



WHITE PAPER

The Relationship between Abnormal Stock Price Performance and Equity Incentive Programs

The way the incentives are used by, accounted for, and disclosed by companies, and what recipients do with them.

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The Relationship between Abnormal Stock Price Performance and Equity Incentive Programs: The way the incentives are used by, accounted for, and disclosed by companies, and what recipients do with them.

I. Introduction

Equity Incentive Analytics (EIA) is a direct extension of the pioneering academic work of Dr. Carr Bettis and Dr. Donn Vickrey (our founders), their academic colleagues and Gradient's own financial engineers. This collective research is also embodied in Gradient's *Equity Incentive Factor* model which serves as the starting point of analysis by equity incentive analysts. This model is itself an amalgamation of multiple underlying models that leverage Gradient's proprietary *Equity Incentive Database*. The underlying quantitative models include a utility maximizing option valuation model that evaluates whether exercise decisions of optionees are unusually early (late) relative to the model's forecast, a *Standardized Options Expense* model used to identify cases where reported compensation expense deviates from economic reality regression models that identify value-relevant executive transactions, and expert systems designed to uncover unusual executive trading activity.

II. Overview

Investment Ideas from Analysis of Long-Term Incentive Compensation Plans

The use of equity compensation has seen dramatic changes in the past two decades. Broad-based option plans were relatively scarce twenty years ago but are now pervasive in US corporations. The average stock option grant for top executives was a small fraction of total compensation in the early '80s, and by the mid-'90s it had become a critical part of the compensation of executives (Hall and Liebman (1998) and Murphy (1999)). Further, the pressure for corporate governance reforms during 1993-2003 has not deterred the steady increases in equity-based compensation in both new economy and old economy firms (Bebchuk and Grinstein (2005)).

Compensation consultants and corporate governance experts have long argued that long-term incentive compensation aligns the incentives of executives and shareholders, and enhances shareholder value. To a certain degree, these arguments are supported by empirical evidence. For example, Gradient's empirical research demonstrates that certain forms of incentive-based compensation — such as the accelerated vesting plans for top executives based on specific accounting metrics — are predictors of longer-term firm stock price out-performance.¹ On the other hand, not all compensation plans are created equal. Other evidence, such as research by Gerakos, Goodman, Ittner and Larcker (2005), shows that very large grants of performance-based options to CEOs are more frequently made in firms with weak governance structures and are used to window-dress concerns of shareholders. Gradient's research has also identified certain types of plans that may encourage executives to take on excessive levels of risk, or focus on goals to maximize their own compensation, at the expense of shareholder value.

¹ Bettis, Coles and Kalpathy (2005) also provide similar evidence

Our analysts sort through the complexities of firm disclosures to identify cases where the plans are well-designed (poorly-designed) and the related benefits (shortcomings) are likely to be reflected in future stock price out-performance (under-performance).

Trading Ideas from Unusual Option Exercise and Executive Trading Decisions

It has traditionally been argued that stock-based compensation is necessary to align the interest of managers and shareholders (e.g., Jensen and Meckling (1979)). However, these theoretical arguments are rendered meaningless if executives are able to de-link their equity holdings from the future stock price performance of their firms. Many also argue that these plans may provide executives with the means and perhaps even the motive to act opportunistically (*The Wall Street Journal* (2003) and *Business Week* (2002 and 2003)). These concerns arise because high-level executives are the largest benefactors of equity incentives and they frequently have access to material private information about their firm. None of this opportunistic behavior negates the fact that long-term incentive plans may be theoretically sound incentive instruments. However, paying careful attention to the potential for opportunistic behavior can signal unusual stock price movements (both positive and negative) in the short to intermediate term.

There is a substantial body of academic evidence showing that, on average, executives act opportunistically (and often to the detriment of outside shareholders) with respect to their *equity incentives*. For example, Yermack (1997) finds that CEO's often receive new or special stock option awards shortly before abnormal stock price run-ups. He postulates that managers may be able to time their awards in advance of favorable corporate news. Aboody and Kasznik (2000) document that on average managers do delay bad news and rush forward good news in order to maximize the value of their option awards. Using complex models that robustly forecast the option-exercise decisions of optionees, Bettis, Lemmon and Wei (2005) show a clear relationship between the timing of option exercise decisions by top managers and future earnings misses and hits. They also show a relationship between earnings announcement period abnormal returns, earnings/accruals management, and long-term abnormal stock returns.²

Another avenue for opportunistic behavior is the use of various instruments to de-link an executive's holdings from future share price performance. Hedging techniques such as forward sale contracts, zero-cost collars and exchange funds are the tools that enable de-linking strategies. Such instruments are designed and marketed by investment banks explicitly for this specific purpose; and are widely available and frequently permitted by firms' corporate policies. However, their use signals declining returns and increased stock price volatility for shareholders (Bettis, Bizjak, Lemmon (2001)). Gradient analysts review publicly available filings in order to identify cases of unusual hedging activity. Our analysts

² Sadir (2004) and Bartov and Mahanram (2004) document some negative abnormal returns following intense exercise behavior. Huddart and Lang (2003) use option exercises of seven firms and show some abnormal stock price returns following exercise decisions. However, several studies (e.g., Carpenter and Remmers (2001), and Bettis (1991)) have looked at the exercise decisions of executives and found little relationship to future stock price returns. Bettis, Lemmon and Wei (2005) had the advantage of being able to identify abnormal exercise behavior by relying on a state-of-the-art exercise decision model adopted from Bettis, Bizjak and Lemmon (2004).

also investigate other potentially pertinent informed trading decisions made by executives, such as those discussed in the academic research of Bettis, Coles and Lemmon (2002), Aboody and Kasznick (2000), , Bettis, Vickrey and Vickrey (1997), Yermack (1997), and Bettis (1995).

