



FAS 123R - What it Really Means to Stock Administrators

Peter Suzman

Managing Partner, FAS123 Solutions, LLC.

NASPP Silicon Valley Chapter Conference

June 16, 2005

Understanding What Has Changed

- Estimation of Volatility
- Choice of Model – Black-Scholes or Lattice
- Estimation of Expected Term for Black Scholes
- Forfeiture Rate and true-up
- Multiple/single grant life and amortization choice
- Service Period
- Deferred tax – APIC pool
- Impact on diluted stock
- General ledger impact
- Plan design impact:
- Acceleration of unvested underwater options
- Cleaning up old problems – restatement needed?



Estimating Volatility

- Volatility is the biggest driver of valuation
- No longer a mechanical process of plugging in the expected term
- Important issue for high-tech and biotech stocks that have sharply declining historical volatilities

Forecasting Volatility

Expected (Forecasted) Volatility is typically based on:

- **Historical Volatility** – as measured by the sample standard deviation of historical returns.
- **Time Series Models** - based on historical returns but using regression analysis which might show how to weight past observations as well as trends such as mean reversion (e.g. GARCH models). Not used much in practice.
- **Implied Volatility** - referring to the volatility that is implied by an option valuation model when it is set equal to the prices of traded options observed in the market.

FASB on History as a Proxy for Expected Volatility in its March 2004 exposure draft

“An entity that uses historical share price volatility as its estimate of expected volatility without considering the extent to which future experience is reasonably expected to differ from historical experience (and the other factors cited in this paragraph) would not comply with the requirements of this Statement.”

FAS 123R on Historical Volatility as a Proxy for Expected Volatility

Paragraph A21 states that companies should begin with historical volatility, but then consider how expected volatility differs from history:

From Paragraph A21:

“Historical experience is generally the starting point for developing expectations about the future. Expectations based on historical experience should be modified to reflect ways in which currently available information indicates that the future is reasonably expected to differ from the past.”



FAS 123R on Expected Volatility

Paragraph B86 states that the objective in estimating expected volatility is to ascertain the assumption about expected volatility that marketplace participants would likely use in determining an exchange price for an option.

This suggests that implied volatility would suffice if options with terms less than and equal to employee stock option terms were very actively traded.

FASB on Factors to Consider in Estimating Volatility

From Paragraph A32:

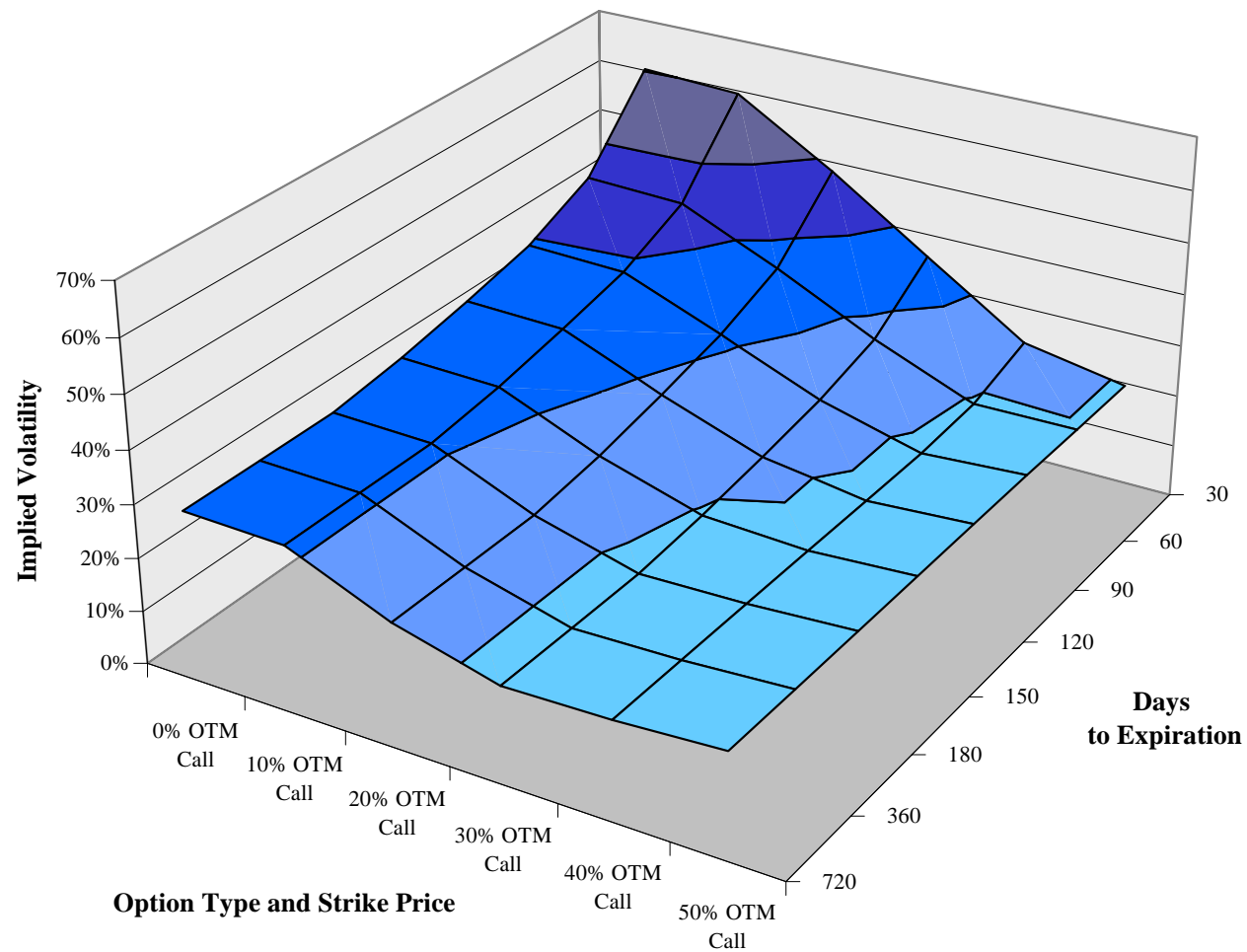
Factors to consider in estimating expected volatility include:

