



ASC 718 Valuation Consulting Services

Montgomery Investment Technology, Inc. provides a comprehensive range of valuation consulting services for compliance with ASC 718 (FAS 123R), SEC Staff Accounting Bulletin 107/110 and PCAOB ESO Guidance.

1) Fair Value of Share-Based Payment (SBP) Awards

- A. Service Condition Awards
 - 1. Employee Stock Option (ESO)
 - 2. Vesting
 - a. Cliff
 - b. Graded
 - 3. Non-vanilla structure
 - a. Stepped strike
 - b. Modified payoff
- B. Market Condition Awards
 - 1. Option or Restricted Stock
 - 2. Total Shareholder Return (TSR)
 - 3. Performance Price Target (PPT)
 - 4. Capped Payoff
 - 5. Indexed option
 - 6. Out-performance option
- C. Performance Condition Awards
 - 1. EPS target or company performance metric
- D. Employee Stock Purchase Plan (ESPP)
- E. Stock Appreciation Rights (SAR)
- F. Estimating assumptions for valuation model

2) Valuation Methods

- A. Black-Scholes-Merton (European)
- B. Cox-Ross-Rubinstein Binomial (traded options)
- C. Lattice (trinomial) with Exercise Behavior overlay
- D. Monte Carlo Simulation (multiple assumptions and unique features)
- E. Gram-Charlier (non-normal returns)
- F. Ingersoll (utility value of executive awards)
- G. Warrant valuation model (dilution effect)

3) Valuation Software

- A. FinTools XL functions
- B. Custom templates
- C. Custom functions
- D. Custom development

4) SBP Preliminary Analysis

- A. Review terms and conditions of award contract
- B. Send questionnaire to Company for award details
- C. Send MITI award description to Company for confirmation
- D. Review recent 10-K and/or 10-Q SBP footnote disclosures
- E. Generate Visual Volatility and Visual Time Series
- F. Review Company press releases and industry news
- G. Review Company dividend announcements

5) Risk-Free Interest Rate

- A. Conversion of bond equivalent yield to continuous rate
- B. Interpolation of rates to match the expected term
- C. Calculation of implied forward rates by one year intervals
- D. LIBOR and swap rates for implied volatility
- E. Convert Constant Maturity Treasury yield curve to a zero-coupon equivalent



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6) Expected Dividends

- A. Collect historical dividend payments
 - 1. Calculate current yield
 - 2. Forecast future dividends using trend analysis
- B. Use Company news release for future dividends
- C. Use expected dividends assumption of zero for dividend protected awards

7) Price Data Validation and Adjustments

- A. Collect price data from three independent sources
 - 1. Daily, weekly and monthly prices
- B. Audit data using validation process
- C. Price adjustments to Close prices
 - 1. Stock splits
 - 2. Cash dividends
 - 3. Adjustment methods:
 - a. Yahoo! Finance
 - b. FASB

8) Expected Volatility

- A. Volatility Analysis
 - 1. Historical Volatility
 - a. Price Data Validation and Adjustments
 - b. Calculate the historical volatility using daily, weekly and monthly prices
 - c. Return basis: fixed intervals or calendar time
 - d. Contractual term
 - e. Expected term
 - f. Horizon period
 - g. Remaining term
 - h. Periodic intervals with mirror or shift to the future
 - i. Mean-reversion
 - j. Exponentially weighted moving average (EWMA)
 - k. Visual volatility using moving average method
 - l. Unique period adjustments by applying deemphasizing factors
 - 2. Implied Volatility
 - a. Analysis of exchange traded options
 - (i) Short-dated and long-dated expirations
 - (ii) In-the-money and out-of-the money options
 - (iii) SAB 107 at-the-money interpolated equivalent
 - b. Other traded derivatives
 - (i) Warrants
 - (ii) Over-the-counter derivatives
 - (iii) Embedded derivatives
 - 3. Volatility Term Structure
- B. Time Series Analysis
 - 1. Test Black-Scholes-Merton assumption for normal return distribution and independence
 - a. Skewness, Kurtosis, Autocorrelation, Lomb
 - 2. Identification of Outliers using six statistical methods to highlight:
 - a. Unique periods of extreme volatility
 - b. Time periods responsible for non-normal returns
 - 3. Qualitative analysis of data identified by the Outlier statistical tests
 - 4. Calculate Adjusted Historical Volatility based on unique period adjustments



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- C. Peer Group Analysis (private company valuation)
 - 1. Identify peer companies
 - a. Equal weight for each company
 - b. Unique weights for each company
 - 2. Estimate peer expected volatility based on historical volatility and/or implied volatility
- D. Peer or Comparability Group Analysis (TSR valuation)
 - 1. Estimate volatility based on historical volatility and/or implied volatility for each company
 - 2. Combined Historical and Implied Volatility
- E. Expected Volatility Analysis
 - 1. Weighted scenarios based on Historical, Implied and Peer Volatilities
 - 2. Volatility Term Structure
 - 3. Blended Historical Volatility
 - 4. Combined Historical and Implied Volatility

