

Confidential

Capital Markets and IBD Finance - Offsite

Valuation and Control Group

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Agenda

- ◆ Mission statement
 - ◆ Valuation and Control group functions
 - ◆ Goals for 2008 and beyond
 - ◆ Model Control Process
 - ◆ Complex Derivatives Transactions Review
 - ◆ Global Organization Structure
 - ◆ Higher Risk areas
 - ◆ Individual Product group plans
 - ◆ Projects
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Mission Statement

The Valuation and Control group is responsible for ensuring the integrity of the valuation of the risks assumed by the Capital Markets division and ensuring that a robust control environment over the valuation processes, model related and otherwise, is maintained at all times. In addition, the group facilitates controlled business development through formulating revenue recognition and reserving policies consistent with the Firm's standards and accounting pronouncements.

Valuation and Control group functions

- ◆ Price verification
- ◆ Model control process
- ◆ Deal reviews
- ◆ Complex Derivatives Transactions Review
- ◆ Revenue recognition policies and valuation adjustments
- ◆ Accounting pronouncements and implementation of Fair value related US GAAP
- ◆ SEC presentations and reviews

Valuation and Control group - Goals for 2008 and beyond

- ◆ Continue to recruit, retain and develop the best talent for the group
- ◆ Ensure prompt review of exotic transactions at the Complex Derivative Transaction Review committee to help facilitate the exotic business growth globally.
- ◆ Leveraging the India initiative to ensure prompt new deal review. Should also transfer some price verification production work to the India office.
- ◆ Fully integrate the valuation staff, currently within the Product control areas, within the Valuation and Control group. Ensure continuing globalization of the Valuation and Control group.
- ◆ Continuing improvement in the price verification processes to increase coverage and to deal with greater volumes. In addition, we aim to complete price verification by business day 10.
- ◆ Focus on more risky positions and anticipate market events

Valuation and control group - Goals for 2008 and beyond

- ◆ Harmonization of valuation adjustments globally (need to ensure that harmonization of models also takes place at the same time, with the help of the Model Control committee).
- ◆ Incorporate price verification workload for non- capital markets groups (e.g. Global Proprietary, GTS) into the Capital Markets Valuation and Control group.
- ◆ Continue to ensure compliance with FIN46 & FAS144 requirements on consolidated real estate.
- ◆ Client valuations – continual process improvement and additional roll out of businesses
- ◆ Model control – globalization of processes and consistency
- ◆ Timely and accurate preparation of disclosures required by the Fair Value Measurement standard (FAS 157).

Model Control Process

- ◆ Models are built by the Quantitative Research (QR) areas
- ◆ Temporary approvals are given initially by the QR group
- ◆ Formal sign off by the Model Validation group
- ◆ Final sign off by Product Control – Valuations and control group
- ◆ Review of model limitations and quantification of valuation adjustments
- ◆ Oversight provided by the Model Control Committee

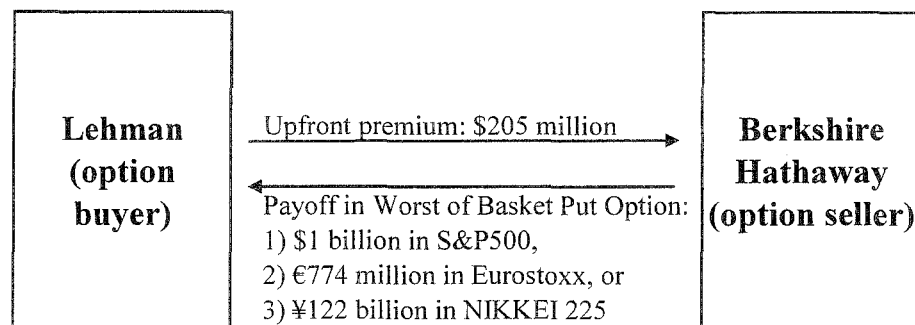
Complex Derivatives Transaction Review Committee - Rules

- ◆ Absolute size of P/L – over \$5mm on individual trade or series of trades
- ◆ P/L over a certain percentage of notional – over 5% of notional for notionals' over \$10mm
- ◆ Potentially leads to any accounting complexity
- ◆ Not covered by existing models
- ◆ Poses additional valuation adjustment issues e.g. long dated vols
- ◆ Leads to legal entity / infrastructure issues
- ◆ The valuation controller for each area will be responsible for ensuring that the above rules are complied with. If the product area has no specific valuation controller, the product control manager for that area will be responsible for escalating trades to the committee.
- ◆ The trades will be formally presented to the committee by the line staff nominated by the product control manager.

