U.S. GAAP & IFRS: Today and Tomorrow
Sept. 13-14, 2010

New York

Fair Value (Derivatives and Embeddeed

Derivatives)

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Fair Value Concepts Under USGAAP

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FAS 157: Overview

- Effective January 1, 2008 for most companies
- Provides guidance on how to do fair value where GAAP already requires it, for example:
  - FAS 133 derivatives and embedded derivatives
  - FAS 107 disclosures
  - Fair values underlying FAS 142 goodwill impairment
  - Purchase accounting opening balance sheet
- DOES NOT require that anything new be fair valued

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FAS 157: New Definition of Fair Value

- "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.
  - Exit Price
  - Market participants = buyers and sellers that are independent, knowledgeable, able, and willing.
- Measurement assumes transaction occurs in the principal (or most advantageous) market:
  - Principal = market with most volume or level of activity
  - If there is no principal market, look to the most advantageous market (i.e., highest price, considering transaction costs)
    - *Example – stock traded on multiple exchanges*

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FAS 157: Fair Value Hierarchy

- Standard establishes a three-level hierarchy:
  - Level 1 – quoted price
  - Level 2 – indirect observable
  - Level 3 – unobservable

- A fair value measurement is categorized within the hierarchy based on the lowest-level input that has a significant effect on the measurement.

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FAS 157: Fair Value Hierarchy – Level 1 & 2

- <u>Level 1</u> inputs are **quoted prices** (unadjusted) in active markets for **identical** assets or liabilities. For example, if valuing a share of IBM common stock, the NYSE exchange price is a Level 1 input.

- **Blocks** of financial instruments: If instrument has a quoted price in an active market, the fair value is **Price X Quantity** (i.e., no block discounts).

- <u>Level 2</u> inputs are directly or indirectly observable inputs (other than quoted prices included in Level 1), including:

Quoted prices for **similar** assets or liabilities in **active** markets. *Example – An investor might estimate the fair value of a privately held bond using a quoted price for a publicly traded bond from the same issuer, adjusting for any differences (e.g., maturity date).*	**Market-corroborated inputs** – Inputs derived from observable market data that are corroborated by correlation or other means. *Example – A specific bank's prime interest rate curve that is not observable, but is correlated with an observable curve.*

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FAS 157: Fair Value Hierarchy – Level 3

Level 3 Inputs:

- Are **unobservable**
- Reflect the entity's own assumptions about assumptions that market participants would use, **including assumptions about risk** (for example, due to unobservability).
- Should be developed based on the **best information available without undue cost and effort**.

Examples of Level 3 Inputs:

- Unobservable (and uncorroborated) interest rate inputs in pricing a long-dated OTC swap.
- An adjustment for "model risk" for a complex structured note.
- Historical or forecasted results (e.g., earnings or cash flow) used in valuing a reporting unit.

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FAS 157: Valuation Techniques

Market Approach	Uses prices and other relevant information generated by identical or comparable market transactions (eg market prices, M&A transactions, reinsurance quotes)
Income Approach	Uses valuation techniques to convert future amounts (eg cash flows) to a single, present, discounted amount (eg present value techniques, option pricing)
Cost Approach	Based on the amount that currently would be required to replace (ie replacement cost) the service capacity of an asset (eg simulated hedging)

Inputs to these techniques should maximize use of observable inputs

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FAS 157: Risk Margins

- 157 states that "*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)."*
- Therefore:
    - Non-market observable assumptions should include margin
    - Margin should be what a *market participant* would add in
    - Market observable assumptions/prices already include risk margin (no need to add)

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FAS 157: Risk Margin Methods

- Explicit PAD on assumptions
  - Most common, but challenge is determining level
- Cost of capital
  - Consistent with actuarial appraisal method
  - Probably best theoretically if principal market is insurer market
  - Challenge is complexity
- Quantile or discount rate adjustment
  - Relatively simple application
  - Does not work within a risk neutral framework
  - Challenge is setting level
- Calibration to market data
  - Involves "calibrating" risk margin so that result ties to market data (quotes or deal prices)
  - Favored by SEC, particularly when there is significant capital markets risk and public data

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FAS 157: Credit Adjustment

- 157 states that "*the fair value of the liability shall reflect the nonperformance risk relating to that liability. Nonperformance risk includes, but may not be limited to, the reporting entity's own credit risk*"
- Therefore, for an insurance contract, should reflect the possibility that the insurer will not pay the claims to the policyholder
- At a minimum, applied to liabilities

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FAS 157: Credit Adjustment Methods

- No adjustment
  - Based on argument that is immaterial, particularly with consideration of guarantee funds
- Discount at swap curve
  - Adds market observable industry default risk
  - Ignores company-specific risks
- Discount at swap curve plus default risk adjustment
  - Additional adjustment based on default studies, CDS, or GICs
  - CDS or GIC may not be reflective of issuing entity
  - Default studies may not be current market
- Cash flow projections adjusted for default
  - Harder to implement, and still need to determine % of scenarios resulting in default

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FAS 157: Goodwill Implications

- FSP FAS 157-2 clarified that FAS 157 was deferred for "non financial" items until 2009

  - Includes goodwill and purchase accounting

- Beginning in 2009, fair value for FAS 142 impairment testing must be FAS 157 compliant:

  - Step 1 test: reporting unit fair values must meet FAS 157 criteria

  - Step 2 test: development of "PGAAP" balance sheet must use FAS 157 compliant fair values

  - Step 2 VOBA therefore becomes discounted runoff of risk margin

  - Overall, change should not have a large net impact on goodwill

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FAS 157 Recap

- Some key differences for actuaries vs pre-157 valuations:
  - Maximize use of observable inputs (from implied volatilities to reinsurance quotes)
  - Assumptions based on market participant view (not internal view)
  - Incorporate risk margins (for nonobservable inputs)
  - Incorporate adjustment for nonperformance risk

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Impacts of Recent FSPs

- FAS 157-3: Determining the Fair Value of a Financial Asset When the Market for That Asset is Not Active
  - Generally upholds FAS 157 guidance
  - Clarifies that entity's own assumptions are acceptable when relevant observable inputs are not available
  - Explicitly states that less reliance should be placed on broker quotes that do not reflect market transactions
  - Challenges continue in incorporating and documenting appropriate liquidity premium

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Impacts of Recent FSPs

- FAS 157-4: Determining Fair Value When the Volume and Level of Activity for the Asset or Liability Have Significantly Decreased and Identifying Transactions That Are Not Orderly
  - Identifies factors to consider to determine if volume has significantly decreased
    1. Few recent transactions
    2. Price quotes not based on current information
    3. Price quotes vary substantially
    4. Indexes previously highly correlated are uncorrelated
    5. Significant increase in liquidity premiums, yields, or performance indicators
    6. Wide or significantly increased bid asked spread
    7. Decline/absence of market for new issues
    8. Little public information
  - If volume has significantly decreased, analyze whether specific transactions are orderly – if not, less weight placed on observable transactions
  - Risk premiums to be based on an orderly transaction
  - Additional disclosures, including valuation inputs and changes in techniques

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Current Issues

- Magnitude of volatility due to own credit
- Reduced observability of certain inputs (eg implied volatility)
- Implications of liability swings on DAC recoverability
- Challenges hedging earnings impacts due to costs
- Methodology for determining "market consistent" assumptions

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