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ASC 718 Valuation Consulting Services

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

1. Fair Value of Share-Based Payment Awards
- A. Employee Stock Options (ESO)
  1. Service Condition Award
  2. Cliff Vesting
  3. Graded Vesting
  4. Non-vanilla structure
     a. Fixed stepped strike
     b. Modified payoff
- B. Restricted Stock with vesting conditions
- C. Market Condition Awards
  1. Total Shareholder Return (TSR)
  2. Price Target
  3. Capped Payoff
  4. Indexed Option
  5. Out-performance Option
  6. Variable strike
- D. Performance Condition Awards
  1. EPS Target or company performance metric
- E. ESPP Awards with option feature

2. Valuation Methods
- A. Black-Scholes-Merton
- B. Cox-Ross-Rubinstein Binomial
- C. Lattice (Binomial and Trinomial) with Exercise Behavior overlay
- D. Monte Carlo Simulation (multiple assumptions and unique features)
- E. Gram-Charlier (non-normality)
- F. Ingersoll (executive awards)
- G. Warrant valuation model (dilution effect)

3. 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

4. Expected Forfeiture
- A. Expected Forfeiture 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

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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

5. 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 period
      e. Remaining period
      f. Horizon period
      g. Periodic intervals with mirror or shift to the future
      h. Mean-reversion
      i. Exponentially weighted moving average (EWMA)
      j. Visual volatility using moving average method
      k. Unique period adjustments by applying deemphasizing factors
   2. Implied Volatility
      a. Short-dated and long-dated expirations
      b. In-the-money and out-of-the money options
      c. SEC SAB 107 at-the-money interpolated equivalent
      d. Other traded derivatives
      e. Warrants
      f. Over-the-counter derivatives
      g. 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

C. Peer Group Analysis
   1. Identify peer companies
      a. Determine appropriate weights for each company
      b. Equal weight for each company
   2. Estimate peer volatility based on historical volatility and/or implied volatility

D. 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

6. 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

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b. FASB

7. 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

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

8. TSR Valuation

A. Market Condition Award as defined in FAS 123R (ASC 718)
B. Total Shareholder Return (TSR) valuation based on the performance of a company relative to a peer 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 including each of the companies in peer group
      d. Vesting period dividend treatment
   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
   3. Valuation techniques
      a. Risk Neutral
         a. Assumes that hedging and selling is allowed
         b. Discount payoff at the risk-free rate
      b. Real World
         a. Assumes that hedging and selling is not allowed
         b. Expected growth rate of each company is estimated
            i. Historical growth rate
            ii. Adjusted CAPM method
   4. Assumption estimation
      a. Expected Volatility
      b. Expected Correlation
      c. Expected Dividends
      d. Equivalent Shares
      e. Expected Growth Rates
      f. The Sensitivity of the assumptions will be tested

9. Expected Correlation

A. Price Data Validation and Adjustments
B. Calculate the historical correlation using daily, weekly and monthly prices
   1. Correlation is defined as the "the simultaneous change in value of two numerically valued random variables"
   2. Sensitivity analysis
      a. Contractual and/or Remaining Term

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b. Horizon Periods

C. Simulate stock price movements based on the historical or estimated correlation matrix
   1. Historical correlation matrix
      a. Peer Group
      b. Comparability Group
   2. Perfect correlation sensitivity (assume a factor of 1)
   3. Fixed correlation factor (can be used as an elementary approach)

10. 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

11. Risk-Free Interest Rate
- A. Conversion of bond equivalent yield to continuous rate
- B. Interpolation of rates to match the remaining term
- C. Calculation of the implied forward rates by one year intervals

12. Financial Reporting Services
- A. Fair Value calculation using specified valuation method
- B. Periodic Cost Attribution report
  1. Adjustments for Expected Forfeitures
  2. Tabulation of Reported Expense to Date
  3. Current period adjustment to account for minimum and floor conditions
- C. Net Cost true-up report based on pre-vest forfeitures through final vesting date
- D. Stock Option Activity report
- E. Diluted EPS calculation
- F. APIC Pool calculation
- G. Mark-to-Market Fair Value calculation
- H. ESO Hedging program

13. 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

14. Share-based Payment Training Seminar
- A. Onsite custom training program
- B. Online training webinars