

Reducing Compensation Expense...

Valuing Options in Light of SFAS No. 123R

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Background

In 2004, the Financial Accounting Standards Board issued the Statement of Financial Accounting Standards (SFAS) No. 123, Share-Based Payment (“SFAS 123R”), which requires companies to report the value of unvested stock options as an expense for income statement purposes over the option’s vesting period. SFAS 123R also requires that companies use a fair value method to value stock options and other forms of share-based payments and recognize the related compensation expense in calculating net earnings¹. The fair value method now required by SFAS 123R for stock option and other stock based compensation valuations replaces the previously allowed intrinsic value method. The intrinsic value method determined the value of a stock option for accounting purposes by subtracting its exercise price from the company’s then-current stock price, but did not require the issuing firm to recognize any

compensation expense on the income statement.

SFAS 123R applies to all companies that have issued stock options and other stock based compensation whether the firm is a large public company with actively traded, liquid stock, a public company whose stock is thinly traded or a private company. For example, determining the fair value of options and other stock based compensation for public companies with actively traded stock is relatively easy when compared to private firms or firms with thinly traded stock. Firms whose stock trades actively may also have publicly traded stock options on which to base their estimate of fair value. Even if they do not have traded options, firms with actively traded stock can more easily make use of standard option valuation models, such as the Black-Scholes Options Pricing Model

or binomial or lattice models,² because they can use their stock’s historical price movements and published forecasts to compute inputs for these models, such as stock return volatility. However, the key inputs, such as volatility estimates, that are needed to determine the fair value of an option, can be very difficult to ascertain for thinly traded public and private companies.

In light of the effectiveness of SFAS 123R, companies need to develop valid methods of determining the fair value of options, which are consistent with this new accounting standard. For public firms with thinly traded stock and private companies, the process for determining the fair value of options involves using an options pricing model, just as it does for firms with actively traded stock.³ However, two of the key inputs to an option pricing model: (i) the stock price; and (ii) the expected volatility of that stock price, are not readily available and are difficult to estimate for thinly

¹ Fair value is defined in FASB SFAS No. 142 as “. . . the amount at which that asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties that is, other than in a forced or liquidation sale.” Business valuation professionals generally refer to this definition as “fair market value”, particularly given that the circumstances of the market for options and stock underlying these options is driven by market forces.

² The Black-Scholes Options Pricing Model is so called because it was developed by Fischer Black and Myron Scholes, as published in “The Pricing of Options and Corporate Liabilities,” *Journal of Political Economy* 81 (May-June 1973), pp. 637-654. Binomial and lattice models are simpler and considered less realistic than the Black-Scholes Model. The Black-Scholes Model is discussed in more detail later in this article.

³ SFAS 123R indicates the options pricing model used to determine fair value and the related model inputs must be based on the existence of a market with willing seller/willing buyer attributes. Although, SFAS 123R notes that binomial models sometimes satisfy this criterion more effectively than the Black-Scholes Options Pricing model, we focus on the Black-Scholes Options pricing model because (i) SFAS 123R supports this model; and (ii) inputs to this model are easier to audit than many binomial models.

traded public and private companies. In terms of implementing SFAS 123R, the Financial Accounting Standards Board provides a definition of volatility that is only applicable to freely traded stocks where a standard deviation of continuously compounded rates of return can be used.

Reducing Compensation Expense

In order to avoid an expense hit for fiscal years ending December 31, 2005 and later, companies could have eliminated any vesting schedules applicable to outstanding options prior to the adoption of SFAS 123R. Approximately 750 public companies, including Dell, Comcast and Alcoa, accelerated the vesting for outstanding options in order to avoid expensing these options. For these and other companies that chose to accelerate the vesting period, the expense will not be recognized on the income statement; however, these companies will still be required to include the unamortized fair value of the options in a footnote to the financial statements. In addition, guidance provided by the Securities and Exchange Commission requires companies that accelerated the vesting of outstanding options to disclose in their financial statements, in each period during which acceleration occurs, (i) the reasons for the companies' actions, (ii) the terms of the modifications that

occurred, and (iii) the number of employees affected.

The impact of SFAS 123R would not only apply to the granting of options but would also affect employee stock purchase plans that provide employees with the opportunity to invest in company stock at a discount to the current market price. Under SFAS 123R, the use of this type of stock purchase plan would also trigger an expense for public companies. As a result, companies should consider whether to discontinue or revise these plans to reduce the discount offered. For example, an employee stock purchase plan that provides a discount of five percent or less is deemed to not give rise to recognizable compensation cost under SFAS 123R.

Changing the Compensation Mix

One simple way of reducing the expense associated with option grants is to reduce the number of option grants made. This can be accomplished by having the compensation committee adjust the formula utilized to make option awards or reducing the number of officers and employees that are eligible to receive options. This alternative, however, may be unpopular with officers and employees.

Other "levers" that can

decrease the value of options and lessen the expense impact on earnings include shortening the expiration period of the options; limiting the conditions under which the options can be exercised; creating options that convert into unregistered or non-voting securities; or tying the vesting of options to qualitative and quantitative criteria other than just time lapsed vesting of the options. Alternatively, companies may consider other forms of compensation such as restricted stock, stock appreciation rights or nonvoting securities.

