Montgomery Investment Technology, Inc.
2 Radnor Corporate Center, Suite 121
Radnor, PA 19087
Phone: 610.688.8111
Fax: 610.688.5084

FAS 157 Valuation Consulting Services

INTRODUCTION

What can MITI do regarding the implementation of Statement of Financial Accounting Standards No. 157, Fair Value Measurements, September 2006?

SFAS 157 requires that the fair value be based on the perspective of a market participant.

MITI can estimate the Fair Value of different assets/liabilities. MITI has a long track implementing the income approach techniques. These valuation techniques include present value techniques; option-pricing models, such as the Black-Scholes-Merton formula (a closed-form model), Monte Carlo simulations and binomial/trinomial trees (i.e., lattice models). MITI has applied these techniques to estimate the Fair Value of complex instruments such as futures, options, ESO and TSR awards, real options.

Additionally, MITI can provide:

1. Level 1 inputs such as stock prices (adjusted for splitting/merger/dividend distribution) and dividend distributions.
2. Level 2 inputs such as implied volatilities and interest rates and yield curves observable at commonly quoted intervals.
3. Level 3 inputs such as historical volatility, historical correlation matrix, and financial forecasts developed using the reporting entity's own data.

STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 157
FAIR VALUE MEASUREMENTS
SEPTEMBER 2006

FAIR VALUE

SFAS 157 (paragraph 5) requires that the fair value be based on the perspective of a market participant: "*Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date*." When estimating the fair value, it is not required to "*undertake all possible efforts to obtain information about market participant assumptions*." SFAS 157 requires taking into account "*information about market participant assumptions that is reasonably available without undue cost and effort*" (SFAS 157 paragraph 30).

SFAS 157 (paragraph 2) does not apply "*under accounting pronouncements that address share-based payment transactions: FASB Statement No. 123 (revised 2004), Share-Based Payment, and its related interpretive accounting pronouncements that address share-based payment transactions*."

FAS 157 Valuation Consulting Services

VALUATION TECHNIQUES

SFAS 157 (paragraph 18) requires the application of one of the following valuation techniques:

a. Market approach. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. For example, valuation techniques consistent with the market approach often use market multiples derived from a set of comparables. Valuation techniques consistent with the market approach include matrix pricing. Matrix pricing is a mathematical technique used principally to value debt securities without relying exclusively on quoted prices for the specific securities, but rather by relying on the securities' relationship to other benchmark quoted securities.

b. Income approach. The income approach uses valuation techniques to convert future amounts (for example, cash flows or earnings) to a single present amount (discounted). The measurement is based on the value indicated by current market expectations about those future amounts. Those valuation techniques include **present value techniques; option-pricing models, such as the Black-Scholes-Merton formula (a closed-form model) and a binomial model (a lattice model),** which incorporate present value techniques; and the multiperiod excess earnings method, which is used to measure the fair value of certain intangible assets.

c. Cost approach. The cost approach is based on the amount that currently would be required to replace the service capacity of an asset (often referred to as current replacement cost). From the perspective of a market participant (seller), the price that would be received for the asset is determined based on the cost to a market participant (buyer) to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. Obsolescence encompasses physical deterioration, functional (technological) obsolescence, and economic (external) obsolescence and is broader than depreciation for financial reporting purposes (an allocation of historical cost) or tax purposes (based on specified service lives).

FAIR VALUE HIERARCHY

The assumptions that market participants would use in pricing the asset or liability, are labeled as inputs. Inputs may be observable or unobservable. "*Valuation techniques used to measure fair value shall maximize the use of observable inputs and minimize the use of unobservable inputs*" (SFAS 157 paragraph 21). SFAS 157 identifies a fair value hierarchy to rank the reliability of inputs used in a valuation approach.

Level 1 inputs "*are **quoted prices (unadjusted) in active markets** for identical assets or liabilities that the reporting entity has the ability to access at the measurement date*" (FASB 157 paragraph 24). If the reporting entity holds a position in a single financial instrument (including a block) and the instrument is traded in an active market, the fair value of the position shall be measured within Level 1 as the product of the quoted price for the individual instrument times the quantity held. The quoted price shall not be adjusted because of the size of the position relative to trading volume (blockage factor).

FAS 157 Valuation Consulting Services

Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. If the asset or liability has a specified (contractual) term, a Level 2 input must be observable for substantially the full term of the asset or liability. Level 2 inputs include the following (FASB 157 paragraph 28):

a. Quoted prices for similar assets or liabilities in active markets

b. Quoted prices for identical or similar assets or liabilities in markets that are not active, that is, markets in which there are few transactions for the asset or liability, the prices are not current, or price quotations vary substantially either over time or among market makers (for example, some brokered markets), or in which little information is released publicly (for example, a principal-to-principal market)

c. Inputs other than quoted prices that are observable for the asset or liability (for example, ***interest rates and yield curves observable at commonly quoted intervals****,* ***volatilities, prepayment speeds, loss severities, credit risks, and default rates****)*

d. Inputs that are derived principally from or corroborated by observable market data by correlation or other means (market-corroborated inputs).