Option Valuation Techniques, Assumptions and Expense

In addition to the changes in the nature, form and use of equity compensation, accounting for equity compensation has changed. On December 15, 2004, the Financial Accounting Standards Board (FASB) released FAS123R, which requires that all firms expense the cost — the estimated fair market value at the grant date amortized over the service period — of options and certain other equity instruments in their income statement. Both FAS123R and its predecessor FAS123 give firms significant leeway in choosing option valuation models and model inputs/assumptions. Since FAS123 was initially adopted, most firms have disclosed the pro forma impact of option grant expense in the footnotes, along with assumptions used to derive the option expense value. Gradient's empirical research shows that firms which have used very aggressive option model input/assumptions have significant stock price under-performance in future periods. Leveraging this research and our database of over 2,000 firm disclosures since 1996, our analysts differentiate between the firms that make very aggressive choices and those that do not; we use this analysis as one component in assessing their equity incentive programs.

Relevance of Governance and Controls

With two decades of dramatic changes in compensation plans, the role of compensation committees has become increasingly important in protecting the interests of shareholders. We carefully evaluate potential conflicts amongst the members of these committees and more generally, we evaluate the “democratic” posture of the firm with respect to shareholder rights (Gompers, et. al., 2003). We also evaluate the policies governing the transactions and other actions of executives who are frequently the largest benefactors of equity incentives. These policies are associated with differences in long-run abnormal returns (Bettis, Coles, Lemmon (2002)) and, in general, provide context for other decisions made in the design of compensation programs and the behavior of executives within the firm. For example, we look at items such as the nature of trading windows and blackout periods imposed by the firm on their insiders (Bettis, Coles and Lemmon (2000, 2002)), and the restrictions the firm places on the use of executive hedge transactions such as collars and exchange funds (see Bettis, Bizjak and Lemmon (2001). We also look at the timing, nature and use of Section 10b-5(1) plans. All of these items reflect on the nature of the controls in place that govern executive transactions, which help explain differences in future security returns across firms.

Section III. Impact of Compensation Plan Design on Stock Price Performance

Gradient maintains a proprietary proxy database spanning over 2,000 companies for each year since 1996. Based on our research, it is clear that almost all employee stock options (ESO's) are plain-vanilla options that are granted at the money with an expiration date of ten years. They typically have either a cliff-vesting period of three years or a graded

vesting period of either three or four years.³ However, more complex vesting policies are also used from time-to-time.

Over 18% of companies have used vesting acceleration or contingent provisions that are tied to some form of performance benchmark. These plans are usually limited to highly compensated employees, generally the CEO or top five executives. Occasionally, they are also offered to senior members of technical or science teams. What is most important to know about these plans is that they offer a variety of different types of performance conditions, and not all are created equal.

An example of a stock-price contingent provision is obtained from the 2001 proxy statement of Sears & Roebuck:

In addition to the time-based vesting requirements, the performance-based options are subject to the following condition: each installment will become exercisable if prior to March 12, 2003 the daily average price for Sears common shares is at least \$100.00 per share for 20 consecutive trading days (the “share-price condition”).

Table 1 below provides detailed information related to accelerated and contingent provisions (republished here by permission).⁴

Table 1: Distribution of Performance-Vesting Equity Grants

“Accelerated” vesting refers to the vesting of equity (restricted stock and stock options) grants if performance hurdles are met. When hurdles are not met, options vest under the normal vesting schedule. “Contingent” vesting refers to the vesting of equity grants when performance hurdles are met. (Not meeting the hurdles results in the forfeiture of equity granted.) Percentages in Panel C do not add to 100 because some contracts use multiple accounting measures.

³ It is not unusual for ESOs to, on occasion, have a graded vesting period that is stretched out over seven years for full vesting. Since the release of FAS123R, an increasing number of firms have chosen to accelerate vesting in an effort to reduce reported income statement impacts during the next three years. The implications of these decisions are outlined in Section VI of this paper.

⁴ This table is reproduced with the permission of the authors, Professors Bettis, Coles and Kalpathy (2005).

Panel A: Distribution of performance hurdles used

	Percentage of total contracts
Accounting income	22.2
Stock price	47.1
Accounting income and stock price	5.3
Other	6.8
Vague	18.6

Panel B: Distribution of performance-vesting equity grants that use accounting measures

	Percentage of contracts using accounting measures
Cashflow	3.8
EPS	58.8
Earnings	36.3
Profit margin	4.6
ROA	8.8
ROE	22.9
Sales	5.8
Vague	19.2

Panel C: Distribution of performance-vesting equity grants that use “other” measures

	Percentage of contracts using “other” measures
Customer satisfaction	4.1
Debt related	2.7
Earnings of peers	8.2
FDA approval	8.2
IPO of subsidiary	1.4
Operational	5.5
ROA of peers	12.4
S&P 500 return	21.9
Sales contracts	5.5
Stock performance of peers	30.1

The theoretical basis for the use of accelerated or contingent programs is to provide a link between a manager’s ability to meet a specific performance objective and their compensation (or the timing of their compensation). Much of the academic research posits that performance options should be superior to traditional options for achieving incentive and selection objectives (Johnson and Tian (2000); Camara (2001); Arya and Mittendorf (2004); and Lambert and Larcker (2004)). There are also an increasing number of pension funds and other activist stakeholder groups calling for traditional options to be replaced by “performance options” that link vesting or exercise to improvements in stock price performance, accounting income or other performance objectives (e.g., AFL-CIO (2003); CalPERS (2003); Institutional Shareholder Services (2004)).

