

**DRAFT**

**Price Verification Policy**  
**Global Capital Markets**  
**2008**

<b>Version Number</b>	
<b>Author (s)</b>	
<b>Release Date</b>	

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## **1. Introduction**

### **1.1 Background**

Generally, all positions within Capital Markets are required to be accounted at fair value. FAS157 defines fair value as "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." Fair value is the amount at which the position could be exchanged in a normal market condition between willing parties, other than in a forced or liquidation sale.

Trading personnel are responsible for marking inventory positions daily. On daily basis, Product control performs P&L review and provides risk based P&L explanatory. On monthly basis, Valuation control performs and publishes results of price verification procedures. This procedure aims at ensuring that the firm's inventory is marked at fair value. For certain positions, for which daily active markets does not exist, price verification may be done on less frequent basis but at least once per quarter.

The purpose of this policy is to document the existing process on price verification process for Capital Markets. These policies may be amended in the future to reflect changes in the business, external regulatory and accounting standards or global policy changes.

### **1.2 Scope**

This policy document applies to price verification process for Capital Markets.

### **1.3 Process Overview**

Price verification process covers firm's entire inventory. However, certain positions may be excluded from price verification process for materiality thresholds. Materiality level in terms of market value, PV01 or vega exposure is considered.

Unresolved variances above specified thresholds are escalated to senior management. Variances thresholds are based on Fair Value Hierarchy (FVH) level<sup>1</sup> assigned. FVH levels are defined by inputs used in order to derive at fair value and are referred below.

- Level 1 - inputs are observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 - inputs are inputs other than quoted prices included in Level 1 that are observable for the asset or liability through corroboration with observable market data.
- Level 3 - inputs are unobservable inputs (e.g., our own data, inputs derived through extrapolation and interpolation that are not corroborated by observable market data).

Price verification variances reporting thresholds are defined per product/business area. All significant variances are further reviewed by performing fundamental research or by examining other trades executed in the market. Significant variances are discussed with traders and alternative price source, if any, mentioned by traders are considered. Unresolved variances are escalated to senior Product controller and Business Unit head and considered for adjustments.

### **1.4 Exemptions**

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<sup>1</sup> Please refer to FAS 157 for detailed description of Fair Value Hierarchy level

Certain positions may be excluded from price verification procedures considering materiality levels. Materiality is based on exposure size, such as market value, PV01 or Vega.

For certain positions, for which daily active markets does not exist, price verification may be done on less frequent basis but at least once per quarter.

Exclusion of any inventory positions from price verification process needs to be documented and concluded as to appropriateness. Untested positions marks and risk may be documented by Valuation controllers by range bounding possible marks.

## **1.5 Validation and Approval**

Price verification process is established and reviewed by product/business area Valuation controller. Valuation controller is responsible to ensure sufficiency and appropriateness of price verification procedure.

## **2. GAAP Requirements**

Lehman Brothers is required under GAAP to record most of the assets and liabilities at fair value. The adoption of FAS157 from December 1<sup>st</sup> 2006 provides guidance on how fair value should be measured. This provides a framework for valuation adjustment policy.

### **2.1 Fair Value Measurement**

The basis for a fair value measure is the price at which a company would sell or otherwise dispose of its assets or pay to settle a liability (i.e., an exit price), not the market price that a company acquires its assets or assumes a liability (i.e., not an entry price).

The main principles of FAS157 are:

- a fair value measure should reflect all of the assumptions that market participants would use in pricing the asset or liability including, for example, an adjustment for risk inherent in a particular valuation technique used to measure fair value.
- a fair value measurement assumes that the transaction to sell the asset or transfer the liability occurs in the principal market for the asset or liability or, in the absence of a principal market, the most advantageous market for the asset or liability.
- permit the use of unobservable inputs for situations in which there is little, if any, market activity for the asset or liability being measured. The objective is a market-based measure, rather than an entity-specific measure, regardless of whether there is significant market activity. FAS157 emphasizes that a company should consider the risk inherent in a particular valuation technique (such as an option pricing model) and/or the risk inherent in the inputs to the valuation technique. Accordingly, a valuation technique should include an adjustment for risk if market participants would include such an adjustment in pricing a specific asset or liability.
- when measuring the fair value of a liability, a company should take into account the effect of its own credit standing.
- in an active market, the (price x position) construct would be used irrespective of the normal daily trading volume in the market being able to absorb the size of position held and the impact on prices if an order was placed for the entire position (i.e. no block discounts are permitted for Level 1 securities).

### **2.2 Observable and Unobservable parameters**

Inputs broadly refer to the assumptions that market participants use to make pricing decisions, including assumptions about risk. FAS157 distinguishes between (1) observable inputs, which are based on market data obtained from sources independent of the company, and (2) unobservable inputs, which reflect the company's own assumptions about the assumptions market participants would use.

The use of unobservable inputs is intended for situations in which there is little, if any, market activity for the asset or liability. However, FAS157 emphasizes that a company's valuation

technique for measuring fair value should maximize observable inputs and minimize unobservable inputs.

### **2.3 Technical References**

Statement of Financial Accounting Standards No. 157 “Fair Value Measurements”

### **3. Methodology**

#### **3.1 Sources:**

Inventory positions are sourced from various systems including Gquest for mortgages and asset backed securities, Picasso for bond options, ICE for derivative position exposures, and others. Valuation controller ensures that positions, marks, and exposures are sourced from the systems that are used for P&L reporting. Valuation controllers should also ensure that price verification population is complete by reconciling to source systems.

#### **3.2 Mark comparison:**

Traders are responsible for marking their portfolios to market. Traders mark can be verified in any of the following manner:

- Cash position marks may be verified with external marks obtained from various sources including independent market quotes, trading activities or benchmarking. In addition, alternative analytical procedures may be performed.
- Derivative position marks may be verified by comparing input parameters such as volatility levels used in trader's valuation with independently obtained values. The difference in volatility levels combined with overall vega exposure is used to determine price variance. Alternatively, output testing may be performed (i.e., Totem/Markit)

#### **3.3 Exit Price**

Long positions should be marked to bid and short positions should be marked to ask. Generally, risk exposures from derivatives positions are marked to mid and bid/offer adjustments are taken on the net exposures.

#### **3.4 Liquidity/Concentration Reserve**

The volume of position in particular instrument may be sufficient enough to impact the market if we were to trade out of it. In such cases, bid-offer reserve alone may not be sufficient to effectively mark position at exit price. Liquidity reserves may be required to allow for such impact. Liquidity reserves are allowed for positions with FVH level 2 and 3 but not for readily tradable level 1. This adjustment is considered on case by case basis, agreed with traders and included in price verification process.

#### **3.5 Other Price valuation adjustments**

To fair value certain positions, price adjustments are necessary to account for non-standard terms of the position or for values and risks not priced in the position valuation. For example, adjustments for model deficiency or Lehman's own credit spreads are required to ensure that positions are valued at exit price. Model, Funding, and other reserves may be provided on case by case basis. All these adjustments are agreed with traders and are included in price verification process.

#### **3.6 Frequency**

Traders mark inventory positions on daily basis. Valuation controllers execute price verification process at month end and more frequently as deemed necessary considering size of reported P&L, general market movements and other factors. Valuation controllers also discuss results of such interim price variances on regular basis with traders and try to resolve any material differences. Results of month end price verification process are consolidated and reported on global basis.

#### 4. Price Testing Thresholds

	De Minimis Threshold	Basis of De Minimis Threshold	Variance Threshold Based on Fair Value Measurement		
			Level 1	Level 2	Level 3
Interest Rate Futures and Swaps Risk	\$0	PV01	Aggregate Variance Threshold of \$1mm for Each Risk Bucket		
Basis Risk	\$0	PV01	Aggregate Variance Threshold of \$1mm for Each Risk Bucket		
Treasuries, Agencies, Other Government Instruments and CMOs	\$0	Market Value	\$300K	\$500K	\$500K
OTC Bond Options and Mortgage Options	\$0	Market Value	\$300K	\$500K	\$500K
Cap/Floor and Swaption Vols	\$0	Vega	Aggregate Variance Threshold of \$1mm for Each Risk Bucket		
FX Spots and Forwards	\$0	Market Value	Aggregate Variance Threshold of \$1mm for Each Risk Bucket		
FX ATM and Skew Vol	\$0	Vega	Aggregate Variance Threshold of \$1mm for Each Risk Bucket		
Muni - Cash	\$1,000,000	Market Value	\$300K	\$500K	\$500K
Muni - Derivatives	\$0	Various Risk Based	\$300K	\$500K	\$500K
Muni - Cash (Alternative Procedures)	\$5,000,000	Market Value	\$300K	\$500K	\$500K
Muni - Derivatives (Alternative Procedures)	\$10,000	PV01	\$300K	\$500K	\$500K
High Grade - Cash	\$1,000,000	Market Value	\$300K	\$500K	\$500K
High Grade - Derivatives	\$10,000	PV01	\$300K	\$500K	\$500K
High Grade - Cash (Alternative Procedures)	\$5,000,000	Market Value	\$300K	\$500K	\$500K
High Grade - Derivatives (Alternative Procedures)	\$10,000	PV01	\$300K	\$500K	\$500K
Brady Options	\$5,000	Vega	\$300K	\$500K	\$500K
High Yield - Cash	\$1,000,000	Market Value	\$300K	\$500K	\$500K
High Yield - Derivatives	\$10,000	PV01	\$300K	\$500K	\$500K
High Yield - Cash (Alternative Procedures)	\$5,000,000	Market Value	\$300K	\$500K	\$500K
High Yield - Derivatives (Alternative Procedures)	\$10,000	PV01	\$300K	\$500K	\$500K
Bank Loan - High Grade	\$5,000,000	Market Value	\$300K	\$500K	\$500K
Bank Loan - High Yield	\$5,000,000	Market Value	\$300K	\$500K	\$500K
Cash CDO	\$1,000,000	Market Value	\$300K	\$500K	\$500K

**Price Testing Thresholds**

	De Minimis Threshold	Basis of De Minimis Threshold	Variance Threshold Based on Fair Value Measurement		
			Level 1	Level 2	Level 3
CMBS / Derivatives / Hedges	\$0	Market Value	\$300K	\$500K	\$500K
REIT LOC / Commercial N/R Mezzanine and B Notes	\$0	Market Value	\$300K	\$500K	\$500K
Floating Rate Loans	\$0	Market Value	\$300K	\$500K	\$500K
Conduit	\$0	Market Value	<1% or > 4%	<1% or > 4%	<1% or > 4%
Equity / REO / Higher Leveraged Mezzanine Loans	\$0	Market Value	N/A	< \$-1mm or > \$5mm	< \$-1mm or > \$5mm
Stock / Futures / Listed and OTC Options / Warrants / Equity Linked Notes	\$0	Market Value	\$500K	\$500K	\$500K

**Note: Unless specified otherwise, please report significant pricing variances on an individual basis.**

**Mortgage Products - Further research will be performed if both of the below pricing thresholds are triggered.**

Method 1: Based on absolute dollar variance.  
Threshold: \$200K

Method 2: Based on price spread.  
Threshold: 1.5 for defaulted securities and the following matrix for non-defaulted securities.