- a. Historical volatility, including changes in that volatility and possible mean reversion of that volatility, over the most recent period that is generally commensurate with the contractual term of the option if a lattice model is being used to estimate fair value or the expected term of the option if a closed-form model is being used.
- b. Implied volatility
- c. The length of time an entity has been public. If less than the expected term the term structure of volatility for the longest period for which trading activity is available should be more relevant. A newly public entity also might consider the expected volatility of similar entities. A nonpublic entity might base its expected volatility on the expected volatilities of entities that are similar except for having publicly traded securities.
- d. Appropriate and regular intervals for price observations. A publicly traded entity would likely use daily price observations, while a nonpublic entity might use monthly price observations.
- e. Corporate and capital structure (e.g. highly leveraged entities tend to have higher volatilities).

SEC – SAB 107

- “The staff believes that companies should make good faith efforts to identify and use sufficient information in determining whether taking historical volatility, implied volatility or a combination of both into account will result in the best estimate of expected volatility.”
- “The staff believes that a company with actively traded options or other financial instruments with embedded options generally could place greater (or even exclusive) reliance on implied volatility.”

Implied Volatility Surface

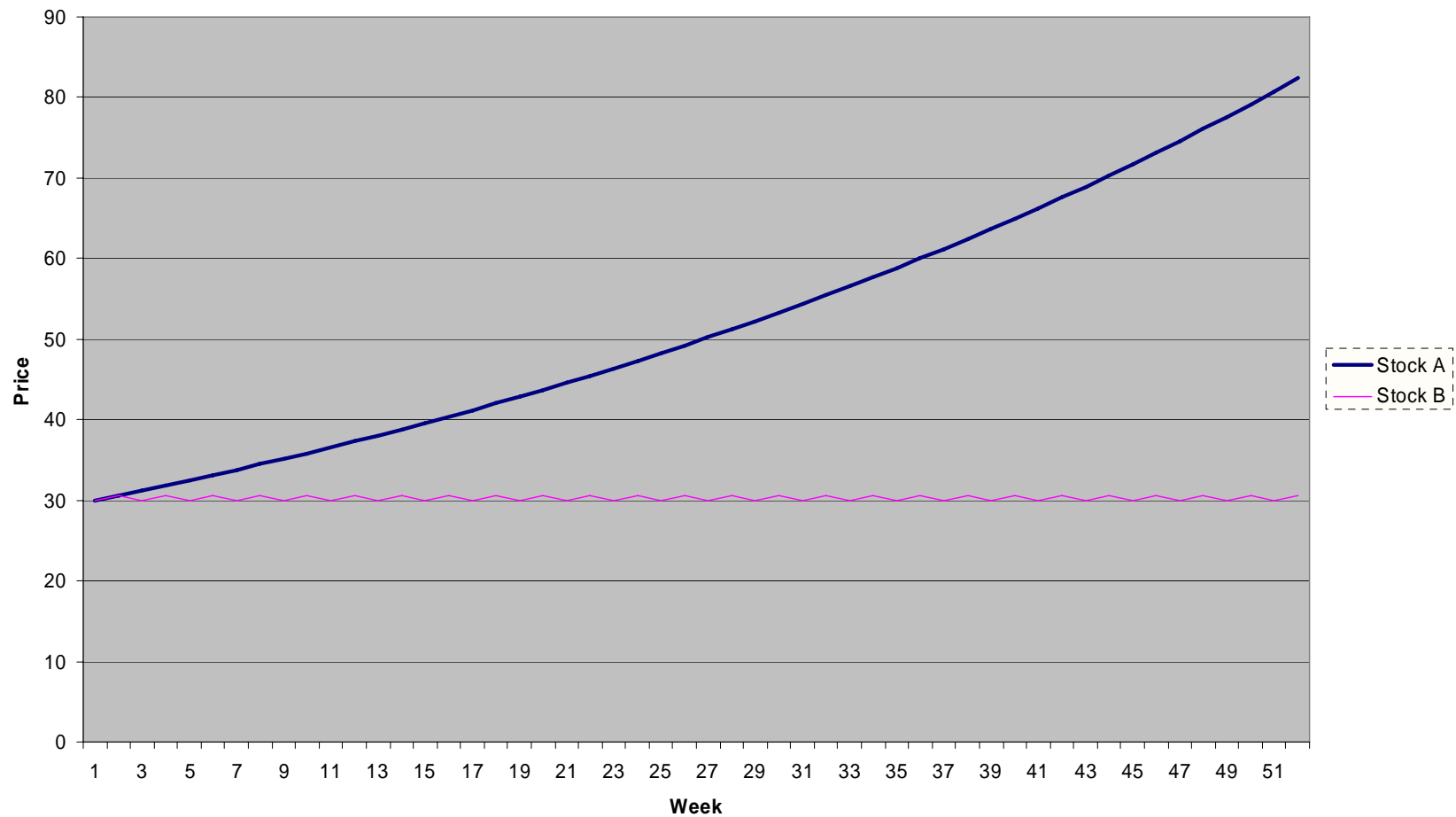


SEC – SAB 107 Implied Volatility

- Matching option term is desirable, but at minimum company needs some options with terms greater than six months
- If all that is available are options with less than one year maturity, then company should take other information into consideration
- Greater than one year maturity is not expected to be significantly different than less than one year (true?)
- Match volatility to estimate to the date of grant if possible

Guess the Volatility

Volatility Example



Choice of Model – Black-Scholes or Lattice

- Which Gives a Lower Valuation?
 - Not a meaningful question in isolation – depends on what expected life you are using for Black-Scholes
- Several Different Lattice models
 - Binomial and Trinomial fundamentally equivalent
 - Models differ in how they model exercise behavior
 - Single Exercise Factor (SEF) model (S/K) – simplest
 - Array of probabilities – intuitive, but hard to derive parameters
 - Regression analysis – statistically soundest
 - Path dependent regression – requires Monte Carlo simulation

Which Lattice Model?

- Single Exercise Factor model (S/K) is easiest to use. For some companies gives artificially low valuation, for some companies gives artificially high valuation. It ignores all the grants that **haven't** been exercised.
- Regression and probabilistic based models can only be used if there is a fair amount of data.
- Path-dependent models often give the lowest valuations, but they are the most complex to analyze and run.

