hollingsworth, 1940). Our second premise is that while intelligent managers may add true value to companies, such agents, because they have high reservation wages, are also likely to have the greatest incentives for disseminating misleading impressions of a company's true value. These premises imply that dishonest but intelligent managers are more likely to fudge disclosures. We also argue that investors may not accurately assess the likelihood that managers are dishonest, because of theological and psychological biases towards trusting fellow humans, so that confounding actions may lead higher ex ante expected stock prices.

We consider an extension of our basic model where managers can take actions to improve the true value of their firms. We find that the smaller the penalty for fudging, the smaller is the incentive for a dishonest but intelligent manager to expend effort towards improving firm values. This is because lesser penalties cause the manager to rely more on dishonest disclosures to achieve higher expected stock prices. We also develop a setting where stock prices affect future cash flows. Here, we find that confounding disclosures may actually improve ex post firm values, because they allow firms to take on projects which would not otherwise be funded. Further, managers towards the end of their careers expect to suffer minimal reputational costs from being exposed by regulators, and hence may have little incentive to eschew such techniques to boost value.

We examine the impact of dishonest disclosures on the incentives to acquire information, and consequently, on financial market liquidity. Here, we propose that the cost of

acquiring a signal that reveals true value increases in manager intelligence. We suggest that intelligent managers are likely to be more successful in obfuscating value through creative off-balance sheet transactions, for example, that are difficult to decipher. This implies that investment analysts may find it prohibitively costly to investigate and acquire information. Therefore, the market discipline which would be expected to keep managers honest may fail in this regard. Furthermore, securities of firms run by disingenuous but intelligent managers may be very liquid because of the lack of adverse selection, but there may be large information asymmetries between outside investors and firms.

Of course, the desire to be intrinsically honest plays a big role in preventing managers from indulging in disingenuous conduct. Otherwise, our arguments suggest that regulatory agencies should be staffed by intelligent personnel in order to efficaciously curb managerial tendencies towards dishonest disclosures. Going beyond our analysis, it is interesting to speculate on the role of population growth on the incentives to be honest. As more people chase finite resources, the tendency for agents to use “short-cuts” to success would intensify and could overcome the intrinsic tendencies to be honest. While such an argument does not lend itself to a theoretical analysis in traditional finance terms, we believe that further consideration of sociological and possibly even theological factors can go a long way in understanding the behavior of corporate executives and the legal and auditing firms retained by management.

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Appendix A

Proof of Proposition 1: The stock price conditional on an assessment of H is

$$E(v|s = H) = \frac{qH + pL(1 - q)}{q + p(1 - q)},$$

and

$$E(v|s = L) = L.$$

Under fudging, the firm worth L is priced at

$$p \left[\frac{qH + pL(1 - q)}{q + p(1 - q)} \right] + (1 - p)L,$$

which is greater than L . An analogous argument shows that the firm worth H is valued and priced at less than H . This proves part 1 of the proposition.

If the firm does not fudge the result, its ex ante expected stock price is $qH + (1 - q)L$.

But, if $p > 0$, the ex ante expected value is

$$[q + p(1 - q)]E(v|s = H) + (1 - p)(1 - q)L.$$

From (2), the above expression reduces to $qH + (1 - q)L$. Hence, in this case, fudging does not cause a divergence between ex ante expected stock prices or firm values, proving part 2 of the proposition.

When investors are biased, the ex ante expected stock price becomes

$$[q + p(1 - q)] \left[\frac{q'H + p'(1 - q')L}{q' + p'(1 - q')} \right] + (1 - q)(1 - p)L$$

which is greater than the true ex ante expected firm value, $qH + (1 - q)L$ if and only if

$$\frac{q'}{q' + p'(1 - q')} [q + p(1 - q)] > q.$$

After some algebraic simplification, the above expression reduces to (5), which holds when $q' > q$ and $p' < p$, proving part 3 of the proposition. \square

Proof of Proposition 2: The manager maximizes

$$qW + (1 - q)[pW + (1 - p)L - kp^2C_r] - \chi q^2$$

taking p as fixed. This yields

$$q = \frac{W - [pW + (1 - p)L - kp^2C_r]}{2\chi}$$

again assuming that the exogenous parameters are such that the right-hand side of the above equation lies between zero and unity. From (1), the optimal p is given by

$$p = \frac{W - L}{2kC_r},$$

Substituting for p into the expression for q above, the proposition follows. \square

Proof of Proposition 3: The expected value of the firm, given that the manager fudges, is

$$E_r = pE(v|s = H) + (1 - p)L,$$

where $E(v|s = H)$ is given by (2). The condition $E_{nr} < K^* < E_r$, ensures that the manager is able to find capital to fund G_2 only if he fudges.