On the other hand, some executive compensation critics contend that performance options are frequently incorporated into compensation plans in order to placate investors who are calling for compensation reforms or to minimize opposition to contentious compensation practices (e.g., Morgenson (2003, 2004)). That is, the companies do not actually expect these programs to have much incentive effect; rather they are introduced to persuade investors that the company is responsive to shareholder concerns, or that

controversial compensation changes are in shareholders' interests (e.g., Westphal and Zajac (1994, 1998)).

Even though there is clearly pressure to see these types of incentives adopted, some firms have rejected shareholder calls for the implementation of such provisions as largely ineffective. For example, Intel Corp notes in its 2001 proxy:

We believe that the demand for performance-vesting measures, by itself, will not prevent the kinds of corporate misdeeds that have been highly publicized over the last few years, and may even lead to further corporate abuse. Performance metrics are subjectively established and evaluated, and without strong corporate governance oversight, may be established to yield inappropriate results relative to a company's performance

We agree that performance contingent or accelerated provisions are sometimes abused. In a successful case brought by shareholders against Secure Computing in the late 1990s, the accelerated provisions were extremely aggressive and were constructed in such a manner that they may have encouraged management to manipulate short-term stock price.⁵ In addition, we agree with Intel, that strong governance controls should be in place to ensure that such programs are designed and implemented appropriately and in the best interest of shareholders. That said, our empirical evidence shows that, on average, firms adopting performance-based provisions have consistently (since 1996) outperformed their non-granting peers over one or two year intervals. On average, Gradient's research also shows that stock-based performance metrics are more highly associated with short-term abnormal returns, whereas accounting-based performance criteria are more highly associated with longer-term shareholder value. For example, firms adopting consistent accelerated programs based on accounting measures generate average one-year excess buy and hold control returns of 5.23% (relative to size-based peers) and 6.03% when compared to sector peers. On average, contingent-provisions are also more powerful (more highly correlated with returns) in the first year after adoption, whereas accelerated provisions have a longer lasting impact on returns.

Our analysts evaluate the nature, form, achievability and consistency of option plans looking for evidence of a coherent incentive structure. The following situations are red flagged for further review:

- Provisions that appear to be based on ad hoc metrics designed to accelerate the vesting of options artificially.

⁵ As an example, one of Secure Computing's grants was made at the money on June 8, 1998, when the price was 9.125, but in order to vest the price of Secure Computing stock had to increase to \$16 (75%) by December 31, 1998, (in less than 7 months). In order to vest all other contingent options granted on June 8, it had to increase from 9.125 to \$20 over this same period. Secure Computing achieved a stock price of \$19.063 by December. By February 1999, the stock price was \$4. Secure computing lost the resultant class action lawsuit, which alleged manipulation of financial information by the management team.

- Any provision that is too easy to achieve, as it ultimately serves little purpose other than to accelerated or maximize payments to executives (with no benefit to long-term shareholder value).
- Targets that are nearly impossible to meet, and may motivate management to engage in highly aggressive or reckless practices in order to attempt to reach these targets.
- Signs of constant re-adjustment of compensation provisions. Such re-adjustment is considered a sign of poor governance controls and a management-captive compensation committee.

Section IV. Option Exercise Behavior and Unusual Executive Behavior

Bettis, Bizjak and Lemmon (2004) [BBL (2004)] robustly explain the exercise decisions of optionees using a state-of-the-art utility maximization model. In turn, this model is leveraged by Bettis, Lemmon and Wei (2005) [BLW (2005)], who document a strong relationship between early (late) option exercise decisions by top managers and future earnings misses (hits), earnings announcement period abnormal returns, earnings/accruals management, and long-term abnormal stock returns.⁶ *Equity Incentive Analytics* generalizes the work of BLW (2005) and extends their analysis to other unusual behavior of executives.

Exercise Decisions of Optionees

Employee stock options (ESO's) differ from ordinary stock options in that they are non-transferable. Employees who hold them are often unable to diversify their stock holdings and human capital investments in the firm fully. Theory predicts that for a tradable option (not an ESO) the optimal exercise policy is to hold the option until (or near) maturity. However, BBL (2004)⁷ provides strong statistical evidence that it is usually optimal for employees to exercise their ESO's well before expiration.⁸

Using a sample of option exercise decisions spanning over 2,000 firms, BBL find that, while early exercise is common, it is not uniform — options are exercised earlier in firms with higher dividend yields and following unexpected stock price run-ups. In addition, they find that options are exercised earliest in firms with high stock price volatility and

⁶ Sadir (2004) and Bartov and Mahanram (2004) have documented some negative abnormal returns following intense exercise behavior. Huddart and Lang (2003) use option exercises of seven firms and show some abnormal stock price returns following exercise decisions. However, several studies (e.g., Carpenter and Remmers (2001) and Bettis (1991)) have looked at the exercise decisions of executives and found little relationship to future stock price returns. Bettis, Lemmon and Wei (2005) had the advantage of being able to identify abnormal exercise behavior by relying on a state-of-the-art exercise decision model adopted from BBL (2004).