Determining Fair Value

For unvested options which were still outstanding as of the date of a company's adoption of SFAS 123R, fair value must be determined and the *de facto* expense to the company of these forms of compensation must be recorded by the company in its financial statements. Provided below are the five factors that must be considered in determining the fair value of options using the Black-Scholes Options Pricing Model:

1. the current value of the underlying stock;
2. the exercise price of the option being valued
3. the applicable interest rate;
4. the time until expiration of the option; and
5. the expected volatility of the price movements in the underlying stock.⁴

⁴ The formula for the Black-Scholes Model looks formidable, but is used extensively in options trading:

$$\text{Call} = s \cdot n(d_1) - x e^{-rt} n(d_2) \quad \text{Put} = \text{Call} + x e^{-rt} - s \quad d_1 = \frac{\ln(s/x) + (r + \sigma^2 \cdot .5)T}{\sigma/T} \quad d_2 = d_1 - \sigma/T$$

Where:

- s is the current stock price, adjusted for dividends
- x is the strike price of the option
- e is the base of the natural logarithm (continued, below)
- r is the risk free interest rate
- T is the time to maturity of the option (in years)
- σ is the expected stock volatility

For a discussion of the uses and limitations of the Black-Scholes Model see "How to Use the Holes in Black-Scholes", by Fischer Black, *Journal of Applied Corporate Finance*, Volume 1, Issue 4, Page 67-73, Jan 1989.

Determining the stock price

For a private company, the fair market value of the equity, on a per share basis, that is, the stock price, must first be determined through application of standard and accepted methodologies⁵, as appropriate, including the application or review of forecasted earnings and cashflows of the business, analysis of comparable, publicly traded companies and merger and acquisition transactions and a review of the company's assets and liabilities.

For a thinly traded company⁶, where the reported stock price may not be a sufficient measure of fair value, the appropriateness of this price must be determined on a case-by-case basis, and should be based on factors including the percentage of stock traded, the percentage of stock held by the public versus affiliates, the frequency of trades, spreads between bid and ask prices, and whether the market value of the common stock, less third party interest bearing debt and preferred stock, is a positive or negative number. Accordingly, in some instances a fair market valuation of a "public" company's stock should be completed, just as is the case with a private company, to determine the fair value of the stock, rather than accepting a pink sheet or bulletin board-posted stock price as the indicator of fair value.

For firms that have recently become public, using the volatility of seasoned stocks within the same industry segment or the industry index for stocks within this segment is necessary to determine option values. The volatility of thinly traded stocks may be used if the volatility is

not solely a result of lack of marketability.

Determining volatility

The second key input in the Black-Scholes Options Pricing Model is volatility—the movement of the company's stock price, up or down, over time. The higher the level of volatility in a stock, the greater the value of the option will be and the greater the required expense. For example, a 5-year option with a \$4 strike price equal to the current market price and no dividends, a doubling of the volatility from just 5% to 10% increases the implied value of the stock option, all other factors remaining static, by approximately one third. Where there are no publicly traded options, there is little guidance on a standard calculation of volatility, except that in the Black-Scholes

options pricing model, the authors clearly intended volatility to be measured as a standard deviation of stock prices, expressed as a percentage, not an average or a coefficient of variation or any other, similar measure.

The standard deviation included in most Black-Scholes models is not defined to be a standard deviation of anything: for example, is it the standard deviation of the stock prices over a given period of time; is it the standard deviation of the stock returns over a given period of time; or is it the standard deviation of stock returns relative to indices over time? Key criteria in determining the parameters of this calculation is the frequency of the underlying data—how often stock prices are posted. For example, if stock prices are infrequently posted or there are few arms' length trades involving disinterested parties, then the standard deviation of the stock



⁵ See for example IRS proposed regulations §409A, September 2005; and IRS Revenue Ruling 59-60.

⁶ Generally thinly traded companies are small, with less than \$10 million in assets and 500 or fewer investors, the stock of which has a significant spread between the buy and ask prices, with an illiquid market that cannot accommodate stock sales without the expectation of resulting significant price stock price movements.

price returns on a daily basis for a multi-year period will not make any sense. In these instances, comparable companies or indices need to be used as volatility proxies. The choices with respect to volatility must be made using clear, supportable and auditable analytics, as do all the factors in an options pricing model. A company's valuation professionals can provide the analytical support and guidance in developing and documenting these key inputs.

For private companies, measuring stock price volatility is more difficult than for public companies, which generally have some historical pricing data that can be used. While the value of a company is driven in large part by its earnings, the measurement of earnings changes on an annual basis provides too few data points to impute any type of stock price volatility. The only credible measure of stock price volatility for a private company therefore is using comparable company stock prices or industry indices over time, with the historical period tracking the expiration period of the options being valued.

Legal Considerations

Now that everyone from the company's outside accountants to the SEC Staff accountants will be looking at the company's volatility estimates and changes in such estimates, for public companies, it is more important than ever that companies choose an accepted valuation method which incorporates estimates that make sense and are supportable. In addition, since the Sarbanes-Oxley legislation enacted in 2002 to combat corporate fraud and related SEC rules require the CEOs and CFOs of public companies to certify, among other things, the accuracy of the company's financial statements, the use of assumptions that are not based on accepted methodologies and are not accurate or involve changed assumptions absent a reasonable basis for doing so could result in these certifications being incorrect. Incorrect financial statements raise ugly restatement and public disclosure issues and consequences as well as internal control problems.

Conclusion

Even if a public company determines that its stock price is sufficient for use in determining one of the inputs to an options pricing model in implementing SFAS 123R, developing other, auditable assumptions, including prospective stock volatility, is key. With respect to stock volatility, this computation may be more complex than a simple computation of the standard deviation of historical stock prices if volatility is expected to decline as a result of corporate developments, corporate financing activities, such as stock buybacks, and industry trends. As indicated above, including these factors in the calculation of volatility would result in a decline in the implied fair value of the options valued for implementation of SFAS 123R. Finally, over the long term, companies should consider modifications to the compensation mix or the compensation plans themselves to reduce the compensation expense. ■

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