Suppose that the manager forecasts $\delta = 1$. Then, if the manager does not fudge, the value of the firm is simply the value of G_1 plus the value of the assets in place. The value of G_1 is given by $L^2 - 0.5L^2 = L^2$ so that the total value of the firm is $L + 0.5L^2$. If the manager fudges, then G_2 gets funded, and the firm's value is given by

$$H + L \left[p \frac{qH + pL(1 - q)}{q + p(1 - q)} + (1 - p)L \right] - 0.5 \left[p \left\{ \frac{qH + pL(1 - q)}{q + p(1 - q)} \right\} + (1 - p)L \right]^2. \quad (9)$$

The proposition thus follows. \square

Proof of Proposition 4: Substituting for $E(v|s = H)$ from (2) into (7), we have

$$E_r = \frac{p[qH + pL(1 - q)]}{q + p(1 - q)} + (1 - p)L.$$

Differentiating the right-hand side of the above expression with respect to p yields the expression

$$\frac{q^2(H - L)}{[p(q - 1) - q]^2},$$

which is positive.

The derivative of expression (9) with respect to p is given by

$$\frac{-pq^3(H-L)^2}{[p(1-q)+q]^3},$$

and that with respect to q is given by

$$\frac{-p^3q(H-L)^2}{[p(1-q)+q]^3}.$$

Both of the above derivatives are negative. \square

Proof of Proposition 5: The market maker is competitive and risk-neutral, so he sets the ask price such that he breaks even on average conditional on seeing the signal s and a buy. Similarly, he sets the bid price such that his expected profit, conditional on seeing s and a sell, equals zero.

The zero expected profit condition for the market maker on the ask side is

$$\alpha p(H - A) = 0.5(1 - \alpha)(A - e)$$

while that on the bid side is

$$\alpha(1 - p)(B - L) = 0.5(1 - \alpha)(e - B),$$

where $e \equiv pH + (1 - p)L$. The above arguments imply that the ask price is given by

$$A = \frac{2\alpha Hp + E(1 - \alpha)}{1 + \alpha(2p - 1)},$$

and that the bid price is given by

$$B = \frac{2\alpha(1 - p) + (1 - \alpha)E}{2\alpha(1 - p) + 1 - \alpha}.$$

The informed trader's ex ante expected profits, denoted by π , are

$$\pi = p(H - A) + (1 - p)(B - L) = [1 - \alpha] \left[\frac{p(H - E)}{1 - \alpha + 2\alpha p} + \frac{(1 - p)(e - L)}{2\alpha(1 - p) + 1 - \alpha} \right].$$

The potentially informed trader chooses to acquire information only if $\pi > C$, or if

$$C < [1 - \alpha] \left[\frac{p(H - E)}{1 - \alpha + 2\alpha p} + \frac{(1 - p)(e - L)}{2\alpha(1 - p) + 1 - \alpha} \right]. \quad (10)$$

The first part of the proposition thus follows.

Further, note that the derivative with respect to p of the right-hand side of the above expression is given by

$$\frac{2(1 - 2p)(H - L)(1 - \alpha)(1 - \alpha^2)}{[1 + (2p - 1)\alpha]^2[\alpha(2p - 1) - 1]^2},$$

whereas the second derivative is

$$-\frac{4(H - L)(1 - \alpha)(1 - \alpha^2)[3\alpha^2(2p - 1)^2 + 1]}{[1 - \alpha(1 - 2p)]^3[1 + \alpha(1 - 2p)]^3},$$

and is always negative so that the right-hand side of (10) is maximized at $p = 1/2$, thus proving Part 2 of the proposition. \square

Appendix B

Extract from Partnoy (2002)

Note: This entire appendix is a verbatim quotation from Partnoy (2002)

Specifically, Enron used derivatives and special purpose vehicles to manipulate its financial statements in three ways. First, it hid speculator losses it suffered on technology stocks. Second, it hid huge debts incurred to finance unprofitable new businesses, including retail energy services for new customers. Third, it inflated the value of other troubled businesses, including its new ventures in fiber-optic bandwidth. Although Enron was founded as an energy company, many of these derivatives transactions did not involve energy at all.

A. Using Derivatives to Hide Losses on Technology Stocks

First, Enron hid hundreds of millions of dollars of losses on its speculative investments in various technology-oriented firms, such as Rhythms Net Connections, Inc., a start-up telecommunications company. A subsidiary of Enron (along with other investors such as Microsoft and Stanford University) invested a relatively small amount of venture capital, on the order of \$10 million, in Rhythms Net Connections. Enron also invested in other technology companies.