⁷ Some examples of papers that examine the theory underlying employee or executive exercise decisions include Lambert, et al (1991), Huddart (1994), Carpenter (1998), Hall and Murphy (2002), Ingersoll (2002), Hull and White (2004) and BBL (2004).

⁸ Understanding the valuation and incentive effects of stock options granted to executives and employees (ESOs) and the costs of these securities to shareholders has been at the forefront of the public debate on stock option expensing, and was the focus of significant FASB and Option Valuation Group debate during the drafting of FAS123R.

further that there are differences in exercise patterns depending on the position (rank) of the optionee.

BBL (2004) uses a utility maximization framework to model and effectively explain ESO exercise decisions by executives.⁹ This explanation inherently includes demonstrating that it is rational economic behavior by executives to sacrifice a substantial portion of the option value by exercising much earlier than expiration. Understanding “normal” exercise behavior of optionees and executives is a critical scientific advancement and one that was key to the FASB (and their Option Valuation Group) during their deliberations related to the methods to use in the expensing of stock options. It is also a critical component of the recent SEC guidance on implementation of FAS123R. For *Equity Incentive Analytics* it provides the framework for identifying exercise decisions that are unusual — a fact that BLW (2005) show is extremely powerful to understanding future earnings announcements and abnormal stock returns.

Exercise and Sell Decisions by Executives

In most US corporations, even those with relatively broad-based plans, the largest benefactors of equity incentive plans are senior members of the management team. Most, if not all, of these most highly compensated individuals are also Section 16 insiders (hereafter “executives”). By definition, this class of executives is considered (by the company) to have access to material and private information.

Executives often accumulate substantial stock holdings via generous *equity incentive* plans that are part of their compensation packages.¹⁰ This trend has been very strong since the late 90’s when options or other forms of equity incentives became the dominate component of executive compensation in both new and old economy firms.¹¹ During 2003 and 2004, the total dollar value of shares sold by executives in U.S. mid-cap public companies (according to SEC filings) was approximately \$121.5 billion dollars whereas the dollars purchased in these same mid-cap firms in the open market was approximately \$2 billion.¹² It is estimated that up to 90% of the sales were related to equity incentive or option exercises.

Clearly, executives tend to have a very heavy concentration of wealth tied to their own firms and, on average, sell for personal portfolio diversification and liquidity reasons. Furthermore, they obtain a large portion of their shares by exercising their options. Even without regard to the academic evidence, it is apparent that a significant amount of executive selling occurs for liquidity and diversification reasons and not because of material private information. Illustrative of this point is the existence and increasing use of well-articulated

⁹ Other examples of research that examine the theory underlying ESO valuation include Lambert et al. (1991), Huddart (1994), Carpenter (1998), Hall and Murphy (2002), Ingersoll (2002), Hull and White (2004), and Ju et al. (2002).

¹⁰ Clearly founding members of firms, which subsequently go public or are acquired by public firms, may acquire significant holdings as a result of their prior ownership interest in the acquired company or private company.

¹¹ Hall and Liebman (1998), Murphy (1999), and (Bebchuk and Grinstein (2005).

¹² Source: Thomson Financial.

and conservative approved selling plans that call for routine and periodic (e.g., each quarter) stock selling by executives such as Rule 10b-5(1) plans.¹³ Examples are the routine program selling of Michael Dell and Bill Gates III. However, as discussed later, we have seen a trend toward more aggressive Rule 10b-5(1) plans that appear to violate the intention of the regulation.

Identifying Abnormal/Unexpected Exercise and Forecasting Period Ahead Earnings

Given that an optimal exercise policy for the executive calls for relatively early exercise (and sales) for liquidity and diversification reasons, it requires a high level of sophistication to extract value-relevant information from these exercise decisions. The key is to understand when executives are attempting to time their exercise and sell decisions to take advantage of their private and value-relevant information — and to understand which exercise decisions are expected (i.e. “normal”) and which are abnormal (either earlier or later than expected).

BLW (2005) show that large option exercises occurring earlier than expected and subsequently sold deeply in the money are associated with strong negative post-exercise abnormal stock performance. Specifically, the average profit-weighted market-adjusted buy-and-hold returns for this group are highly statistically and economically significant at -9.95% (-14.61%) over the twelve (eighteen) months following the early exercise event.¹⁴ Similarly, executives who exercise later than expected produce smaller, but albeit statistically and economically significant positive abnormal returns (e.g., 4.95% for the twelve months following the late exercise). As expected, there are no significant abnormal returns following normal exercise decisions.

BLW (2005) also provide three other pieces of evidence demonstrating the importance of understanding the exercise decisions of executives and how these decisions are related to the management of earnings. Their base evidence uses companies that have met or exceeded analyst consensus earnings forecasts in the previous four quarters before the exercise event (the EEM-event group). For these cases:

- 1) Early exercise events are strongly related to the likelihood that the firm will miss (meet or exceed) the earnings expectation for the period ahead. These companies missed earnings over 78% of the time in the quarter following the early exercise event, or 85% in one of the two quarters following the event. Following late exercise events, they met or exceeded earnings 74% of the time.