Type	Agency	Prime	Non-Prime
<b>IO</b>	3.0	4.0	4.0
<b>PO</b>	3.0	4.0	4.0
<b>INV</b>	2.5	3.5	3.5
<b>Z</b>	2.5	3.5	3.5
<b>SUB</b>	2.5	3.5	4.5
<b>MEZ</b>	3.0	4.0	5.0
<b>SUP</b>	3.0	4.0	5.0

## **Valuation Adjustments by BPM0: Fixed Income (AMERICAS)**

### **5. Interest Rates Americas**

#### **Price Verification Overview**

The Valuation Control group performs price verification in accordance with the following document. These procedures will be performed on a monthly basis, in order to ensure that the Firm's inventory and open positions are marked to fair market value. This document will apply to Lehman's Interest Rates, FX, Prop and other portfolios. All positions will be considered for price verification.

#### **1) Preparation**

The preparation phase of performing the price verification procedures can be divided into two parts: 1) gathering all open positions and exposures, including delta, vega and cash positions, from various Lehman P&L systems as of month-end day; and 2) gathering internal and external market data, from Bloomberg, Reuters, external brokers and Markit, as of month-end.

#### **2) Verification**

Verification procedures should include but not be limited to the following:

- For risk based testing, compare Lehman's marks on inputs, such as interest rates and volatilities, to external quotes. Apply differences to the relevant open Lehman risk positions by maturity. In addition, full re-pricing of Lehman's portfolios is also done whenever possible. This applies to FX Options and European Swaption skew testing, where independent vol inputs are fed into respective pricing models to generate PV variances (between external MTM and Lehman MTM) on each trade within the portfolios.
- For price based testing, compare Lehman's price marks, such as government bond and futures prices, to external market prices. Apply price difference to notional on each security owned by Lehman.
- For products that involve many complex inputs and modeling, output testing is in place for the purpose of price verification. This applies to interest rate and FX exotics such as Target Redemption Notes (TARNs), Callable Range Accruals and Forward Vol Agreements. A handful of standard structures are priced using Lehman pricing models and submit to Totem (Markit) for comparisons with Totem consensus prices on these structures.

All price verification is to be documented accordingly. Documentation should indicate internal vs. external rates, source of external rates, market value variance, and difference between internal and external rates.

#### **3) Thresholds/Escalation/ Resolution**

- Valuation Controller will review monthly price testing and resolve variance with individual traders. Specific guidelines regarding variances are as follows:
- As to thresholds, all variance greater than \$1 million per type of risk (Delta or Vega) and per product type, will be documented and considered for adjustment. In addition, bid/ask spreads will also be considered as thresholds for some products that generally quote bids and asks. For example, raw rate differences between Lehman and the market should be within current bid/ask spreads by maturity levels.
- Additional research will include, but will not be limited to the following:
  - i. Obtain additional external quotes
  - ii. Discuss variance with the trader
  - iii. Examine prices of actual trade executions
  - iv. Communicate with external brokers
  - v. Research for extenuating circumstances
  - vi. Review and perform verification procedures prior to next month-end
- Adjustment will be made to the Firm's books and records if absent future evidence, the position is deemed liquid and pricing source is an independent market quote.
- Valuation Controller will document all adjustments and/or the rationale behind the decision not to adjust a documented variance.
- Unresolved issues will be brought to the attention of Senior Controller and the Business Head.
- Final Price Verification Document will be reviewed by Senior Controller on a monthly basis.

## **5.1. Core Fixed Income Derivatives**

### **General Description**

The types of Core Interest Rate Derivative Products which Valuation Control performs price verifications include:

#### **a. Eurodollar Futures**

Eurodollars are deposits denominated in US dollars at banks outside the US. ED Futures are futures contracts based on these deposits. They are usually bets on short-term interest rates.

#### **b. USD Swap Rate**

Interest rate swaps are often used to hedge interest rate fluctuations, by swapping fixed rate obligations for floating rate obligations, or vice versa. There are various maturities such as 3 year, 5 year, 30 year and etc.

#### **c. Canadian Dollar (CAD) Swap Rate**

#### **d. Index Basis Swap ---CP, T-Bill, Fed Fund and Prime**

These are basis swaps in which two parties swap variable interest rates based on different money markets. In this case, CP, T-bill, Fed Funds, and Prime rates are swapped with 3-month Libor rate.

#### **e. LIBOR Basis Swap --- 1 Month LIBOR and 6 Month LIBOR**

Again, these are also basis swaps in which 1-month and 6-month Libor rates are swapped with 3-month Libor rate.

#### **f. Cap/Floor**

A cap is a series of European call options or caplets on 3 month Libor. Similarly, a floor is like a series of put options or floorlet on 3 month Libor.

#### **g. Swaptions**

A swaption is another derivative of interest rate instrument giving the owner an option to enter into an interest rate swap.

#### **h. Muni BMA Swap**

BMA (Bond Market Association) swaps are interest rate swaps designed to add exposure to the muni market by exchanging the BMA muni index yield for a fixed rate.

#### **Internal Data Source**

Risk used for testing is sourced from ICE. ICE consolidates risk for the Desk on a daily basis, and aggregates both derivative systems- Summit and HJM.

#### **External Data Source**

Independent market data is from external pricing service such as Totem (Markit), as well as brokers like Tullet, ICAP, and Prebon.

#### **Calculation**

Volatility is summarized in a standard 2D matrix. Swap spread and basis exposures are expressed by maturity- this is consistent with external brokers. Differences between the independent quotes and Lehman marks are applied to our risk exposures to get PV variances.

Expiry	SWAP MATURITY									
	1Year	2Year	3Year	4Year	5Year	7Year	10Year	15Year	20Year	30Year
1Month	14.53	18.98	18.9	18.6	18.4	17.39	16.06	15.54	14.95	14.86
3Month	14.97	18.87	18.55	17.92	17.37	16.58	15.57	15.06	14.55	14.29
6Month	16.46	18.61	18.24	17.79	17.38	16.57	15.54	14.93	14.43	14.05
1Year	18.86	18.9	18.29	17.71	17.43	16.67	15.74	15.07	14.57	14.24
2Year	18.68	18.2	17.66	17.25	17.02	16.36	15.59	14.81	14.42	14.15
3Year	17.92	17.52	17.22	16.95	16.69	16.14	15.47	14.7	14.34	14.07
4Year	17.19	17.08	16.85	16.6	16.36	15.91	15.28	14.59	14.21	13.94
5Year	16.88	16.72	16.48	16.24	16.05	15.65	15.04	14.37	13.98	13.72
7Year	15.88	15.68	15.52	15.4	15.26	14.86	14.35	13.62	13.25	12.97
10Year	14.96	14.88	14.65	14.46	14.29	14	13.61	12.86	12.38	12.1
15Year	13.91	13.99	13.91	13.84	13.76	13.48	13.06	12.3	11.82	11.67
20Year	13.29	13.48	13.42	13.36	13.28	13.01	12.57	11.87	11.28	11.18

#### **Thresholds/Escalation/ Resolution**

We put this section in the overview but it can also be here depends on the need...

### **5.2. Interest Rate Exotics Structures**

#### **General Description**

Currently Valuation Control performs output price testing on four types of Exotics Interest Rate products in NY: Callable Range Accruals, Target Redemption Notes, Callable Capped Floaters and Cumulative Callable Inverse Floaters. These structures are considered exotics not only

because they generally involve digital payouts or knockout features, but also that they are callable Bermudan style.

### **1. Callable Range Accruals**

A range accrual note is similar to a fixed rate bond, except that interest only accrues on days when a reference rate falls within a specified range. Coupon and range levels can be fixed or step up. Index can be 3m, 6m Libor or etc.

### **2. Target Redemption Notes**

A target redemption note is an index-linked note that provides a guaranteed sum of coupons (target cap) with the possibility of early termination. In a typical structure, the coupons are calculated based on an inverse floating Libor formula. Once the accumulated amount of coupons has reached the pre-specified target cap, the note will be terminated.

### **3. Callable Capped Floaters**

A capped floater is a floating rate note where the floating rate is capped. In addition, the rate can be floored, multiplied by a scaling factor or have a spread added.

### **4. Cumulative Callable Inverse Floaters**

A cumulative callable inverse floater is a floating rate note where generally coupon on the first period is fixed. Coupons on the subsequent periods are calculated based on previous coupon levels and an inverse floating Libor formula.

### **Internal Data Source**

Sample structures proposed by Totem are priced every month-end using Lehman models and calibrations in Lens. Wherever barrier shifts/ramps are used, especially in the case of Range Accruals and TARNs, same shifts/ramps are applied in pricing sample deals for Totem submission.

### **External Data Source**

Currently only Totem consensus prices are used as the independent pricing source and there are 10 to 20 sample structures on each type of product with various maturity, coupon and cap levels.

### **Calculation**

For these exotics structures, Lehman prices are compared directly to Totem consensus to determine if Lehman is aggressively or conservatively marked. In addition, we examine if our price differences are within 2 standard deviations based on information provided by Totem. Wherever ramps are used in pricing, we conduct sensitivity analyses on pricing impact and propose the optimal ramp level that would give a price closest to the consensus. See attached below for sample results and analysis on CRAs.