Rhythms Net Connections issued stock to the public in an initial public offering on April 6, 1999, during the heyday of the Internet boom, at a price of about \$70 per share. Enron's stake was suddenly worth hundreds of millions of dollars. Enron's other venture capital investments in technology companies also rocketed at first, alongside the widespread run-up in the value of dot.com stocks. As is typical in IPOs, Enron was prohibited from selling its stock for six months.

Next, Enron entered into a series of transactions with a special purpose entity -apparently a limited partnership called Raptor (actually there were several Raptor entities of which the Rhythms New Connections Raptor was just one), which was owned by a another Enron special purpose entity, called LJM1 - in which Enron essentially exchanged its shares in these technology companies for a loan, ultimately, from Raptor. Raptor then issued its own securities to investors and held the cash proceeds from those investors.

The critical piece of this puzzle, the element that made it all work, was a derivatives transaction - called a "price swap derivative" - between Enron and Raptor. In this price swap, Enron committed to give stock to Raptor if Raptor's assets declined in value. The more Raptor's assets declined, the more of its own stock Enron was required to post. Because Enron had committed to maintain Raptor's value at \$1.2 billion, if Enron's stock declined in value, Enron would need to give Raptor even more stock. This derivatives transaction carried the risk of diluting the ownership of Enron's shareholders if either Enron's stock or the technology stocks Raptor held declined in price. Enron also apparently entered into options transactions with Raptor and/or LJM1.

Because the securities Raptor issued were backed by Enron's promise to deliver more shares, investors in Raptor essentially were buying Enron's debt, not the stock of a start-up telecommunications company. In fact, the performance of Rhythms Net Connections was irrelevant to these investors in Raptor. Enron got the best of both worlds in accounting terms: it recognized its gain on the technology stocks by recognizing the value of the Raptor loan right away, and it avoided recognizing on an interim basis any future losses on the technology stocks, were such losses to occur.

It is painfully obvious how this story ends: the dot.com bubble burst and by 2001 shares of Rhythms Net Communications were worthless. Enron had to deliver more shares to "make whole" the investors in Raptor and other similar deals. In all, Enron had derivative instruments on 54.8 million shares of Enron common stock at an average price of \$67.92 per share, or \$3.7 billion in all. In other words, at the start of these deals, Enron's obligation amounted to seven percent of all of its outstanding shares. As Enron's share price declined, that obligation increased and Enron's shareholders were substantially diluted. And here is the key point: even as Raptor's assets and Enron's shares declined in value, Enron did not reflect those declines in its quarterly financial statements.

B. Using Derivatives to Hide Debts Incurred by Unprofitable Businesses

A second example involved Enron using derivatives with two special purpose entities to hide huge debts incurred to finance unprofitable new businesses. Essentially, some very complicated and unclear accounting rules allowed Enron to avoid disclosing certain assets and liabilities.

These two special purpose entities were Joint Energy Development Investments Limited Partnership (JEDI) and Chewco Investments, L.P. (Chewco). Enron owned only 50 percent of JEDI, and therefore - under applicable accounting rules - could (and did) report JEDI as an unconsolidated equity affiliate. If Enron had owned 51 percent of JEDI, accounting rules would have required Enron to include all of JEDI's financial results in its financial statements. But at 50 percent, Enron did not.

JEDI, in turn, was subject to the same rules. JEDI could issue equity and debt securities, and as long as there was an outside investor with at least 50 percent of the equity - in other words, with real economic exposure to the risks of Chewco - JEDI would not need to consolidate Chewco.

One way to minimize the applicability of this "50 percent rule" would be for a company to create a special purpose entity with mostly debt and only a tiny sliver of equity, say \$1 worth, for which the company easily could find an outside investor. Such a transaction would be an obvious sham, and one might expect to find a pronouncement by the accounting regulators that it would not conform to Generally Acceptable Accounting Principles. Unfortunately, there are no such accounting regulators, and there was no such pronouncement. The Financial Accounting Standards Board, a private entity that sets most accounting rules and advises the Securities and Exchange Commission, had not - and still has not - answered the key accounting question: what constitutes sufficient capital from an independent source, so that a special purpose entity need not be consolidated?