¹³ Rule 10b5-1 plans define when a purchase or sale constitutes trading “on the basis of” material nonpublic information. Subject to paragraph (c)(1)(ii) a person’s purchase or sale is deemed to be exempt if the person can demonstrate that they have entered into a binding sale to sell the securities under the guidance of a written plan, whose execution will be by a third party. Further the written plan must meet other conditions such as specific provisions for a specified number of securities. It may include pre-specified calculations based on formulas or algorithms that are functions of price. Furthermore, the contract is not good if the person enters into an alternate or hedging position with respect to the securities.

¹⁴ Results are also similar using the profit-weighted calendar time series for monthly Fama and French (1997) 3-factor adjusted returns.

- 2) During the 3-day earnings announcement window in each of the two quarters following an early exercise event, the average abnormal return (market-adjusted buy-and-hold) was -1.37% relative to firms that did not have early exercise events.
- 3) Large early exercises are preceded by aggressive use of discretionary accruals with a reversal after the early exercise event. More specifically, discretionary accruals (as defined by Jones (1991)) peak at 0.77% of total assets two quarters prior to an early exercise. At this level of discretionary accruals-to-total assets, the EEM group exceeds that of the normative group by 44%. A reversal of the accruals used to pump up earnings also occurs with a fall from the pre-exercise peak of 0.77% of total assets to 0.07% in the three-to-six quarter post-early exercise period (a 0.71% reversal that is significant at the 1% level).

Gradient engineers have modeled scenarios other than the discrete cases with specific EEM conditions described above in order to develop a robust forecast of the probability of missing period ahead earnings and under- or over-performing in the periods ahead. More specifically, we generalize the BLW (2005) framework outlined above to provide an option exercise expectation for each grant and grantee. The framework is dynamically adjusted each day based on changes in the key variables that drive the expectation model (such as recent stock price run-up and in-the-money percentage of the option, changes in the firm's volatility or dividend policy, etc).

Other Unusual Executive Behavior

Consistent with managed earnings for the extraction of personal wealth, the awarding of new options is also likely to occur after the announcement of bad news, or generally, when the share price is low. This allows executives to maximize the economic value of options in future periods when the firm's price has recovered (Aboody & Kasznik, 2000). EIA analysts also look for changes in the timing of stock option and other incentives for evidence of potential bottoming (and a subsequent expected share price increase).

It has traditionally been argued that stock-based compensation is necessary to align the interest of managers and shareholders (e.g., Jensen and Meckling (1979)). In addition, as discussed in Section III, long-term incentive plans are arguably sound theoretically and in some cases may be effective incentive instruments. One of the key principles behind their use is to ensure that the recipients have a disproportionate amount of their wealth tied to the firm. This lack of diversification is also the reason that many executives exercise their ESOs much earlier than they would from a position where they were able to effectively hedge (which is possible in all freely traded option instruments).

Given the overweighting of firm-specific executive holdings, it is not surprising that the investment banking industry has developed a series of instruments that are specifically designed to enable executives to hedge against any material downside risk. In many cases, the executive still maintains ownership of their shares.¹⁵ In other words, they may de-link the

¹⁵ E.g., a zero-cost-collar involves the simultaneous purchase of a put option funded by the proceeds from the sale of a call option on the stock of the company.

return that they obtain from vested incentive instruments from the performance of their firm's stock, while retaining all other ownership rights. Clearly, these instruments run contrary to the intent of providing strong equity-based incentive programs for executives and employees. If a firm permits its executives to use these instruments, it brings into question the governance structure at the firm. Furthermore, on average, a firm's future returns decline and stock price volatility increases following their use (Bettis, Bizjak and Lemmon (2001)). Gradient's EIA analysts examine the footnotes of each form 4 filing¹⁶ in companies of interest to determine when these instruments are used. Our analysts also investigate the more complex and potentially pertinent informed decisions by executives such as those discussed by Bettis, Coles and Lemmon (2000, 2002), Bettis, Vickrey and Vickrey (1997), Yermack (1997), and Bettis (1995).

Section V. Option Valuation Expense

Under FAS123 (for the past ten years), US public companies have been permitted to expense the intrinsic value of stock options. The intrinsic value is the difference between the strike and grant prices on the day of grant. For most companies, this approach has resulted in zero expense since the vast majority of grants are made at the money, and without variable provisions. While allowing this intrinsic value approach, the FASB encouraged firms to expense the estimated fair market value of the option grants on the income statement. The fair market value is estimated at the grant date by using an appropriate option valuation model or formula and the value is amortized over the service (vesting) period. Despite the FASB's preference, from 1996 to 2003, only two US public companies expensed stock options using the fair market value method. Regardless, all companies were still required to provide in the footnotes the pro-forma EPS impact of the option/compensation expense under the fair market value method, as well as the assumptions/inputs for the selected valuation model or formula.