CRA Results						Includes our number in avg	lowest after knockout	Totem-LB			
Structure	Maturity	Coupon	Obs index	Range Ceiling	Option Style	Lehman Price	Totem Price	Spread	StDev	Price Diff	Client StDev
1. Fixed cpn, fixed range	10yr	8.25%	3mL	7.00%	Bermudan	(28.70)	(39.12)	45.00	13.02	(9.42)	0.72
2. Fixed cpn, fixed range	10yr	8.25%	3mL	7.00%	Bermudan	309.07	284.57	82.15	22.89	(24.50)	1.07
3. Fixed cpn, step up range	5yr	11.25%	3mL	5.50%	Bermudan	8.05	35.26	112.00	36.39	27.21	0.75
4. Floating cpn, fixed range	7yr	3mL + 6%	3mL	6.00%	Bermudan	(61.84)	(68.90)	40.17	12.83	(7.06)	0.55
5. Fixed cpn, fixed range	7yr	8.25%	3mL	7.00%	Bermudan	190.11	177.48	47.07	13.41	(12.63)	0.94
6. Fixed cpn, fixed range	15yr	8.25%	6mL	7.50%	Bermudan	(79.88)	(71.95)	74.70	19.22	7.91	0.41
7. Mixed cpn, fixed range	7yr	See note below	3mL	7.00%	Bermudan	(7.42)	(9.61)	25.50	8.09	(2.19)	0.27
8. Fixed cpn, fixed range	5yr	8.25%	6mL	6.50%	Bermudan	(21.66)	(17.00)	26.11	7.14	4.66	0.65
9. Step-Up cpn, fixed range	10yr	See note below	3mL	7.50%	Bermudan	(46.95)	(60.84)	70.42	20.86	(13.89)	0.67
10. Fixed cpn, fixed range	15yr	10.00%	3mL	7.00%	Bermudan	(21.30)	(22.74)	74.08	18.41	(1.44)	0.08
11. Fixed cpn, fixed range	10yr	10.75%	6mL	6.50%	Bermudan	(118.35)	(118.40)	85.35	21.09	(0.05)	0.00
12. Mixed cpn, fixed range	10yr	See note below	6mL	6.00%	Bermudan	(212.97)	(241.51)	82.25	25.32	(28.54)	1.13
13. Fixed cpn, fixed range	10yr	7.75%	1yr	6.00%	Bermudan	702.96	734.73	156.48	48.10	31.77	0.66
14. Step-Up cpn, fixed range	10yr	See note below	3mL	6.50%	Bermudan	(51.98)	(60.22)	38.43	11.01	(8.24)	0.75
15. Step-Up cpn, Step-Up rang	5yr	See note below	3mL	6.50%	Bermudan	55.34	54.81	27.72	8.30	(0.53)	0.06
16. CMS Countdown	10yr	7.00%	See note below	See note below	Bermudan						
17. CMS Countdown	10yr	Yr 1-5: 7.50%	See note below	See note below	Bermudan						
18. Floating cpn, fixed range	20yr	3mUSD + 2.00%	3mL	8.00%	Bermudan	169.71	159.242	125.3014	33.7306	(10.47)	0.31
19. Mixed cpn, fixed range	7yr	6.50%	6mL	6.50%	Bermudan	225.92	214.5895	53.2285	17.6992	(11.33)	0.64
20. Fixed cpn, fixed range	5yr	6.50%	3mL	6.50%	Bermudan	133.09	118.1831	36.0512	11.9242		
21. Fixed cpn, fixed range	10yr	1% + 3mL	3mL	8.00%	Bermudan	142.58	131.8047	51.0086			
22. Fixed cpn, fixed range	10yr	7.00%	3mL	8.50%	Bermudan	34.75	27.6254	28.2641			
23. Fixed cpn, fixed range	10yr	3mL	3mL	9.00%	Bermudan	310.13	326.1076	42.8294			

### Sensitivity Analysis Results

Strike (%)	Maturity (Year)	Optimal Ramp Level (bps)
6%	7Y	30bps
	10Y	25bps
6.50%	5Y	35bps
	10Y	25bps
	7Y	35bps
7%	7Y	35bps
	10Y	40bps
	15Y	40bps
7.50%	10Y	40bps
	15Y	30bps
8%	10Y	35bps
	20Y	45bps
8.50%	10Y	45bps
9%	10Y	25bps

### Thresholds/Escalation/ Resolution

Generally 2 standard deviations are used as the threshold level on these exotics output testing.

### 5.3. CMOs

#### General Product Description

CMO is called Collateralized Mortgage Obligation. It is a type of mortgage –backed security that creates separate pools of pass-through rates for different classes on bondholders. Repayments of principals for each class follow orders specified by the prospectus. VCG compares the Lehman Brothers’ prices and Market prices to get the differences, and determines if Lehman’s CMO positions are marked aggressively or conservatively against the market.

#### Calculation

Download the position and product information from G-Quest, which is the front end P&L data collection, correction and reporting application. The information downloaded from G-Quest covers the Lehman price, inventory and several external market prices from brokers such as EJV, and ABSG. VCG also uses Bloomberg price as the other external price source, and do interpolation to estimate prices for CMOs that have higher coupons.

After preparing all external market prices (EJV, ABSG, and Bloomberg), internal Lehman prices and inventory amounts, VCG applies differences between external prices and internal prices to the notional and obtain P&L variances of the CMO products.

### 5.4. OTC Bond Options

#### General Product Description

These are call or put options on Treasury bonds and bills.

#### Calculation

Every month-end day volatilities and Repo rates from brokers are inputted into our bond option valuation and risk management system at Lehman. Then internal prices will be verified against external sources. The external quote source is GFI. For month end price testing purpose, two overnight valuations are run. The first batch values the option as the traders would; The second batch values the options using external inputs (GFI). The difference in the portfolio marks to market serves as our PV variance.

## **5.5. Mortgage Options**

### General Product Description

Mortgage Options are call and put options on Mortgage securities such as FNMA, GNMA and etc.

### Calculation

VCG downloads the Mortgage Option product and position information from the Lehman pricing and risk management trading system for Fixed Income bond options. The downloads include amount, style (European Call or European Put), underlying, settle date, strike, volatility, close Lehman underlying price, and close Lehman option price. VCG also obtains the month-end GFI Treasury Volatilities as independent quotes. After all the information prepared, VCG calculates the external market option prices using Lehman Excel Add-in function with the needed parameters. VCG then applies the difference between external and Lehman option prices to the amount and contract size to get individual variance of each Mortgage Option security, and then sums them up to get total variance. For securities that have already expired, VCG does not test them and put them in a separate category.

## **5.6. CVA**

VCG currently tests the CDS Hedges of CVA positions and is working on testing methodology on CVA products. Every month existing CDS positions are communicated with the Credit Valuation group where these positions are tested using their standard methods for CDS testing. Final variance and significant issues are included in our reporting.

## **5.7. Mortgage Derivatives**

### General Product Description

Currently VCG conducts price verification on PSA Swaps within the Mortgage Derivative business. PSA stands for Public Security Association which is a standard prepayment benchmark. These types of swaps are exchanges between fixed and floating, with reference collateral pools being TBA securities or aged or a combination of those pools. Notional amounts on these trades usually amortize based on current to initial factor ratio of the underlying pools.

### Calculation

VCG gets Mortgage Derivatives positions from Lehman's risk management, trading, and pricing system used by MBS/ CMBS/ ABS trading desk. The position and product information from the system includes internal Lehman price, duration, notional, and the underlying CMO security with its maturity (usually 15 year or 30 year). VCG acquires the seasoned pass-through OAS from Lehman published research report as of month-end date, and uses Zero Volatility (ZV) and OAS in this report to calculate option cost. VCG then calculates independent price by option cost and Swap rate of the same maturity from Bloomberg. Next, VCG computes the difference between Lehman price and independent price, and then applies the difference to notional to obtain the P&L variance.

## **6. Foreign Exchange Products and Foreign Exchange Prop Products**

### **6.1. FX and FX Prop Spot and Interest Rate**

### General Product Description

FX Spots testing covers all the currency exchange rate risk in Lehman's FX portfolios. FX Rates/Fwd testing covers USD and foreign currency interest rate exposure in Lehman's FX portfolios.

### Calculation

In FX and FX Prop price testing, VCG covers BRL/ MXN Forwards, Mexican THIE Swaps, USD and Foreign Interest Rates, and Spot Rates.

- BRL and MXN Forwards---Obtain net notional values for forward positions of Brazilian Real and Mexican Peso from LehmanRisk. Notional values are bucked by tenor. The internal forward points are from Murex and the external forward points are from Bloomberg. VCG compares external forward to internal forward and apply difference to Delta risk exposures to calculate the variance.
- Mexican THIE Swaps---Obtain Mexican THIE Swap risk (PV01) from LehmanRisk. The internal market data is from Summit and the external market data is from GFI. VCG compares these two prices and apply difference to THIE Delta risk to calculate the variance.
- USD and Foreign Interest Rates---Obtain interest rate risk (PV01) by tenor from LehmanRisk. The internal FX rate curves are from Lehman's official internal market database and the external interest rate curves are from Bloomberg. VCG uses the internal curves, external curves and exposure to calculate the variance.
- Spot Rates---Obtain FX spot exposures for all FX trades (Delta Risk) from LehmanRisk. VCG gets the internal spot rates from MUREX and the external spot rates are from Bloomberg. VCG compares external spot rate to internal spot rate and apply the % difference to Delta risk exposure to calculate the variance.

## **6.2. FX/FX Prop Option ATM and Skew Volatility**

### General Product Description

This is the At-the-money and Skew volatility testing for FX Options (both vanilla and exotics) in Lehman's FX and FX Prop portfolios. VCG currently tests 63 currency pairs, which makes up about 90% of total FX Vega exposure. There's a continued effort to expand currency pairs to increase coverage.

### Calculation

VCG saves trade sets by different books at month-end in Lehman's FX pricing and simulation system to capture current positions within each book. VCG submits Lehman's Volatility marks on each of the currency pair tested to Totem (Markit) every month-end. When Totem consensus volatilities are published, VCG then builds two market pages for each currency pair, one with Lehman's volatilities and the other with Totem consensus. The vol surface tested includes ATM and skew (i.e., 10 and 25 delta Risk Reversals, and 10 and 25 delta Strangle Margins). VCG then runs PV simulations (in the same system) using consensus market against Lehman market to get PV variance for each book.

### **6.3. Correlation Testing on FX Cross Currency Pairs**

#### General Product Description

This is to test Lehman's correlation marks on FX cross currency pairs within the FX Options portfolios. Currently only ATM correlations are marked and that is what VCG is testing. There's a continued effort to expand currency pairs to increase coverage.

#### Calculation

Every month-end VCG submits Lehman's cross currency volatilities on each cross pair to Totem (Markit) and obtains consensus vols. ATM vol differences are then applied to vega exposures by tenor on each cross pair to calculate PV variance.