Complex Derivatives Transaction Review Committee - Presentation

- ◆ Deal details e.g. type, size, maturity and P/L
- ◆ Brief market narrative including types of clients and what competitors are doing
- ◆ Flow diagram summarizing the deal
- ◆ Risk metrics e.g. delta, vega, correlation sensitivity
- ◆ Potential accounting issues
- ◆ Potential valuation adjustments
- ◆ Potential modeling issues
- ◆ Legal entity
- ◆ Banking or Trading book categorization
- ◆ Any other significant issues e.g. operational or booking issues

CDTR example - Worst of Basket Put Option



- ◆ Lehman buys from Berkshire Hathaway an European-style put option in one of three indices: \$1 billion in S&P500, €774 million in Eurostoxx, or ¥122 billion in NIKKEI 225.
 - Trade Date: 2007
 - Expiration Date: 2027
 - Upfront Premium: \$205 million
 - Strikes: At trade date, the option was at-the-money (1,433.79 for S&P500, 4,158.73 for Eurostoxx and 17,441.16 for NIKKEI 225)
 - Settlement: At expiration date, Lehman will choose the index that will provide the greatest payoff subject to a minimum of zero
- ◆ Trade is not subject to CSA, and thus, Lehman cannot request margin from Berkshire Hathaway. To account for this counterparty exposure, future cash flows are discounted at LIBOR plus 32 bps rather than LIBOR flat.
- ◆ The tenor of the option is 20 years; however, listed options only have expiry up to 3 years. The desk has hedged with 10-year OTC options.

CDTR example - Worst of Basket Put Option (continued)

- ◆ The following are some of the input parameters:
 - Equity Volatilities (observable up to 15 years)
 - FX Volatilities (observable for the full tenor of the trade)
 - Equity / Equity Correlations (observable up to 7 years)
 - Equity / FX Correlations (observable up to 5 years)
 - FX / FX Correlations (observable for the full tenor of the trade)
 - Forward Dividend Rate (observable up to 15 years)

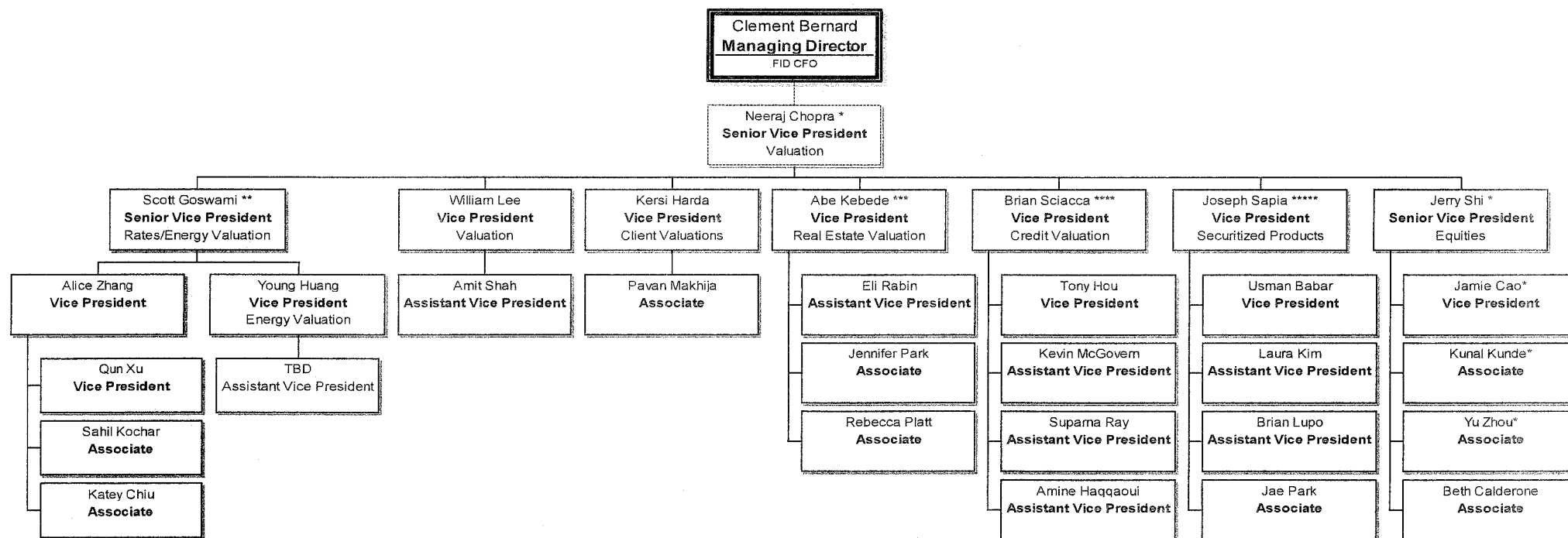
 - ◆ Trade is classified as level 3 under FAS157.