The debate about whether the grant of ESOs truly constitutes an "expense" — or if it is merely a balance sheet transaction — has continued for the past decade. However, since 1996, the FASB has not wavered from their position that option compensation should be viewed as an expense. In 2002, the FASB announced that they were going to revisit the reporting of these grants along with equity compensation and incentives in general. This fueled a very public and political debate on the merits and potential pitfalls of requiring companies to expense options. Despite pressure from Congress and a number of corporate lobbyists, on December 15, 2004, the FASB revised FAS123 (now FAS123R) governing the accounting for ESOs and other equity compensation. The largest public companies will begin including option expense in their income statements beginning their first fiscal year after June 15, 2005. Smaller companies have even longer, and will not be required to expense options starting with their first fiscal year after December 15, 2005.¹⁷

¹⁶ These data elements are not available by any commercial vendor of "insider" data as the details of these transactions are buried in the footnotes to Form 4 filings, if they are reported at all.

¹⁷ FASB 123R would have required all public companies to start expensing options with their first quarter after June 15, 2005. However, in March the SEC gave implementation guidance. For large companies whose fiscal year coincides with the calendar year, the SEC's guidance effectively means that they will not have to start expensing options until the first quarter of 2006 instead of the third quarter this year.

Given the footnote disclosure requirements of the old FAS123, beginning in 1996, companies have had to choose both a model/formula (e.g., such as Black-Scholes-Merton or the Bettis, Bizjak and Lemmon utility model calibration approach) for estimating the value of the option and derive or estimate model input/assumptions. Companies still must do both according to FAS123R. Under both the old and revised FAS123, there is significant latitude given in the selection of a valuation model/formula. Further, various required model inputs and assumptions are flexible in nature, such as the estimated life of the option and estimated stock price volatility. Compensation expense can vary 25% merely because of the choice of model/formula; changes in model assumptions can influence compensation expense by even larger magnitudes.¹⁸

Auditors have historically been very lax (or have known little about) verifying the assumptions and inputs to the process, as well as the resultant option values. As an example, in its audited financial statements (years 1999-2002) one company in our database reported a dividend yield of 20.50%, which it claimed to have calculated as the “dividend per share divided by earnings per share.” In 2001, this produced an option fair value of \$0.16. The correct dividend yield for 2001 is 2.13%, which is calculated as the total per share dividend paid in 2001 over the average closing price during the year, using quarterly intervals. Applying this corrected term to the Black-Scholes-Merton formula while holding all other parameters constant results in an option fair value of \$3.55 — a value 2,200% larger than what the firm actually disclosed.

Arguably these extreme cases are less likely under FAS123R since auditors will look at the values with more scrutiny now that the expense will appear in the income statement rather than in a footnote. However, both the choice of model and related inputs/assumptions has a significant impact on EPS values (or pro forma values under FAS123). Significant discretion is still allowed under FAS123R. Therefore, this is an area subject to significant manipulation for those who wish to manage earnings, or engage in other practices that may not be in the best interest of shareholders.

It is our experience that firms that use systematically aggressive model inputs and assumptions ultimately tend to under-perform their peers. In this regard, we believe that aggressive model inputs/assumptions are often an indicator or symptom of other problems, such as aggressive management of earnings and very weak governance. Gradient’s engineers use our database FASB 123 disclosures to explore all option valuation model input/assumptions used by the largest 2,000 U.S. public firms since 1996. This helps our analysts identify those firms that may be improperly managing option expense values. To obtain both unreasonable and aggressive estimates we rely on two measures *Objective Options Expense* and *Standardized Options Expense*.

For *Standardized Options Expense* each firm in our database is categorized into its own peer group based upon three characteristics:

- market capitalization (size)
- industry

¹⁸ Refer to BBL (2004) for examples of the impact of the choice of valuation input assumptions

- historical price volatility¹⁹

Within each peer group, the valuation assumptions disclosed by each member are averaged to derive a single set of assumptions specific to that peer group. Each firm's option expenses are then recalculated — using these standardized (peer-based) assumptions in a Black-Scholes Merton formula — yielding the Gradient *Standardized Options Expense value*.

More specifically, standardized values for key option model input variables are created are follows:

Table 2: Components of *Standardized Options Expense*

Valuation Parameter	Method of Derivation
Stock price	Firm's own disclosed stock price on date of grant
Exercise price	Firm's own disclosed option exercise price
Expected option life	Peer-group expected life average
Volatility estimate	Peer-group volatility estimate average
Risk-free rate	Peer-group risk-free rate average
Dividend yield	Firm's own disclosed expected dividend yield

Abnormal Standardized Options Expense is then calculated by taking the difference between the reported options expense and *Standardized Options Expense*, and scaling the absolute value of earnings.²⁰

Given our expertise in ESO valuations, we believe that the Black-Scholes-Merton formula is often inappropriate for deriving option expense and can produce inaccurate and unrepresentative values.²¹ It is partly for this reason that we investigate not only firms that have very large negative *Abnormal Standardized Options Expense*, but also very large negative *Abnormal Objective Options Expense*. Much like *Standardized Options Expense*, *Objective Options Expense* seeks to level the playing field by offering more reliable and reasonable option expense data, and in turn, EPS and earnings figures. However, while *Standardized Earnings*

¹⁹ Using historical price volatility to form a peer group is not in most peer group classification schemes. Its inclusion is due to the unique and powerful role that volatility has on option exercise. Historical volatility is highly effective in explaining observed option exercise trends. Consequently, firms of similar historical volatility should certainly estimate similar volatilities and even similar expected option lives. The FASB recommends using volatility as a predictor of option exercise in Paragraph 281 of SFAS 123.