## **7. Government and Liquid Market Proprietary**

### **7.1. Treasuries, Bonds and Futures**

#### General Product Description

The following is a list of Government products tested:

1. U.S. Treasury Notes & Bonds
2. Israel Government Aid Bonds
3. Foreign Government Bonds
4. Tennessee Valley Authority ("TVA") Bonds
5. Corporate Bonds
6. U.S. Agency bonds
7. U.S. Treasury Bills, Zeros & Inflation Protected Securities ("TIPS")
8. I-Shares
9. Futures
10. Mortgage Pass-through securities

#### Calculation

VCG downloads all the Government positions from the Lehman Global P&L reporting system. For independent prices, VCG uses external brokers such as EJV, IDC, and Extel. For some specific securities that do not have any prices from the above three sources, VCG will try Bloomberg or other sources. In the example of corporate bond positions, pricing sources are not readily available. VCG will defer to other sources, such as Bloomberg Quotes, Reuters Quotes, and Structured Note Mark-To-Market report, which is an online research report that Lehman distributes to clients. For Treasury Inflation Protected Securities (TIPS), VCG needs to divide original internal price by inflation factor get the accurate internal price. For Foreign Government bonds, VCG needs to transfer the original market value which is in foreign currency to U.S. Dollar based market value.

After VCG gets all the internal prices and external prices, VCG then calculates variances (Price difference times notional) to see whether the firm's inventory positions are conservatively or aggressively marked. All results will be reported to senior manager.

### **7.2. Derivatives in Government and LMP**

#### General Description

The types of IRP Derivative products with the Government and LMP world include:

1. USD Swap rates
2. Foreign currency Swap rates: CAD, AUD, EUR, GBP, JPY and etc.
3. Index Basis Swap ---T-Bill versus 3M Libor
4. Swaptions

#### Calculation

Risk used for testing is sourced from ICE. ICE consolidates risk for the Desk on a daily basis, and aggregates both derivative systems- Summit and HJM. Volatility is summarized in a standard 2D matrix. Swap spread and basis exposures are expressed by maturity- this is consistent with external brokers. Independent market data is from external providers such as Totem (Markit), Tullet, ICAP, Bloomberg and Prebon. Differences between the independent quotes and Lehman marks are applied to our risk exposures to get PV variances.

## 8. **Commodities**

Valuation Control Group (VCG thereafter) performs price verification on the commodities trading portfolio. Testing is performed on a monthly basis to ensure the Firm's inventory is marked to fair market value. At times price testing may be completed on an ad-hoc basis in addition to our regular month-end procedures.

#### **Positions:**

Risk positions are collected from Kinetix as of last business day of the month.

Eagle's portfolio is being tested separately without netting with the rest of the Lehman Brothers' portfolio for the time being.

For completeness of the testing, TASC report is being set up and Product Control will sign off on the positions being tested.

#### **Calculation:**

To Mid is calculated as follows:

Aggregated Position x (Third Party Mid-LB Mark)

#### **Price source:**

Third Party Mid is defined as consensus price (Totem or 10x, etc), direct broker quotes, broker IM or a combination of the above.

#### **Tolerance: Business Level and Curve Level**

To make the variance calculation realistic and enforceable VCG will use reserve calculation as the tolerance band.

Red Event: Business Level To Mid exceeds the Business Level Reserve.

Action: VCG will discuss the result with desk and debit or credit the overage to the business.

Amber Event: VCG will identify variances by location that may be of concern. VCG will take into account the nominal variance, current reserves for that location, position and risk size, and how close a position is to mid in classifying an amber event.

Action: VCG will discuss the result with desk. Head of business has the discretion over corrective action. (If any) VCG will document decision made by the head of the business.

## 9. Real Estate

### Overview

The Real Estate business is separated into several distinct asset classes:

CMBS Securities  
Real Estate Derivatives  
Large Loans (Fixed & Floating)  
Commercial Conduit Loans  
Commercial Small ARM Loans  
Commercial N/R Mezz- and B-Notes  
Commercial Unfunded Rate Locked Commitments  
REIT LOC  
Principal Whole Loans (PTG)  
Real Estate Owned (PTG)  
Principal Real Estate Equity Partnership Interests (PTG)

Product Control (“PC”) must perform a series of price verification exercises geared to each asset class. PC’s policy is to perform a price verification review of these assets on a monthly basis.

### Preparation

- PC downloads all the Real Estate positions and key data from Quest (using the extract/ batch report feature) into an Excel spreadsheet.
- PC reconciles the Quest download to the firm’s balance sheet reporting system (GFS).
- PC then aggregates the entire asset population into their respective asset classes in preparation for pricing.
- For PTG positions, please refer to the Mezzanine and Equity Business Price Verification Overview for a description of the process performed by Product Control related to price verification.

#### 9.1. CMBS Securities

- A pricing download which includes 3<sup>rd</sup> party pricing data is taken from Quest each month-end.
- A reconciliation between the pricing download and the Quest extract is performed to ensure completeness of the population.
- All non-IO CMBS positions are tested against a 1% pricing variance limit or \$500k pricing variance. Where the difference between the average of third party prices and the Lehman mark is over 1% or the P&L impact on a position by position basis is over \$500k, the

position is investigated further. Discussions are held with the business and the results of the discussions are documented in the pricing model.

- IO CMBS positions are subjected to a similar testing, but, given the added complexity in IO pricing, a 5% tolerance level is applied. Any positions which fall outside of the 5% limit are investigated further.
- Positions which fall outside of the range (1% or 5%) are price tested individually on a net present value basis.
- A summary of the 3<sup>rd</sup> party pricing sources is presented in the 'Verification Real Estate Shorts Positions' section later.
- PC creates (straight interpolation) a spread matrix for fixed and floating-rate securities based on spreads published in third-party newsletters ('*Commercial Mortgage Alert*', '*Real Estate Finance & Investments*'). For ratings not provided in CMA, notching adjustments are interpolated from the change in spreads published in Lehman's CMBS Research publication ('*ForTheFloor*').
- The ratings, WAL and security type of each position are obtained through Bloomberg extracts.
- Once the appropriate spreads to be used for each security have been determined (based on security ratings and WAL), each security is then priced on Trepp website or Intex Desktop application. Alternatively, the Yield Table function in Bloomberg may be used. TREPP, Intex and Bloomberg are used by the traders in pricing their positions and PC feels comfortable with the integrity of the results from these sources.
- Where the price from Bloomberg or TREPP is not reasonable, the desk is consulted as to how best to model the positions. The methodology is discussed and if reasonable the revised method is used to price the positions.
- Other positions which cannot be price-tested using the above methods, typically investment grade agency securities which are not priced consistently in Bloomberg, TREPP, Intex or where there is no market in the position, are investigated separately in consultation with the business and the appropriateness of the internal marks is commented on.

## 9.2. Real Estate Derivatives

The real estate business (CMBS trading desk) enters into different types of derivative contracts for hedging as well as trading purposes. Derivative products that the desk trades currently include:

- Interest rate swaps
- CMBX
- Credit default swaps on CMBS
- Duration neutral swaps
- Total return swaps
- CDX

Interest Rate Swaps: These are price verified by the interest rates products (IRP) valuation control group. The IRP valuation control group provides the testing results to the real estate valuation control group for consolidated reporting purposes.

CMBX: The following procedures are undertaken to price-test the CMBX inventory at the end of every month

- An inventory download is generated from Quest at the end of every month
- A report is sent from RAMP at the end of every month with additional information (globalID, upfront fee, etc)
- CMBX spreads and dollar prices are obtained from Markit via a daily feed to Lehman
- Prices provided by Markit are compared against the desk price to determine if there are any material pricing variances.
- Material pricing variances (those exceeding the established threshold of \$100k) will be escalated to senior management and the desk, and the conclusion reached is documented.

Credit Default Swaps on CMBS: The following procedures are undertaken to price-test the CDS-CMBS inventory at the end of every month

- An inventory download is generated from Quest at the end of every month
- CDS spreads are obtained from the desk and sent to Derivative Fitch. The benchmark composite spreads are obtained from Fitch on a monthly basis.
- Spreads determined from Fitch are compared against the desk spread to determine if there are any material pricing variances.
- Material pricing variances (those exceeding the established threshold of \$1 million) will be escalated to senior management and the desk, and the conclusion reached is documented.

Duration neutral swaps:

- An inventory download is generated from Quest at the end of every month
- Index spreads are updated from Lehman Live
- A download is obtained from DMS for trade specific details
- Market value is calculated in the excel model
- Resulting market value is compared against basis in Quest.
- Any over or under valuations exceeding established thresholds (\$100k) are investigated, discussed with front office and conclusions are documented.

Total return swaps:

- An inventory download is generated from Quest at the end of every month
- Index spreads are updated from Lehman Live
- Libor is obtained either from BBA website, Lehman fixed income research or Bloomberg
- A download is obtained from DMS for trade specific details
- Market value is calculated in the excel model
- Resulting market value is compared against basis in Quest.
- Any over or under valuations exceeding established thresholds (\$100k) are investigated, discussed with front office and conclusions are documented.

CDX

- An inventory download is generated from Quest at the end of every month
- Prices provided by Markit are compared against the desk price to determine if there are any material pricing variances.

- Material pricing variances (those exceeding the established threshold of \$100k) will be escalated to senior management and the desk, and the conclusion reached is documented.

### 9.3. Commercial Conduit Loans & Large Loans

#### Fixed Rate Loans

- Conduit and Large Loans are originated with the intention of eventual inclusion in future securitizations and, therefore, price verified as such (i.e., in aggregate).
- Except in cases where the loan is not securitizable, conduit and large loans are priced together by taking the aggregate face value of the loan population and computing a “mock” (fusion) securitization, modeled after a recent comparable Lehman (fusion) deal. In cases where there is not a recent deal, then other similar deals will be considered in the analysis. Reasons for why the current inventory is similar to the CMBS transaction being modeled after should be documented (e.g., LTV, DSCR, WAC, etc.).
- The conduit deals are typically in partnership with UBS and the mock securitization is based on the total loan balance of the deal. The costs and fees associated are either scaled down according to the balance Lehman contributed or are the actual amounts Lehman received/paid in the deal.
- Using these details, PC calculates the tranche percentages, I/O strips and average lives for the hypothetical deal. Coupon rates are derived based on market convention (i.e., Investment Grade tranches are structured with a target price of 100.5 while Non-Investment Grade tranches are structured with a target spread of Treasuries + 50bps). PC then applies the appropriate discount rates which are derived by interpolating spread-matrices published in internal or third-party newsletters (e.g., *Commercial Mortgage Alert*, *Real Estate Finance & Investment*, *LB CMBS Research ‘For the Floor’*).
- The resulting proceeds (based on the execution of the “mock” securitization) are then compared with Lehman’s market value of those loans in order to determine the potential profit/loss. The mock securitization of the loan inventory should result in a hypothetical return on the assets that is in line with the actual return on the deal after interest rate and spread movements have been accounted for. Typically, the return on a LB-UBS securitisation is 1-4% depending on prevailing market conditions and the at-origination spreads of the loans.
- Aged positions
  - Fixed rate loans which are aged over 180 days are identified and the reasons they have not been securitized are investigated with deal originators. Depending on the outcome of the investigation, a decision whether to be included in the mock securitization will be made. In the event they are excluded, we will document our conclusion in the pricing model.