9) Expected Term

- A. SEC Staff Accounting Bulletin 107 Simplified Method
- B. Ratio of time from vesting date to contractual term date
- C. Average Time Outstanding
 - 1. Based on historical option transactions to date plus projected transactions
 - a. Exercises
 - b. Forfeitures (post-vest)
 - c. Expires
 - 2. Implied Expected Term using Black-Scholes-Merton
- D. Suboptimal Exercise Factor
 - 1. Based on historical exercise multiple plus projected transactions
- E. Implied Expected Term
 - 1. Derived from Lattice Model
 - 2. Derived from Monte Carlo Method
- F. Derived service period plus an adjustment factor may be used for certain market condition awards

10) Expected Forfeitures

- A. Expected Forfeitures based on historical transactions plus qualitative factors
 - 1. Annual employee turnover rate
 - a. Companywide or by designated groups
 - b. Applied to vesting schedule to arrive at the overall estimated forfeitures
- B. Pre-Vest Forfeitures from historical transactions
 - 1. Required for compensation cost true-up at each vesting date
- C. Post-Vest Forfeiture Rate from historical transactions
 - 1. Required for Fair Value calculations using Lattice and Monte Carlo valuation methods

11) Price Target Valuation

- A. Market Condition Award
 - 1. Performance price target
 - a. Consecutive days at or above a target price
 - b. Multiple days at or above a target price
 - c. Consecutive days at or above an average target price
 - d. One touch "Up and In" target
 - 2. The Fair Value is calculated using Monte Carlo simulation, the Lattice method and/or a Closed-form solution
 - 3. The Derived Service Period is calculated using Monte Carlo simulation
 - a. Risk-Neutral method
 - b. Real World method



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- B. Probability of an Expected Stock Price on a Given Date
 1. Below a specified value
 2. Above a specified value
 3. Between two specified values

12) TSR Valuation

- A. Market Condition Award as defined in ASC 718
- B. Total Shareholder Return (TSR) valuation based on the performance of a company relative to a peer group, comparative group or industry sector
- C. Valuation method is Monte Carlo simulation
 1. Stock price paths are simulated on a daily basis based on these factors:
 - a. Expected volatility
 - b. Risk-free interest rate or growth rate
 - c. Correlation matrix or array including each of the companies in peer group
 - d. Dividend treatment
 - (i) With reinvestment of dividends in stock
 - (ii) With reinvestment of div at risk-free rate
 - (iii) Without reinvestment of dividends
 2. The TSR ranking of the company will be estimated over a defined performance period, and the corresponding payoff incorporated into the fair value calculation
- D. Valuation techniques
 1. Risk Neutral
 - a. Assumes that hedging and selling is allowed
 - b. Discount payoff at the risk-free rate
 2. Real World
 - a. Assumes that hedging and selling is not allowed
 - b. Growth rate of each company is estimated
 - (i) Historical growth rate or trend
 - (ii) Adjusted CAPM method
- E. Assumption estimation
 1. Expected Volatility
 2. Expected Correlation
 3. Expected Dividends
 4. Equivalent Shares
 5. Expected Growth Rates
 6. The Sensitivity of the assumptions will be tested

13) Expected Correlation

- A. Price Data Validation and Adjustments
- B. Calculate the historical return correlation using daily, weekly and monthly prices
 1. Company by Peer Matrix
 - a. Cholesky decomposition
 2. Company by Peer Array
 - a. Correlation of Company to each Peer
 3. Sensitivity analysis
 - a. Contractual and/or Remaining Term
 - b. Horizon Periods
- C. Simulate stock price movements based on the historical or estimated correlation matrix
 1. Historical correlation matrix or array
 - a. Peer Group
 - b. Comparability Group
 2. No correlation sensitivity (assume a factor of 0)
 3. Perfect correlation sensitivity (assume a factor of 1)
 4. Fixed correlation factor (elementary approach)



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14) Expected Growth Rate of Company

- A. Growth Rate resulting from Capital Appreciation and Dividend Income
- B. Historical return calculations
- C. Beta analysis
 - 1. Capital Asset Portfolio Model (CAPM) growth rate estimates
 - 2. Adjusted CAPM growth rate estimates

15) Cost Attribution Calculations

- A. Monthly, quarterly, or annual expense
- B. Daily or monthly attribution technique
- C. Straight-line or accelerated method
- D. Reported expense tabulation from prior periods
- E. Implied forfeiture rate calculation based on actual and expected forfeitures
- F. Minimum cost and floor adjustments
- G. Current period adjustment for expense catch-up
- H. Type of awards: ESO, TSR, PPT, ESPP, SAR, Restricted Stock, Phantom Stock, Performance Condition

16) Financial Reporting Services

- A. Footnote disclosure of Fair Value calculation method
- B. Footnote disclosure of assumptions for valuation model
- C. Sensitivity analysis of the assumptions
- D. Stock option activity report
- E. Diluted EPS calculation
- F. APIC deferred tax calculation
- G. Mark-to-market Fair Value calculation
- H. ESO hedging program

17) Plan Design and Review

- A. Review the terms of the award contract
- B. Provide summary description of the award contract
- C. Make suggestions for plan enhancement
- D. Best practices comparative review

18) Share-based Payment Training Seminar

- A. Onsite custom training seminar
- B. Online training webinars