²⁰ There is, to some extent, confounding effects in this measure, as companies with a higher percentage of options outstanding as a percentage of shares outstanding tend to be firms that have the biggest compensation expense and biggest EPS impacts. Thus if they are very aggressive in their assumptions — as opposed to firms with a small number of options that choose to be aggressive — they are more likely to appear in the extreme category. It is also by definition that companies with the most generous option programs have the most incentive to manage earnings related to executive incentives.

²¹ Every individual member of the FASB is on record agreeing with this assertion. The FASB and its OVG have a clear preference from other techniques such as the utility maximizing lattice approach used by BBL (2004).

accomplishes this task by imposing peer assumptions within the Black-Scholes-Merton formula, *Objective Options Expense* does so by focusing on a more reliable actual cost of the options to the firm's shareholders.

Objective Options Expense uses each firm's calculated historical volatility, instead of the volatility estimate found in the annual report.²² The calculated historical volatility is then applied to a version of the BBL (2004) option valuation methodology to calculate the expected option life endogenously. This technique is more sensitive to the unique features of employee stock options; it also attempts to approximate the actual value of firms' options.

Specifically, the valuation components of *Objective Options Expense* are derived as follows:

Table 3: Components of *Objective Options Expense*

Valuation Parameter	Method of Derivation
Stock price	Firm's own disclosed stock price on date of grant
Exercise price	Firm's own disclosed option exercise price
Expected option life	Endogenously-derived expected time-to-exercise given firm-specific conditions
Volatility estimate	Firm-specific historical stock price volatility
Risk-free rate	Peer-group risk-free rate average
Dividend yield	Firm's own disclosed expected dividend yield

To identify companies with aggressive or inappropriate assumptions (which artificially boost profit metrics), Gradient's analysts identify companies with extremely negative *Abnormal Standardized Options Expense* and *Abnormal Objective Options Expense* (collectively – *Abnormal Earnings*).

As shown in Table 4 below we find very strong evidence that the stock price of companies that use aggressive/inappropriate assumptions/valuation techniques (resulting in large negative *Abnormal Earnings*) significantly under-perform their peers in the periods ahead. Their return expectation is also very different from the average firm in a control group of firms who use values that are not abnormal.

Table 4: Return Comparison of Abnormal to Normal Options-Adjusted Earnings

Earnings Measure	Mean Excess Returns - Size			Mean Excess Returns - Sector			Median Raw Returns		
	6 mos	1 yr	2 yrs	6 mos	1 yr	2 yrs	6 mos	1 yr	2 yrs
Abnormal	-1.78%	-5.59%	-11.63%	-1.31%	-5.37%	-11.10%	-0.51%	-3.67%	-5.95%
Normal	0.46%	-0.85%	1.60%	0.15%	-1.10%	0.54%	3.81%	11.65%	20.83%

All abnormal earnings excess return values and the median raw return for 1 and 2 yrs are significant at the $p=0.01$ level or greater. Median returns of normal earnings are also significant at the $p=0.01$ level or greater.

²² Bettis, Bizjak, Lemmon and Wei (2005) document that, on average, five-year historical volatility estimations provide reasonably robust estimates of future long-term volatility. Our models use the standard deviation of the log of the trailing five-year weekly stock price returns to calculate estimated volatility.

In addition to the evaluation of aggressive option expense issues we also leverage our knowledge of option valuation models, input estimation and our familiarity with trends in the reported data to identify other signs of manipulation of these values as companies begin to adopt FAS123R. Gradient's analysts identify issues that may be important indicators of poor guidance by management. It is already apparent that, as some firms are adopting FAS123R they are looking for ways to window-dress the earnings impact. As an example, some firms, such as Advanced Micro Devices (AMD), Noven Pharmaceuticals (NOVN), Viacom (VIAB) and Linear Technology (LLTC)²³, have decided to accelerate vesting provisions to increase the pro forma option expense in the current period. In turn, this will reduce option-related expense once it begins to appear on the face of their income statements next year. These maneuvers are self-serving (immediate vesting benefits those who receive the options immediately) and not in the interest of shareholders. On the other hand, if companies continue to use reasonable assumptions and make reasonable option model choices we expect to see no share price impact as a direct result of the adoption of FAS123R.

Section VI. The Relevance of Governance and Controls

Generally, firms that have adopted a more “democratic” posture with respect to shareholder rights over the past decade have performed materially better than those firms that took actions to restrict shareholder rights (Gompers, et. al., 2003). In contrast those firms seeking to protect positions of corporate power — through the use of those institutional structures and procedures that continue the private benefits of corporate control — are likely to relatively under perform vis-à-vis their democratic peers.²⁴

The wider range of academic research on the relationships between governance and firm value/future performance generally relates to board composition, executive compensation or executive ownership.²⁵ In examining the agency contract between management and shareholder financing, the thrust of the research suggests that governance mechanisms that minimize the “private benefits of control,” (Grossman and Hart, 1988), and eschew entrenched management and other forms of management opportunism, are more likely to lead to greater returns to the shareholder/financier.