Since 1982, Financial Accounting Standard No. 57, Related Party Disclosures, has contained a general requirement that companies disclose the nature of relationships they have with related parties, and describe transactions with them. Accountants might debate whether Enron's impenetrable footnote disclosure satisfies FAS No. 57, but clearly the disclosures currently made are not optimal. Members of the SEC staff have been urging the FASB to revise No. 57, but it has not responded. In 1998, FASB adopted FAS No. 133, which includes new accounting rules for derivatives. Now at 800-plus pages, FAS No. 133's instructions are an incredibly detailed - but ultimately unhelpful - attempt to rationalize other accounting rules for derivatives.

As a result, even after two decades, there is no clear answer to the question about related parties. Instead, some early guidance (developed in the context of leases) has been grafted onto modern special purpose entities. This guidance is a 1991 letter from the Acting Chief Accountant of the SEC in 1991, stating: "The initial substantive residual equity investment should be comparable to that expected for a substantive business involved in similar [leasing] transactions with similar risks and rewards. The SEC staff understands from discussions with Working Group members that those members believe that 3 percent is the minimum acceptable investment. The SEC staff believes a greater investment may be necessary depending on the facts and circumstances, including the credit risk associated with the lessee and the market risk factors associated with the leased property."

Based on this letter, and on opinions from auditors and lawyers, companies have been pushing debt off their balance sheets into unconsolidated special purpose entities so long as (1) the company does not have more than 50 percent of the equity of the special purpose entity, and (2) the equity of the special purpose entity is at least 3 percent of its the total capital. As more companies have done such deals, more debt has moved off balance-sheet, to the point that, today, it is difficult for investors to know if they have an accurate picture of a company's debts. Even if Enron had not tripped up and violated the letter of these rules, it still would have been able to borrow 97 percent of the capital of its special purpose entities without recognizing those debts on its balance sheet.

Transactions designed to exploit these accounting rules have polluted the financial statements of many U.S. companies. Enron is not alone. For example, Kmart Corporation - which was on the verge of bankruptcy as of January 21, 2002, and clearly was affected by Enron's collapse - held 49 percent interests in several unconsolidated equity affiliates. I believe this Committee

should take a hard look at these widespread practices.

In short, derivatives enabled Enron to avoid consolidating these special purpose entities. Enron entered into a derivatives transaction with Chewco similar to the one it entered into with Raptor, effectively guaranteeing repayment to Chewco's outside investor. (The investor's sliver of equity ownership in Chewco was not really equity from an economic perspective, because the investor had nothing - other than Enron's credit - at risk.) In its financial statements, Enron takes the position that although it provides guarantees to unconsolidated subsidiaries, those guarantees do not have a readily determinable fair value, and management does not consider it likely that Enron would be required to perform or otherwise incur losses associated with guarantees. That position enabled Enron to avoid recording its guarantees. Even the guarantees listed in the footnotes are recorded at only 10 percent of their nominal value. (At least this amount is closer to the truth than the amount listed as debt for unconsolidated subsidiaries: zero.)

Apparently, Arthur Andersen either did not discover this derivatives transaction or decided that the transaction did not require a finding that Enron controlled Chewco. In any event, the Enron derivatives transaction meant that Enron - not the 50 percent "investor" in Chewco - had the real exposure to Chewco's assets. The ownership daisy chain unraveled once Enron was deemed to own Chewco. JEDI was forced to consolidate Chewco, and Enron was forced to consolidate both limited partnerships - and all of their losses - in its financial statements.

All of this complicated analysis will seem absurd to the average investor. If the assets and liabilities are Enron's in economic terms, shouldn't they be reported that way in accounting terms? The answer, of course, is yes. Unfortunately, current rules allow companies to employ derivatives and special purpose entities to make accounting standards diverge from economic reality. Enron used financial engineering as a kind of plastic surgery, to make itself look better than it really was. Many other companies do the same.

Of course, it is possible to detect the flaws in plastic surgery, or financial engineering, if you look hard enough and in the right places. In 2000, Enron disclosed about \$2.1 billion of such derivatives transactions with related entities, and recognized gains of about \$500 million related to those transactions. The disclosure related to these staggering numbers is less than conspicuous, buried at page 48, footnote 16 of Enron's annual report, deep in the related party disclosures for which Enron was notorious. Still, the disclosure is there. A few sophisticated analysts understood Enron's finances based on that disclosure; they bet against Enron's stock. Other securities analysts likely understood the disclosures, but chose not to speak, for fear of losing Enron's banking business. An argument even can be made - although not a good one, in my view - that Enron satisfied its disclosure obligations with its opaque language. In any event, the result of Enron's method of disclosure was that investors did not get a clear picture of the firm's finances.

Enron is not the only example of such abuse; accounting subterfuge using derivatives is widespread. I believe Congress should seriously consider legislation explicitly requiring that financial statements describe the economic reality of a company's transactions. Such a broad standard - backed by rigorous enforcement - would go a long way towards eradicating the schemes companies currently use to dress up their financial statements.