#### Notes Regarding Fixed Rate Loans

- Fixed rate loans will gain or lose market value after the rate is locked if the underlying base rate moves. To avoid potential losses in the securitization inventory, traders hedge out interest rate exposure through short selling of swaps, treasury and agency securities
- To hedge the interest rate risk on fixed rate loans, traders use the Quikyield Analysis tool on Bloomberg to determine the effective duration of each loan (from life and cpn of the loan). The effective duration is then used in calculating the equivalent Agency or Swap security that replicates the performance of the loan. The traders then short sell these securities with the effect that any adverse movement in interest rates results in a loss on the loan, but a gain on the hedge. Net effect of any I.R movement approximates zero.
- The maturity of the agencies/swaps approximate the lives of the underlying loans which might result in one bucket of treasuries ( say 10yr) hedging out a number of underlying loans
- Spread movements in fixed rate loans are hedged using total return swaps against CMBS indices.
- The loans and hedges are tracked through the traders' RAMP system.

#### Floating Rate Loans

- Large floating rate loans are predominantly originated for securitization or syndication. Typically, Lehman keeps a subordinate piece of the loan after the securitization or syndication and transfers the loan to the B-Note/ Mezz ledger.
- Large floating-rate loans which are syndicable or securitizable in their current condition are price tested in the Securitizable LLF model. For loans which are older than 9 months which have not yet been included in past securitizations (if any), further analysis is carried out on updates to the loan collateral's performance.
- The securitizable large floating rate loans are price verified on an individual basis, using a Net Present Value analysis based on individual loan characteristics.
- PC creates (straight interpolation) a spread matrix for fixed- and floating-rate securities based on spreads published in the *'Commercial Mortgage Alert'* newsletter.
- PC then determines what the theoretical "shadow rating" would have been for the loan based on the LTV at time of underwriting. Shadow rating thresholds are obtained from Moody's Hyper-Tranching for CMBS Large Loans matrix.
- Once the proper discount rate is determined, PC calculates the net present value of the loan. Due to the limited call protection on these positions, the "market" price determined using the above methodology is capped at 100% of face value for floating rate loans. The resulting NPV is then compared to Lehman's market value. The difference between the two amounts represents the potential under or over valuation.
- All positions where our basis is less than the estimated value by \$2mm or where our basis is greater than the estimated value by \$1mm are investigated and the resolution is documented in the pricing model.

- Those loans that are not presently securitization or syndication eligible are price verified as whole loans in the PTG model. It is felt that is appropriate since the loans are not being held with the intention of securitizing or syndication in their present condition.
- Aged Positions
  - Floating rate loans are investigated if they have been held for over 270 days. In each case, the business is consulted for an explanation of the reason for holding and an understanding if there has been any impact to the collateral value. If the loan remains securitization or syndication eligible, PC will compare the loan's spreads to published market data. In cases where the collateral value has deteriorated, PC will price as a principal position.

#### **9.4. Commercial N/R Mezz- and B-Notes**

- The Commercial N/R Mezz- and B-Notes are price verified on an individual basis, using a Net Present Value analysis based on individual loan characteristics.
- PC creates (straight interpolation) a spread matrix for fixed- and floating-rate securities based on spreads published in the *'Commercial Mortgage Alert'* newsletter.
- PC then determines what the theoretical "shadow rating" would have been for the combined whole loan (the senior plus the junior notes), based on the LTV at time of underwriting. LTV's are updated as new values are obtained from the special servicers. Shadow rating thresholds are obtained from Moody's Hyper-Tranching for CMBS Large Loans matrix.
- Based on the shadow rating assigned to the B-Note/ Mezz position, a discount rate is applied.
- This discount rate is then used to present value the cash flows of the Mezz- or B-Note. The resulting market value is then compared to Lehman's market value. The difference between the two amounts represents the potential under or over valuation.
- The "market" price determined is capped at 105% for fixed rate loans and 100% for floating rate position to account for the existence or non-existence of prepayment protection.

#### **Commercial Unfunded Rated Locked Commitments**

- Unfunded Rate Locked Commitments are either small or large fixed loans that have not yet funded but have been rate locked. They are rate locked with the intention of eventual funding and inclusion in future securitizations and, therefore, price verified as such (i.e., in aggregate) using mock securitization.
- Except in cases where the rate lock has unwound, unfunded commitments are priced together by taking the aggregate face value of the loan population and computing a "mock" (fusion) securitization, modeled after a recent comparable Lehman (fusion) deal. In cases where there is not a recent deal, then other similar deals will be considered in the analysis.
- The conduit deals are typically in partnership with UBS and the mock securitization is based on the total loan balance of the deal. The costs and fees associated are either scaled down according to the balance Lehman contributed or are the actual amounts Lehman received/paid in the deal.

Please refer to Fixed Rate loans section above for further details on pricing

## 9.5. REIT LOC

- The REIT lines of credit and term loans are price verified on an individual basis, using a Net Present Value analysis based on the individual loan characteristics.
- The discount rates used in the REIT file are interpolated from the LoanConnector Website which publishes spreads based on data from current market term loans and revolvers. The appropriate spread for each position is then found by cross referencing the loan type and its credit rating (from Bloomberg/Moody's). Where a rating is not available, the position defaults to CCC-, Sub-Investment Grade.
- PC obtains the coupon rates (interest earned) from the Trader Prints (Quest) and the "unused" and "facility" fees from the LoanIQ downloads or from discussions with the business. These cash flows are then discounted using the appropriate discount rate (see above) to arrive at a Net Present Value.
- The calculated NPV is then compared to the positions' market value to arrive at the potential profit/loss.
- All positions where our basis is less than the estimated value by \$2mm or where our basis is greater than the estimated value by \$1mm are investigated and the resolution is documented in the pricing model.

## 9.6. Real Estate Short Positions

- A Pricing download of Real Estate inventory is taken for month-end and filtered for short positions. Short balances are typically US Treasuries and Agencies used by the Desk for hedging long loan and security balances against interest rate risk.
- The positions are tested against 3<sup>rd</sup> Party market data feeds bought by Lehman. These are considered to be an accurate reflection of the true market price given the liquidity and uniformity of the securities.
- The internal marks are tested against a threshold of 1% variance from the average of the external prices and/ or a \$300k over or under valuation.
- The 4 external sources the shorts are price tested against are:
  - EJV(Electronic Joint Venture) - EJV's methodology is based on multiple inputs and utilizes their advanced computational capabilities. The basic inputs are daily transmissions of end-of-day valuations from EJV "partner" firms, communication with other broker dealer firms, and feedback from EJV clients. Contributing partners include CitiBank, CS First Boston, Goldman Sachs, JP Morgan, Lehman Brothers, Liberty Brokerage, and Morgan Stanley. The approach is deliberately flexible so that EJV can follow methodologies that reflect current market activities.
  - IDC (Interactive Data Corp. - Int'l Dataline feed) - Financial Times Interactive Data's International DataLine offers international close-of-market pricing and securities

information. International DataLine integrates direct exchange feeds, direct exchange feeds through intermediaries, market maker quotes, data from authoritative third parties, and data from the EXSHARE® and EXBOND® data services to provide broad multi-source data coverage.

Their "Best Price" approach takes into account:

Price - Determining the price type generally accepted as the "best" representation of closing value for each security type in each market.

Source - Selecting the most reliable and accurate data source when multiple data sources are available.

- Extel (owned by Interactive Data Corp.) - As part of the Financial Times Group, Extel Financial collects data from over 100 exchanges around the world. Prices are collected through a variety of international data networks from the world's major exchanges and information providers. International bond prices are received directly from the International Securities Market Association (ISMA). Unit Trusts, Insurance Bonds, Offshore Funds, and Broker Fund prices are collected directly from the fund management companies or their PR agencies using an automated collection system. A manual pricing team research price data where no automated data is available.
- ABSG (Asset Backed Securities Group) - Asset Backed Securities Group - a pre-eminent source for comprehensive disclosure data, factor information and independent valuations for U.S. based Asset and Mortgage Backed Securities, ARMs, CMO/REMIC, and SBA Securities.

Further information about these external price sources is available on Lehmanlive (ESM Price browser\documents)

## 9.7. PTG Overview

Price verification for PTG assets (whole loans, REO's, and equity investments) are performed in two stages – One that is performed on a monthly basis and the other a detailed analysis performed on a quarterly basis.

The monthly analysis is performed to closely monitor month over month fluctuations in values and identifying assets that need to be included in the Watch List (i.e. position has a potential for a loss based on the current appraised values). In the monthly pricing files, resolutions are documented on positions with over \$5mn in positive variances and items to be included in Watch List.

The quarterly analysis is a much more detailed analysis of pricing variances resulting from the routine monthly process.

## 9.8. Principal Whole Loans (PTG)

- Single Asset and Single Family Whole Loans are price verified on an individual basis, using a Net Present Value analysis based on individual loan characteristics.
- The discount rates used are determined by interpolating spreads published in *'Real Estate Finance & Investments'* newsletter, based on LTV's calculated using recent property values reported by the Servicers (Trimont and PCCP).
- Once proper discount rates are determined, PC then calculates the net present value of the capped receipts over the expected term of the loans. The NPV (based on current values) is compared with "Capped OPB" and "Available Proceeds" (collateral value after paying off any senior lien), and the minimum of these three values is assigned as a value to the position. UPB is capped at 105% as an estimate of a price an investor would pay for such loans that are not call-protected. The value is then compared to Lehman's basis. The difference between the two amounts represents a pricing variance to be researched, subject to thresholds.
- To the extent that the OPB plus any anticipated payoff fees (i.e. deferred interest, equity kickers) exceed the value of the collateral, these receipts are then capped at the collateral's value. Deferred fees are excluded from NPV calculations based on current value since the realization of such fees is uncertain until the loan matures, or the borrower pays off the debts.
- The above process is conducted based on current property values as well as stabilized property values (as reported by the Servicers). Even though the analysis is performed using current and stabilized values, pricing variance is based on current value, i.e., the comparison of the current basis versus current value is what yields the pricing variance to be researched, which ultimately leads to suggested mark adjustments or assertions.