Many of the elements of corporate governance and policies adopted over the past decade and a half (e.g. the adoption of codes of conduct, director elections, transparent decision-making, adoption of appropriate accounting standards, etc.) have helped increased

²³ Kraeuter (2005) and Wolverton (2005)

²⁴ Gompers, does not draw strong conclusions about causality, but points out that if the material “difference in firm value were even partially ‘caused’ by each additional governance provision, then the long-run benefits of eliminating multiple provisions would be enormous.” In explaining the difference between the abnormal returns of Democratic viz. Dictatorial companies, Gompers found no evidence of “a robust relationship between governance and insider trading.” While this finding may be true with respect to the difference between the returns of Democratic and Dictatorial companies as a whole, the EIA model focuses on a subset of firms that under perform relative to peers. In this regard, the issues related to managed earnings, and the maintenance of private control after earnings disappointments is more likely to be aligned with the Dictatorial group of companies, which maintain structures that support the private benefit of executives.

²⁵ See Shleifer and Vishny (1997) for a survey.

corporate transparency. It is important, however, that the *form of corporate self-governance* be examined in relation to the *substance of corporate action*. In this regard, increased legal requirements related to internal controls and executive/auditor attestation (Sarbanes-Oxley, Section 404 implementation) provide an important enterprise point of reference from which to examine the representational faithfulness of adopted governance provisions. Simply put, reporting on the adequacy of internal controls will provide external observers with system-level information related to the firm's effective implementation of a wider range of required governance and accountancy controls. The full impact of this requirement will provide additional insight into the practices of firms with elevated levels of downside risk.

More case specific evidence, however, can be found in an analysis of the acts of companies and their executives/management in relation to:

- established legal and regulatory requirements (e.g. Rule 10b5-1 and other insider trading regulations)
- the extent to which executive privilege lends itself to perpetuating private benefit and protection (e.g. board tenure, committee composition, interlocks, and compensation)
- the adoption of protective *viz.* open processes

In examining a firm's consistency with or deviation from legal and regulatory requirements, our analysts examine a range of reporting requirements, with a particular view toward reports and other events that may help to further explain our opinion on a positive or negative view. A Rule 10b5-1 proposed sale plan (an exception to Rule 10b-5), for instance, would be examined to determine the volume of shares or other important information, which in turn would be considered in relation to the strength of the firm's internal controls. For example, a 10b5-1 plan approved by the firm and the SEC that registered a large volume of "planned" sales followed by a cessation of such a plan; or that resulted in a highly favorable sales price based on subsequent events would raise concerns about company internal controls and processes. Similarly, a high volume of executive sales, or trades not easily explained by other abnormal observations (e.g. a recent increase in share price) would be examined against the requirements of 10b-5 and other events (ranging from firm-related news, impending earnings announcements or securities against the firm). The principal issue at hand is the extent to which the company's governance processes and internal controls mitigate the risk of legal and regulatory violations and exposure to shareholder grievances.

As discussed in Section IV, companies sometimes permit executives to hedge their ownership interest in the firm by using derivative instruments or investing in exchange funds. These instruments immediately de-link the relationship between the grant of the equity incentive instrument and the future success of the firm. We view the use of such instruments as a sign of compensation governance weakness. In addition, their use is associated with shorter-term firm under performance. In addition, Bettis, Coles and Lemmon (2000) document that over 90% of firms have blackout periods (or a specific trading-window period) wherein executives are prohibited from (permitted to) trade.

In addition, in most firms, executives are prohibited from trading at all without first obtaining pre-clearance from the compliance officer — usually the General Counsel or Corporate Secretary. Blackouts (or the inverse of a trading window) typically occur in periods immediately before earnings announcements and other significant material events (such as takeover discussions).

Gradient’s analysts evaluate whether a company implements, and consistently applies, policies that mandate trading windows or blackout periods. We also evaluate whether the company systematically reports their executive transactions in a timely manner (in accordance with insider trading regulations).

A long line of academic research has identified lower benefits for shareholders where governance and controls provide for executives to employ inefficient projects to gain private benefit (including perquisites, and continuing benefits). This problem is accentuated by entrenched management that operates within a structure that can resist hostile takeovers (Jensen and Ruback (1983), and Shleifer and Vishny (1989)). The expropriation of shareholder/investor funds is heightened (lowered) in conditions where agents of private benefit operate with minimal (strong) responsiveness to shareholders. In this regard, our analysts review a range of governance provisos, including (but not limited to):

- board tenure, including classified and unclassified boards
- executive compensation, including size of packages, perquisites, accelerated payouts and severance
- compensation and nominating committee structure and composition
- director character, including past service, tenure and interlocks
- decision-making processes, including ballot type, super majority requirements, cumulative voting, by-law and charter amendment requirements, and provisions for special meetings
- alternate stock sales procedures, including cash-outs and greenmail sales

Our analysts investigate each of the issues above to gain a better understanding of the governance structure of the firm and, in particular, those that may result in self-serving compensation policies, giving the equity holder the incentive and the motive to manipulate financial information provided to shareholders. We also gain insight into compensation-related governance by evaluating the policies that govern Section 16 insiders and the actions taken by them. We evaluate subtleties from these data since there is a strong body of evidence demonstrating that the actions (or lack of action) by insiders can be useful in explaining both short-term and long-term exceptional returns.

Gradient’s analysts rely on evidence and principles provided in this white paper to generate actionable **alerts** and extensive stock **research** as part of



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