Examples of Level 2 inputs for particular assets and liabilities are (SFAS 157 paragraph A24):

a. Receive-fixed, pay-variable interest rate swap based on the LIBOR swap rate. A Level 2 input would include the **LIBOR swap rate** if that rate is observable at commonly quoted intervals for the full term of the swap.

b. Receive-fixed, pay-variable interest rate swap based on a foreign-denominated yield curve. A Level 2 input would include the **swap rate based on a foreign denominated yield curve** that is observable at commonly quoted intervals for substantially the full term of the swap. That would be the case if the term of the swap is 10 years and that rate is observable at commonly quoted intervals for 9 years, provided that any reasonable extrapolation of the yield curve for year 10 would not be significant to the fair value measurement of the swap in its entirety.

c. Receive-fixed, pay-variable interest rate swap based on a specific bank's prime rate. A Level 2 input would include the **bank's prime rate** derived through extrapolation if the extrapolated values are corroborated by observable market data, for example, by correlation with an interest rate that is observable over substantially the full term of the swap.

d. Three-year option on exchange-traded shares. A Level 2 input would include the **implied volatility** for the shares derived through extrapolation to year 3 if (1) prices for one- and two-year options on the shares are observable and (2) the extrapolated implied volatility of a three-year option is corroborated by observable market data for substantially the full term of the option. In that case, the implied volatility could be derived by extrapolating from the implied volatility of the one- and two-year options on the shares and corroborated by the implied volatility for three-year options on comparable entities' shares, provided that correlation with the one- and two-year implied volatilities is established.

e. Licensing arrangement. For a licensing arrangement that is acquired in a business combination and that was recently negotiated with an unrelated party by the acquired entity (the party to the licensing arrangement), a Level 2 input would include the **royalty rate** at inception of the arrangement.

f. Finished goods inventory at retail outlet. For finished goods inventory that is acquired in a business combination, a Level 2 input would include either a **price to customers** in a retail market or a **wholesale price to retailers** in a wholesale market, adjusted for differences between

the condition and location of the inventory item and the comparable (similar) inventory items so that the fair value measurement reflects the price that would be received in a transaction to sell the inventory to another retailer that would complete the requisite selling efforts. Conceptually, the fair value measurement should be the same, whether adjustments are made to a retail price (downward) or to a wholesale price (upward). Generally, the price that requires the least amount of subjective adjustments should be used for the fair value measurement.
g. Building held and used. A Level 2 input would include the **price per square foot** for the building (a valuation multiple) derived from observable market data, for example, multiples derived from prices in observed transactions involving comparable (similar) buildings in similar locations.
h. Reporting unit. A Level 2 input would include a **valuation multiple** (for example, a multiple of earnings or revenue or a similar performance measure) derived from observable market data, for example, multiples derived from prices in observed transactions involving comparable (similar) businesses, considering operational, market, financial, and nonfinancial factors.

Level 3 inputs are unobservable inputs for the asset or liability. Unobservable inputs shall be used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at the measurement date. Unobservable inputs "*shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk)*" (SFAS 157 paragraph 30).

Examples of Level 3 inputs for particular assets and liabilities are (SFAS 157 paragraph A25):
a. Long-dated currency swap. A Level 3 input would include **interest rates** in a specified currency that are not observable and cannot be corroborated by observable market data at commonly quoted intervals or otherwise for substantially the full term of the currency swap. The interest rates in a currency swap are the swap rates calculated from the respective countries' yield curves.
b. Three-year option on exchange-traded shares. A Level 3 input would include **historical volatility**, that is, the volatility for the shares derived from the shares' historical prices. Historical volatility typically does not represent current market participant expectations about future volatility, even if it is the only information available to price an option.
c. Interest rate swap. A Level 3 input would include an adjustment to a **mid-market consensus** (nonbinding) price for the swap developed using data that are not directly observable and that cannot otherwise be corroborated by observable market data.
d. Asset retirement obligation at initial recognition. A Level 3 input would include **expected cash flows** (adjusted for risk) developed using the reporting entity's own data if there is no information reasonably available without undue cost and effort that indicates that market participants would use different assumptions. That Level 3 input would be used in a present value technique together with other inputs, for example (1) a risk-free interest rate or (2) a credit-adjusted risk-free rate if the effect of the reporting entity's credit standing on the fair value of the liability is reflected in the discount rate rather than in the expected cash flows.
e. Reporting unit. A Level 3 input would include a **financial forecast** (for example, of cash flows or earnings) developed using the reporting entity's own data if there is no information

reasonably available without undue cost and effort that indicates that market participants would use different assumptions.

If an input used to measure fair value is based on bid and ask prices, "*the price within the bid-ask spread that is most representative of fair value in the circumstances shall be used to measure fair value, regardless of where in the fair value hierarchy the input falls (Level 1, 2, or 3)*" (SFAS 157 paragraph 31).

This report has been prepared by Montgomery Investment Technology, Inc. for internal use only.
August 2008