## 9.9. Real Estate Owned (PTG)

- PC compares Lehman's basis to the properties' current values (as reported in the servicer tapes) to determine the pricing variances to be researched, subject to established thresholds.

- The same is done by comparing Lehman's basis to the projected stabilized value (less any required funding needed to reach stabilization) and then discounting back at a discount rate appropriate for equity (see price verification of Equity Partnership Interests). Credit is given to interim cash flows from the property.
- The analysis based on stabilized values is used to determine "red" items on the Watch List. The valuation based on the current values is used to determine "yellow" items on the Watch List and pricing variances to be researched.

#### **9.10. Principal Real Estate Equity Partnership Interests (PTG)**

- PC price verifies Equity Partnership Interests individually by examining the deal waterfalls under a current partnership liquidation scenario based on current values (as reported by the servicer). There are four components: a) return of capital; b) cumulative preferred return; c) current year preferred return; d) Lehman's share of the excess profits (if at all). Returns are deemed to be *pari passu*. Model assumes distribution of cash flows in the following order:
  - Pay-off the full amount of any debt
  - Distribution to owners for accumulated preferred returns
  - Distribution to owners for return of capital
  - Distribution to owners for split of any remaining profit according to their profit and loss sharing ratios

In cases, where waterfall agreements differ from model assumptions, modifications are made in the model by over-riding the formulas and the reason/justification noted.

- A similar analysis is conducted based on stabilized values and then discounted back over the expected holding period. The appropriate discount rates are taken from Korpacz and from individual discussions with market participants.
- The analysis based on stabilized values is used to determine "red" items on the Watch List. The valuation based on the current values is used to determine "yellow" items on the Watch List and pricing variances to be researched.

#### **9.11. PTG (Quarterly)**

In addition to the monthly processes discussed above, PC performs a detailed position by position valuation analysis on a quarterly basis.

- The price variances are based on the current values of underlying collateral haircut by 10%. The 10% haircut is applied to account for value estimation errors and estimated holding and disposal costs. If the resulting price variance is already negative prior to haircut, then the quarterly analysis is performed on those positions without considering the haircut. . The quarterly analysis is performed for positive and negative price variances in excess of \$3 million.
- Each position with a positive or negative variance in excess of \$3mn is researched in detail by referring to Asset Summary Reports (ASRs) and "Current Information Updates" from Servicers, and communicating with the business and asset managers.

- The decision to mark an asset is primarily a function of whether the position is a consolidated position or not based on FIN46. Thus, the quarterly analysis breaks-down those positions with variances to be researched into two categories: The Consolidated Portfolio and the Mark to Market Portfolio.
- The Consolidated Portfolio is kept at lower of cost of market, and is subject to accounting requirements of SFAS 144. SFAS 144 requires us to categorize positions into three main categories: held for sale, held for use or development. PTG's assets are in general either in the Held for Sale or development categories since it is not the practice for Lehman to hold properties for use. Development categories include only those assets with no operating cash flow.
- For the Consolidated Portfolio, impairments are recognized to their full extent as held for sale properties are not subject to the undiscounted cash flow testing SFAS 144. No mark-ups are taken beyond par. However, mark-ups may be taken for positions that were impaired previously to the extent of the prior mark-downs taken. For REO positions, such mark-up will be limited to the basis of the assets as of the date they went REO. For assets turned REO prior to 11/30/03, the basis as of 11/30/03 (the date LB adopted FIN46 for the first time) is used.
- For the Mark-to-Market Portfolio, marks (up or down) supported by the analysis may be suggested.
- Once the analysis is completed, PC concludes with mark suggestions which are then discussed with the business unit.

### **Escalation / Resolution – CMBS Securities**

- All positions with pricing variances in excess of + or - \$500k are investigated with the trader and the resolution is documented in the pricing model.
- Securities whose variances exceed their specific tolerance level are submitted to the trader for discussion with Product Control. Any unresolved differences are further submitted to both senior management in Product Control and Trading. The results are documented in the pricing model.

### **Escalation / Resolution – Conduit/ Large Loans/ Small ARM**

- The mock securitization for fixed-rate loans should result with a return on the loan inventory that is in line with the securitization it is based on. The typical return on a LB-UBS securitisation is 1-4% depending on prevailing market conditions and at-origination spreads of the loans. To the extent that the return on the model falls outside the range, any sources of movement; such as swap & treasury rates, or spreads compression or tightening are investigated and the resolution is documented in the pricing model.
- The desk hedges positions with treasuries or swaps. To the extent that a negative variance did exist, it would be brought to the attention of the business, and decisions reached are concluded in the pricing models.
- Positive variances are not recognized into P&L since the majority of the P&L is contingent upon the successful execution of a CMBS transaction.
- Large floating loans held for securitisation but which remain in inventory past 9 months are investigated for impairments and for updates to the underlying collateral's performance. Where necessary, PC will discuss mark adjustments with the Front office.
- For loans which are put through the PTG model, variances over \$3mm are investigated further, and mark adjustments are discussed with the business. The decision reached is documented in the pricing model.
- Where further analysis of the loans does not provide an explanation for the difference in valuations, then PC will go to the business to discuss marking the loan appropriately.

### **Escalation / Resolution – REIT LOC**

- All positions where our basis is less than the estimated value by \$2mm or where our basis is greater than the estimated value by \$1mm are investigated with the trader and the resolution is documented in the pricing model (liquidity of the deal and the performance risk of the loan is strongly considered in the market).

### **Escalation / Resolution – Short Positions**

- Where there are pricing differences with the external marks, further pricing comparison will be made against bloomberg and where differences persist the position will be discussed with the trader, and decisions are documented in the pricing model.

### **Escalation / Resolution – Mezz- & B-Notes**

- All positions where our basis is less than the estimated value by \$2mm or where our basis is greater than the estimated value by \$1mm are investigated with the trader.
- Based on the result of the discussions, the positions are either remarked or justification for current mark is documented in the pricing model.

### **Escalation / Resolution – Whole Loans/ REO's/ Partnership Interests**

#### The Monthly Process

- Negative pricing variances resulting from the monthly process are categorized as either “Red” or “Yellow” items and are included on Watch List – a monthly report distributed to senior management describing each position and the impairment issues along with their resolution.
  - “Red” Watch List Items: These are positions that, due to lower anticipated *stabilized* values, are likely to incur capital losses. Red watch list items are brought to the attention of the business. PC will initiate dialog with the business, Risk Management, and the Asset Managers to determine whether or not there is a credit impairment. If so, PC will recommend that the asset be marked appropriately.
  - “Yellow” Watch List Items: These are positions that, due to lower *current* values, could potentially result in capital losses, if the business plan does not materialize. However, given a clear business plan and sufficient expected accretion of value through stabilization, it is not likely to result in a loss. Yellow watch list items are brought to the attention of the business. PC will initiate dialog with the business, Risk Management, and the Asset Managers to determine whether or not there is a credit impairment. These items are then monitored closely for potential future write downs, should the business plans not materialize as planned. Positions that have variances in excess of the threshold amounts are included in the quarterly detailed analysis and investigated in further detail.
- Positive pricing variances based on current value in excess of the monthly threshold of \$5mm (without haircutting the current value) are investigated and their resolutions documented on the pricing files.

#### The Quarterly Process

- The quarterly process results in suggested marks along with justifications or explanations for such marks. The results are then discussed with the business, risk management, asset managers and a final mark established.
- Such marks are then communicated to Front Office Finance group, which in turn instructs middle office of the bookings to be made into the firm's books and records
- Exogenous factors that are not necessarily apparent in the monthly pricing models often exist. These factors are looked at extensively on a position by position basis and decisions justifying either the appropriateness of existing marks or justifying proposed marks are made.

- The resolution of variances may take time, such that all interested parties can do their due diligence around the assets in question.

## Reporting

- A summary of pricing results is submitted to the central valuation group for inclusion into the Capital Markets Valuation package.

## 10. Credit

### 10.1. Bank Loans

All Bank Loan positions are required by FAS157 to be marked to market at fair value which is defined as the amount at which the position could be exchanged in a current arms-length transaction.

In order to derive the fair value, we rely on our knowledge of the market and other third party data sources and methods to reflect both specific market conditions and the risk inherent in a loan position.

The purpose of this policy and procedure is to document the existing procedure on the price verification for Bank Loans. This policy and procedure will be amended in the future to reflect the changes in the business, product, market, external regulatory and accounting policies.

This policy and procedure document applies to price verification for Bank Loan positions.

### Completeness and Accuracy

The entire loan PV population should have all the loans solely or partly owned by Credit America. The two sources of the loan population are in Loan IQ and Gquest (balance sheet).

In the price verification file, we prepare the reconciliation of these loan population sources. We make sure the market values of the loan population are tied to source system.

### Obtain the third party data for price verification

Several independent price verification data sources we are incorporating in the current month-end price verification process:

<u>Derived Prices for verification</u>	<u>Source</u>
Executed trade activities	Laura
Venders' quotes	Reuters (Aka LSTA)
Loan/Bond price	Reuters, Markit, Bloomberg
Loan CDS curve (CDS matrix)	Markit and Caruso
Bond CDS curve (CDS matrix)	Markit and Caruso
Sector/rating (CDS matrix)	Markit
CR matrix	Loanconnector

Detailed explanations of these data sources and methodologies:

- Executed trade activities – we refer the latest trade price (up to a week before/ after month-end)
- Venders' quotes – we search the month-end brokers' quotes on the market if possible.
- CDS matrix
  - Loan CDS curve - build a yield curve off of Corp Loan spreads.
    - Steps:
      - I. Download various spreads by issuers, sector, rating, maturity seniority, covenants clause, recovery rate and etc.;
      - II. Add the CDS spread on top of LIBOR to obtain the yield curve
      - III. Calculate the implied price based on the loan position (funded and unfunded amounts), rates, yield and maturity
  - Bond CDS curve – build a yield curve off of Corp Bond CDS spreads.
    - Steps same as Loan CDS, just with Bond as collateral
  - Sector/rating – build a yield curve of loan spread based fewer conditions (sector, rating, and maturity)

Spread interpolation – Points along independent credit curve may be linearly interpreted by valuation controller.