Estimating Expected Term for Black-Scholes

- Old methods were very simplistic – typically estimated weighted-average time to exercise. Totally ignored grants that were not exercised
- Better to add some factor for unexercised grants (like half remaining term), but still dependent on past history of stock price
- Best method is to use the mechanism of the lattice model, but adjust for the company's cost of capital instead of using the risk-neutral lattice that is used for valuation
- SAB 107 Safe Harbor: $(\text{Vest} + \text{Life}) / 2$

Lattice Models – Pros and Cons

- Advantages:
 - Sometimes produces lower values
 - More sophisticated
 - Potentially more supportable
- Disadvantages
 - More Complex
 - Need more historical data
 - Less Transparent
 - Harder to audit
 - Probably can't go back to Black-Scholes

Forfeiture Rate and true-up

- FAS 123R no longer permits “actual” method of accounting for forfeitures
- Must switch to estimating forfeiture rate and true-up
- How often should you true-up?
 - At least annually
 - Some software true-up every quarter
- One-time catch-up – shouldn’t be necessary for most companies using actuals

Multiple/Single Grant Life and Amortization Choice

- Two choices under FAS 123 – single grant life with straight line, and multiple grant life with accelerated (FIN 28) amortization
- Four choices under FAS123R – mix and match:
 - Single grant life, straight line
 - Single grant life, FIN 28
 - Multiple grant life, straight line ****
 - Multiple grant life, FIN 28
- Logical choice is multiple grant life for valuation (because it produces lower values) and straight line for amortization (because it is simpler and matches perceived employee service better)

Service Period

- Option is now expensed over the “service period.”
- This usually, but not always, corresponds to the vesting period
- An example where it doesn’t is a retirement-eligible employee – may require immediate expensing.
- Another example is a service period beginning before grant is officially made.
- Administrators potentially will have to track service periods as well as vesting periods.

Deferred tax – APIC pool

- Not really a change as in theory this was supposed to be tracked all along under FAS 123
- In practice, practically nobody did this
- SEC in SAB 107 gave some relief – don't have to have this nailed down immediately
- Complexities for foreign employees, companies with NOL's
- Problems with missing data, acquisitions and mergers

Impact on FAS 128 - Diluted Stock

- Unamortized compensation from FAS 123 is a buyback in the treasury stock method in the diluted stock calculation
- Significant impact for some companies – partially offsets increased expense from FAS 123
- Note that sample calculations in FAS 123R examples are quite misleading – actual calculations have to be done on a grant-by-grant basis otherwise grants can become anti-dilutive
- Note also impact on NQ tax benefit – spread now needs to exceed Fair Value before there is a benefit from the NQ buyback
- Means companies using spreadsheets for FAS 123 will have to reconsider

General Ledger Impact

- Need to report option expense by division of company for internal cost-accounting
- Potentially need to track optionees as they move
- May need to capitalize some option expense
- May need to report expense monthly and close books quickly

Plan Design Impact

- Restricted Stock vs. Options
 - Gap in perceived value of options and cost to company
- Performance-Based Options
 - Two types of performance-based:
 - Market-Based
 - Haircut in valuation
 - No True-up
 - Need Lattice to Value
 - Non-Market Based
 - Harder to Administer
 - Potential Swings in earnings
- ESPP impact
 - Move to straight 6-month offering periods

Acceleration of Unvested Underwater Options

- Many significant companies – Xerox, Comcast, AMD
- For example, Xerox’s disclosure:

“The primary purpose of this accelerated vesting is to eliminate compensation expense Registrant would recognize in its results of operations upon the adoption of FASB Statement No. 123R, “Share-Based Payment,” which is effective for Registrant beginning in the first quarter of 2006. Registrant expects the acceleration to reduce its pre-tax stock option compensation expense in 2006 by approximately \$31 million or \$0.02 per diluted share...”
- Watch out for the ISO limit!
- Can add a limit on disposition

Cleaning up Old Problems – Restatement Needed?

- What happens if a company takes a closer look at its prior FAS 123 disclosures and discovers serious problems?
- For example, assume a company had never trued-up its grants, and when it does so while calculating its APIC pool, it discovers that its previous disclosures were significantly different than they should have been?
- There has already been an example of a company (Advent Software) deciding to postpone filing its 10-Q and deciding to restate prior years because of the way it accounted for an option exchange program in 2002 and its tax treatment of the pro forma option expense.
- Advent also reported these errors were the “result of a control deficiency with respect to the Company’s procedures in correctly calculating and reporting its stock-based employee compensation expense under SFAS 123, as amended by SFAS 148, and **believe[s] that this control deficiency constituted a material weakness** as of December 31, 2004 and as of March 31, 2005.”

Questions?

More information on lattice valuation and volatility estimation can be found at

www.fas123solutions.com

Peter Suzman – phone 617-965-2018

Email: peter.suzman@fas123solutions.com