Enron's risk management manual stated the following: "Reported earnings follow the rules and principles of accounting. The results do not always create measures consistent with underlying economics. However, corporate management's performance is generally measured by accounting income, not underlying economics. Risk management strategies are therefore directed at accounting rather than economic performance." This alarming statement is representative of the accounting-driven focus of U.S. managers generally, who all too frequently have little interest in maintaining controls to monitor their firm's economic realities.

C. Using Derivatives to Inflate the Value of Troubled Businesses A third example is even more troubling. It appears that Enron inflated the value of certain assets it held by selling a small portion of those assets to a special purpose entity at an inflated price, and then revaluing the lion's share of those assets it still held at that higher price.

Consider the following sentence disclosed from the infamous footnote 16 of Enron's 2000 annual report, on page 49: "In 2000, Enron sold a portion of its dark fiber inventory to the Related Party in exchange for \$30 million cash and a \$70 million note receivable that was subsequently

repaid. Enron recognized gross margin of \$67 million on the sale.” What does this sentence mean?

It is possible to understand the sentence today, but only after reading a January 7, 2002, article about the sale by Daniel Fisher of Forbes magazine, together with an August 2001 memorandum describing the transaction (and others) from one Enron employee, Sherron Watkins, to Enron Chairman Kenneth Lay.

Here is my best understanding of what this sentence means:

First, the “Related Party” is LJM2, an Enron partnership run by Enron’s Chief Financial Officer, Andrew Fastow. (Fastow reportedly received \$30 million from the LJM1 and LJM2 partnerships pursuant to compensation arrangements Enron’s board of directors approved.)

Second, “dark fiber” refers to a type of bandwidth Enron traded as part of its broadband business. In this business, Enron traded the right to transmit data through various fiber-optic cables, more than 40 million miles of which various Internet-related companies had installed in the United States. Only a small percentage of these cables were “lit” - meaning they could transmit the light waves required to carry Internet data; the vast majority of cables were still awaiting upgrades and were “dark.” The rights associated with those “dark” cables were called “dark fiber.” As one might expect, the rights to transmit over “dark fiber” are very difficult to value.

Third, Enron sold “dark fiber” it apparently valued at only \$33 million for triple that value: \$100 million in all - \$30 million in cash plus \$70 million in a note receivable. It appears that this sale was at an inflated price, thereby enabling Enron to record a \$67 million profit on that trade. LJM2 apparently obtained cash from investors by issuing securities and used some of these proceeds to repay the note receivable issued to Enron.

What the sentence in footnote 16 does not make plain is that the investor in LJM2 was persuaded to pay what appears to be an inflated price, because Enron entered into a “make whole” derivatives contract with LJM2 (of the same type it used with Raptor). Essentially, the investor was buying Enron’s debt. The investor was willing to buy securities in LJM2, because if the “dark fiber” declined in price - as it almost certainly would, from its inflated value - Enron would make the investor whole.

In these transactions, Enron retained the economic risk associated with the “dark fiber.” Yet as the value of “dark fiber” plunged during 2000, Enron nevertheless was able to record a gain on its sale, and avoid recognizing any losses on assets held by LJM2, which was an unconsolidated affiliate of Enron, just like JEDI.

As if all of this were not complicated enough, Enron’s sale of “dark fiber” to LJM2 also magically generated an inflated price, which Enron then could use in valuing any remaining “dark fiber” it held. The third-party investor in LJM2 had, in a sense, “validated” the value of the “dark fiber” at the higher price, and Enron then arguably could use that inflated price in valuing other “dark fiber” assets it held. I do not have any direct knowledge of this, although public reports and Sherron Watkins’s letter indicate that this is precisely what happened.

For example, suppose Enron started with ten units of “dark fiber,” worth \$100, and sold one to a special purpose entity for \$20 - double its actual value - using the above scheme. Now, Enron had an argument that each of its remaining nine units of “dark fiber” also were worth \$20 each, for a total of \$180.

Enron then could revalue its remaining nine units of “dark fiber” at a total of \$180. If the assets used in the transaction were difficult to value - as “dark fiber” clearly was - Enron’s inflated valuation might not generate much suspicion, at least initially. But ultimately the valuations would be indefensible, and Enron would need to recognize the associated losses.

It is an open question for this Committee and others whether this transaction was unique, or whether Enron engaged in other, similar deals. It seems likely that the “dark fiber” deal was not the only one of its kind. There are many sentences in footnote 16.