- Benchmark of the similar assets
  - Information from Markit on current aggregated bid and offer price levels for:
    - Loans marked by multiple loan traders
    - Loans for which Markit Loans is able to create a reference price using related loan marks
- CR matrix
  - Build a yield curve based on funded/unfunded, rating and maturity

### **Hierarchy of the price verification data (methodologies)**

#### **Principle: to find a reliable, accurate and independent price to test loan position**

Price verification combines art and science when incorporating any methods for the purpose of verifying all Bank Loans' positions in the month-end process. Judgment is often used on individual loan positions. Current procedure takes the preference of these methods in the following order (\*it will often change in individual cases):

- 1) Executed trade activities – if the credit market is stable and smooth, we take the average of the last three month trading price of the same loan position as reference; if the credit market is volatile, we use up to the last week trading price as reference
- 2) Venders' quotes – if venders have recently frequent quotes, we take the average
- 3) CDS matrix – Loan CDS curve is preferable to bond CDS curve, bond CDS curve is preferable to sector/rating CDS curve
- 4) Benchmark of the similar assets
- 5) CR matrix
- 6) Untested – two situations: loan position's MV is below \$5000; or no reliable and accurate price exists for some loan commitment positions

### **Valuation adjustment threshold and resolution**

- Valuation adjustment threshold

Variances above \$500K and 3% are investigated further.

- Resolution of significant valuation variance

Materiality, market condition, vender quality, traders' track records, and traders' discussion are used to resolve the variance.

### **Management reporting and escalation**

- Management reporting

Monthly price verification variance reports are prepared and distributed to product control management and the trading desk.

- Significant issue escalation

If price verification product controller and trader cannot resolve the material variance, the issue is to be escalated to senior finance management (Global Head of Fixed Income Product Control, Global Head of Valuation Control Group, and Head of GCP trading desk). After the escalation, the collective decision will be made.

### **10.2. CDS**

The objective of CDS Price Testing is to verify the CDS marks of Lehman traders. We aim to affirm that the Lehman marks accurately reflect marks at which Lehman traders can exit their positions in the market.

Achieving this involves gathering information and data from both Lehman traders and external sources. The Lehman data is compared with the external data and discrepancies between Lehman's prices and those from external sources are noted. Pricing discrepancies generate variances between the value of a position in a trader's book and the value one would expect to realize in the market. There is an acceptable threshold for variances. Any items that exceed this threshold are investigated and resolved.

The price testing process is detailed below.

#### **Completeness & Accuracy**

The Valuation Control team in New York is responsible for testing CDS positions in the Credit Americas world. We are responsible for testing names owned by specific BPM Product Level 2s (PL2s) in Credit Americas. We obtain a current list of these PL2s from controllers. A reconciliation of PL2 names is performed to ensure completeness of population. We are comfortable that each PL2 is complete as mid office reconciles ICE PL2's to generate daily P&L.

We rely on two files to ensure that we are capturing the test population. The files are NY\_Variiances\_Yymmdd and NY\_untested\_Yymmdd. These files are sent to us by the Valuation Control team in London.

The files hold the global population of CDS positions owned by Lehman. To obtain the CDS names that need to be price tested and significant variances to be investigated here in New York, the global population is filtered using the relevant PL2 names.

## **Independent Pricing Data – Sources and Hierarchy**

To validate the trader's marks, we compare them to independent marks to assess whether the trader's marks are reasonable. Sources of independent pricing data, ranked in order of priority:

1. Traded levels obtained from trades with outside counterparties.
2. Third party sources, e.g., Markit Partners.
3. Broker quotes.
4. Related credit default swaps
5. Related bond.
6. Benchmark off a restructuring clause.
7. Other Sources.

## **Investigation and Resolution of Variances**

Variances that exceed the threshold are investigated and resolved. The threshold can vary by BPM. Product controllers are free to adjust these thresholds as volatility, volumes, and market conditions dictate.

Guidelines:

- FID Corp – 500,000
- High Yield – 500,000
- High Grade – 300,000
- Emerging Markets – 300,000

Following are the steps taken in resolving a variance.

- To assess reasonableness of Lehman and external marks, we first look up contemporaneous traded levels in ICE. If the traded levels support the Lehman marks, the process ends here.
- If we are unable to find relevant traded levels, we may obtain broker quotes and compare the marks to those.
- If the above steps are inconclusive, we can get a sense of what the marks should be by benchmarking off a related credit default swap or related bond.
- At the end of the process, we will have a good sense of whether the Lehman marks or external marks are reasonable. In the case where the Lehman marks are inaccurate, the trader will have to re-mark to the market. If the external marks are inaccurate, they are discarded. Through either action, the variance may be resolved.

Note 1: At some point during the process, we may retest by obtaining the most recent Lehman marks and external marks. In doing this, we may discover that the trader levels have moved in line with external sources; as a result, the variance may fall below the threshold or disappear.

Note 2: The CDS price testing database uses straight-line assumptions to interpolate independent points. In most cases, this is adequate. Where the product controller determines and uses an alternative interpolation method, a supporting comment should be documented. Throughout the process, we rely on our knowledge of the reference entity, the market and current events, the trader's record and anecdotal evidence to help us validate marks.

## **Management Reporting and Escalation**

- Management reporting

Monthly price variance reports are prepared and distributed to product control management and the trading desk.

- Significant issue escalation

If a product controller and trader cannot resolve a significant variance, the issue is to be escalated to senior finance management (Global Head of Fixed Income Product Control, Global Head of Valuation Control Group, and Head of GCP trading desk). After the issue is escalated, a collective decision will be made.

### 10.3. CDO

#### Background

All CDO positions are required by FAS157 to be marked to market at fair value which is defined as the amount at which the position could be exchanged in a current arms-length transaction.

In order to derive the fair value, we rely on our knowledge of the market and other third party data sources and methods to reflect both specific market conditions and the risk inherent in CDO positions.

The purpose of this policy and procedure is to document the existing procedure on the price verification for the CDO book. This policy and procedure will be amended in the future to reflect the changes in the business, product, market, and external regulatory and accounting policies.

This policy and procedure document applies to price verification for CDO positions.

#### Completeness and Accuracy

The entire CDO PV population should contain all the positions solely or partly owned by the CDO desk. The main source of the CDO population is Gquest.

In the price verification file, we reconcile the Quest Price Testing: Inventory Export file to a Quest extract of the two PL1's (CDO Americas & CDO PROP – HY US) in order to ensure a complete population. Other products are also tested and their populations are reconciled in other ways.

#### Obtain the third party data for price verification

Several independent price verification data sources we are incorporating in the current month-end price verification process:

#### Derived Prices for verification

Executed trade activities  
Position prices

#### Source

Laura, GQuest  
EJV, IDC, ABSG, IDSI, Markit,

Detailed explanations of these data sources and methodologies:

- Executed trade activities – we refer the latest trade price (up to a month before/ after month-end depending on market volatility)
- Independent spread entered into Intex
  - Based on collateral type and credit rating of CDO – spread such as from JP Morgan research file is input into Intex
  - Several scenarios are ran in Intex at the spread selected – these scenarios include:
    - CPR – prepayment rate
    - CDR – default rate
    - Loss Severity – par minus recovery
  - These criteria used in these scenarios is based upon historical market data as well as current trends
- External Prices
  - External prices are fed through Gquest from EJV, IDC, ABSG, IDSI, and Bloomberg. These prices are reviewed and prices that are more than a month old and incorrect prices are removed.
  - Prices are also downloaded directly from Bloomberg and Markit
- LehmanLive CDO Calculator
  - The LehmanLive CDO Calculator receives feeds from Intex as well as pricing feeds and calculates a NAV for the tranche

#### **Hierarchy of the price verification data (methodologies)**

##### **Principle: to find a reliable, accurate and independent prices to test CDO position**

Price verification combines art and science when incorporating methods for the purpose of verifying CDO positions in the month-end process. Judgment is often used on individual CDO positions. Current procedure takes the preference of these methods in the following order (\*it may change in individual cases):

- 1) Executed trade activities – if the credit market is stable and smooth, we will allow prices from trades that occurred 4-6 weeks prior to the month end; if the credit market is volatile, we use a shorter time period.
- 2) Hedge Positions – if the position is hedged through either an offsetting position or TRS and both positions have the same mark, the price is considered valid.
- 3) External Prices – External prices are primarily used to ensure the accuracy of corporate bond positions, equity positions, and treasury positions held by the CDO business. External prices for CDO's and HEL's are less frequently available and less accurate, and are used for pricing very few of these positions.
- 4) Intex testing – JP Morgan spreads are input into Intex, along with prepayment, default, and recovery assumptions (which can be obtained from other providers) to calculate a dollar price for the position.
- 5) NAV from LehmanLive Calculator– The LehmanLive CDO Calculator receives both Intex feeds and pricing feeds to determine the NAV of the tranche. The NAV is compared to the price the position is marked at.
- 6) IO Analysis – This values the trade as being valued exclusively on the present value of future interest payments.

- 7) Pricing off ABX – ABS CDO’s can be priced off ABX Tranches by implying that residential mortgage collateral are valued at the ABX tranche with the same credit rating.
- 8) Other testing methods
- 9) Untested – No reliable and accurate price exists for some CDO positions

#### **Valuation adjustment threshold and resolution**

- Valuation adjustment threshold  
Variances above \$400K for Level 1 & 2 positions, and variances above \$300k for Level 3 positions are investigated further.
- Resolution of significant valuation variance  
Materiality, market condition, vender quality, traders’ track records, and traders’ discussion are used to resolve the variance.

#### **Management reporting and escalation**

- Management reporting  
Monthly price verification variance reports are prepared and distributed to product control management and the trading desk.
- Significant issue escalation  
If price verification product controller and trader cannot resolve the material variance, the issue is to be escalated to senior finance management (Global Head of Fixed Income Product Control, Global Head of Valuation Control Group, and Head of GCP trading desk). After the escalation, a collective decision will be made and P&L may be adjusted.

### **10.4. HG, HY, & EMG Cash**

#### **Background**

All positions within HG, HY, and EMG are required by FAS 157 to mark to market at fair value which is defined as the amount at which the position could be exchanged in a current arm-length transaction.

In order to derive the fair value, we rely on our knowledge of the market and other third party data sources and methods to reflect both specific market conditions and the risk inherent in these positions.

The purpose of this policy and procedure is to document the existing procedure on the price testing and valuation for HG, HY, and EMG positions. This policy and procedure will be amended in the future to reflect the changes in the business, product, market, external regulatory and accounting policies.

#### **Scope**

This policy and procedure document applies to price valuation for HG, HY, and EMG cash positions.

## Completeness and Accuracy

The entire HG, HY, and EMG testing population should have all the positions solely or partly owned by these desks. The main source of the HG, HY, and EMG populations is Gquest.