 - ◆ Day 1 P/L of this trade was approximately \$16.5 million after liquidity valuation adjustments of 0.75 volatility point for equity volatility and 5% correlation for equity / equity correlation. As such, Day 1 MTM was \$221.5 million, equal to upfront premium of \$205 million plus Day 1 P/L of \$16.5 million.

 - ◆ Current MTM is \$380.5 million. This increase is largely due to change in implied volatility of the three indices and a 17.5% drop in the Nikkei since inception.
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Valuation and Control – US Organization chart

*Dual report to Frank Peam
 **Dual report to TBD
 ***Dual report to Jonathan Cohen
 ****Dual report to Garth Behrje
 *****Dual report to James Guarino



Organization - continued

- ◆ Europe currently has 14 dedicated valuation and control staff with 4 replacement and 4 additional hires being requested.
 - ◆ Europe has good quality key people in place for most areas and we need to ensure that the group is built up quickly to minimize any valuation risks.
 - ◆ Asia – need to centralize the valuations and control team
 - ◆ India – currently have 15 people and requesting an additional 10.
 - ◆ India strategy
 - ◆ US – very low turnover in the past year with good progress being made in training new joiners. Requesting an additional 3 hires for Muni, Commodities and Emerging Markets (excluding requirements for groups outside of Capital Markets e.g GPS, GTS, Asset Management).
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Higher Risk areas within Capital Markets

- ◆ Securitized Products in Europe and Asia
- ◆ Real Estate globally
- ◆ Fund Derivatives with increase in volatility
- ◆ Equity volatility and correlation products
- ◆ Contingent Acquisition Facilities (CAF) and Firm Relationship Loans (FRL)
- ◆ Interest rate exotic transactions

Securitized Products and Real Estate

- ◆ Dedicated headcount in Europe for Valuation and Control
- ◆ Development of consistent valuation adjustment policies
- ◆ Transition of balance sheet reporting to the business support team
- ◆ Development of a monthly price verification package globally
- ◆ Improved timing and frequency of price verification work
- ◆ Refine price testing on RE derivative products
- ◆ Improve methodology and coverage on CMBS and IO positions

Interest Rates, FX and Commodities

- ◆ Dedicated headcount in Europe for Valuation and Control
- ◆ Transfer of FX price verification from US to Europe
- ◆ Transition of price testing to India – 6 additional heads
 - 2 for Commodities and FX testing of Europe positions
 - 2 for Asia Rates and FX price testing
 - 2 for US Rates, Muni and FX
- ◆ Calibration of models
- ◆ Increased exotics business in each location
- ◆ Integration of Eagle price verification

Credit and CDO products

- ◆ Continue to refine methodology on CAF and FRL price testing
- ◆ Transition of balance sheet reporting to the business support team
- ◆ Development of CDS price testing database
- ◆ Improved timing and frequency of price verification work
- ◆ Improve methodology and coverage on CDO positions
- ◆ Monitor risks on Auction Rate securities and any Asset Backed Commercial Paper
- ◆ Transfer of price testing to India – 3 additional heads

Equities

- ◆ Focus on products with increased risk – Volatility, Correlation and Fund derivatives
- ◆ Development of consistent valuation adjustment policies
- ◆ Improved timing and frequency of price verification work
- ◆ More thorough deal reviews by the India team
- ◆ Transfer of price testing to India – 1 additional head

Projects covering all areas

- ◆ Model Controls – continue to work with Quant Research and Model Validation (Risk Management) groups
- ◆ Development of consistent price testing policies and procedures
- ◆ Increased focus on higher risk items
- ◆ Roll out of the client valuations process to other areas
- ◆ Continuing work on quarterly SEC reviews
- ◆ Development of New deal review database for Equities, Rates and Credit
- ◆ Increased review of calibration processes and output testing