In the price verification file, we reconcile the Quest Price Testing: Inventory Export file to a Quest extract of the relevant businesses in order to ensure a complete population.

### Obtain the third party data for price verification

Several independent price testing data sources we are adopting in the current month-end price valuation process:

<u>Derived Prices for testing</u>	<u>Source</u>
Position prices	EJV, IDC, ABSG, IDSI, Markit, Bloomberg
Executed trade activities	Laura, GQuest

Detailed explanations of these data sources and methodologies:

- Executed trade activities – we refer the latest trade price (up to a 10 days before/ after month-end depending on market volatility and liquidity of the position)
- External Prices
  - External prices are fed through Gquest from EJV, IDC, ABSG, IDSI, and Bloomberg. These prices are reviewed and prices that are more than a month old and incorrect prices are removed.
  - Prices are also downloaded directly from Bloomberg and Markit
- Alternative methods may be used.
- If no external price is available, the position is untested.

### Hierarchy of the price valuation data (methodologies)

#### Principle: to find reliable, accurate and independent prices to test positions

Price valuation combines art and science when adopting any methods for the purpose of testing all positions in the month-end process Judgment is often used on individual positions. Current procedure takes the preference of these methods in the following order (\*it may change in individual cases):

- 1) Executed trade activities – Based upon the liquidity of the position and current market conditions, prices from trades 10 days before or after month end are used to verify the accuracy of the marks
- 2) External Prices – External prices are used to ensure the accuracy of the majority of the positions held by the EMG business.
- 3) Alternative methods.
- 4) Untested – No reliable and accurate price exists for some positions

### Valuation adjustment threshold and resolution

- Valuation adjustment threshold

- For HY & HG variances above \$500K for Level 2 & 3 positions, and variances above \$300k for Level 1 positions are investigated further
- For EMG Variances above \$400K for Level 2 & 3 positions, and variances above \$300k for Level 1 positions are investigated further.
- Thresholds may be adjusted to reflect volume and market volatility
- Resolution of significant valuation variance

Materiality, market condition, venter quality, traders' track records, and traders' discussion are used to resolve the variance.

### **Management reporting and escalation**

- Management reporting  
Valuation variance reports are prepared and reviewed by product control team and the trading desk. Price testing template package and GCP – Americas valuation package are monthly prepared.
- Significant issue escalation  
If price verification product controller and trader cannot resolve the material variance, the issue is to be escalated to senior finance management (Global Head of Fixed Income Product Control, Global Head of Valuation Control Group, and Head of GCP trading desk). After the escalation, a collective decision will be made and P&L may be adjusted.

## **11. Mortgage and mortgage backed**

Identification of Inventory to be tested:

Extract

The price verification process begins with the identification of the population to be tested (referred to as "Inventory") and the determination of a valuation date. The population is derived from the positions that are booked in the Gquest system (referred to as "Gquest") as of the last business day of each month (referred to as "Valuation Date") in the Mortgage Trading ledgers.

Gquest is a global system for tracking profit and loss (referred to as P&L") and facilitates data collection, correction, and reporting. It provides Finance with the ability to report the P&L from an individual security level up to a consolidated divisional level. Gquest sources trade date plus one day data from a variety of other systems including GEDS, ITS, GSS, TMS, RISC and GFS. Product controllers can view the components that generate P&L at a detailed level. The system allows users to modify/correct trading and commission data in order to produce the daily P&L "flash" reports. Gquest retains information at the individual position level for 35 calendar days or 22 business days back from the current date. Further dated information is only available as of the last business day of each month.

Gquest is also used to identify the positions to be price verified because it includes all positions on Lehman's balance sheet and any other commitments related to VaR.

An extracting tool within Gquest allows for the download of critical information of the Inventory for analysis. Finance extracts the Inventory booked in Gquest as of the Valuation Date to Excel, (referred to as the “Extract”). The data contained in the Extract includes the following:

<b>Profit Center</b>	<b>Position Size</b>
<b>Trader</b>	<b>Price (referred to as “Inventory Price”)</b>
<b>Account Number</b>	<b>Market Value</b>
<b>Security Number</b>	<b>EJV Price (Third party price provider)</b>
<b>Cusip</b>	<b>IDC Price (Third party price provider)</b>
<b>Issuer</b>	<b>Extel Price (Third party price provider)</b>
<b>Coupon</b>	<b>ABSG Price (Third party price provider)</b>
<b>Maturity Date</b>	

The Third Party Prices are derived from a tool built within Gquest that pulls Third Party Prices from the ESM system within Lehman Live.

The Gquest Extract is the starting point for the price verification process and is the basis for the creation of the “**Central File**”. A sample of the Extract is in **Appendix I** and can be found in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** folder under the applicable year and month.

In order to maintain the integrity of the data, a **Control Number** is assigned to each position. This ensures that as the holdings in the file move through the price verification process all positions are accounted for.

Additional information is downloaded from Bloomberg via the API function and is added to the Central File. In order to facilitate a quicker download from Bloomberg, multiple excel files are created using only the control number and cusip columns from the Central File. These files are named “MTG Simple Bloomberg 1, 2, 3, 4...” and can be found in the **G:\Financial Control\Daily B-S\Mortgages Bloomberg\jPK** folder.

The following data is downloaded from Bloomberg:

- Security Description**
- Moody’s Rating**
- S&P Rating**
- Fitch Rating**
- Bloomberg Rating**
- Mtg CMO Class**
- Mtg Tranche Type (Short)**
- Mtg Tranche Type (Long)**
- Mtg Type**
- Lead Manager**
- Co Manager**
- Mtg WAL**

This data is updated in the Central File using Vlookups to the MTG Simple Bloomberg files. After the data is updated it is range valued and the Vlookups are eliminated.

Before the file is completed the following formula columns are added:

**ABS MKT VAL** – Absolute market value

**Avg. Ext. Price** - The average of EJV, IDC, Extel and ABSG prices

**Variance** – The difference between the absolute market value and the inventory price multiplied by the position amount divided by 100.

**Link** – An additional unique identifier made up of acct\_no and sec\_nbr fields.

**Grade** – An “If” statement is used to determine IG or NIG based on ratings.

**BS File Collateral Type** – Vlookup is used to extract type from prior period file. Any missing types are determined by using the Profit Center, Trader, Issuer, Security Description, and Tranche Type.

**Identifiers 1, 2, 3** – Used to identify those positions that are IO, PO, INV, MEZ, Sub, Z and Sup tranches based on MTG CMO Class

**Tolerance** – The allowable price differential between Product Control and the Trader. Those positions are assigned a value via a Vlookup to the “Tolerance Matrix.” Pass through securities are given specific tolerances based on fixed or floating collateral. The Tolerance matrix at June 30, 2006 was as follows:

<u>Type</u>	<u>Agency</u>	<u>Prime</u>	<u>Non Prime</u>
IO	3.0	4.0	4.0
PO	3.0	4.0	4.0
INV	2.5	3.5	3.5
Z	2.5	3.5	3.5
Sub	2.5	3.5	4.5
MEZ	3.0	4.0	5.0
SUP	3.0	4.0	5.0

Pricing tolerances, which are based on bid offer spreads, are reviewed quarterly.

**Flag** – Determined using “IF” statements described in further detail later in the procedure. The flags include:

**NPA** – indicates that No Price is Available from a third party mark, recent trade or alternative procedure.

**Pass 1** – Positions which pass the dollar difference threshold based on the position’s IOSCO rating. These thresholds are set by Global Price Verification.

**Pass 2** – Positions which pass the price threshold (Tolerance) based on the instrument type. This test, which considers position size, is performed on all positions that fail the dollar difference threshold.

**Fail** – Positions which fail to pass either the dollar or price threshold test.

**Variance** – A formula populates the amount from the variance column for all positions flagged “Fail”.

**Longs** – Formula populates the value of all positions greater than 0.

**Shorts** - Formula populates the value of all positions less than 0.

**ABS mkt val of Ext. APriced** – Absolute Value of Long Market Value.

**ABS mkt val of Ext. Priced** – Absolute Value of Short Market Value.

**Pricing File Collateral Type** – An “If” statement is used to determine if the market value is less than \$ 1 million. These positions fall below scope and are identified as such. The remaining population is updated with the types from the Collateral Type BS File column.

**IOSCO** – Used to identify SFAS 157 Fair Value Hierarchy.

After these columns are updated the file is reviewed to ensure that all positions have been assigned a collateral type. By using the Profit Center, Trader, Issuer, Security Description and Tranche Type, as well as referencing Bloomberg and Gquest, missing collateral types are assigned.

To summarize, an Extract from Quest is downloaded and is built upon by incorporating additional data elements from Bloomberg as well as some formula columns. Once finalized, it is saved under the filename “Central File”. The Central File is used as the basis for other reports and processes performed by Product Control, including the Price Verification, the Balance Sheet Matrix, the Asset Watch List and various FAS disclosures. In order to maintain the integrity of the data, a copy of the Central File is pasted as a tab labeled “**Quest Extract**” in the price testing analysis or the “**Pricing File**”. The record count, total UPB and total Market Value are checked to ensure that all the data was copied from the Central File. The Pricing File contains the information resulting from the Price Verification Process.

The Pricing File is located in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** folder under the applicable year and month.

The positions are carved up based on the Pricing File Collateral Type column. A tab is created for each type they include:

**ABS Real Estate**  
**Agency CMO**  
**Prime**  
**Passthroughs**  
**Non-Prime**  
**NIM**  
**Residuals**  
**Servicing**  
**Whole Loans**  
**Futures**  
**Treasury**  
**Below Scope**

Summary and Control tabs are added to ensure that record count, total UPB and total Market Value reconcile to the Quest Extract tab. Additional tabs are created that include:

**Conclusions** – By type, explaining price verification conclusion reached Inventory - A chart showing priced inventory concentration  
**Credit Exposure** - Charts showing credit exposure by type  
**Tolerance Matrix** – Matrix used to look up price tolerance by type  
**Breakout** - Summation of IOSCO information used for Fair Value Disclosure.

The Price verification process begins at this point. The verification process for each type is described in detail in the Price Verification Process section of the P&P.

### **Reconciliation of Inventory**

In order to ensure that all positions have been included in the Price Verification process, the positions obtained through the Quest Extract are reconciled to two other systems. These include the Global Funding System (GFS) and Whole Loan Tracking.

### **Global Funding System to Gquest**

Global Funding System (referred to as “GFS”) is Lehman’s balance sheet technology system. Its purpose is to serve as an application to provide a strategic global platform for warehousing and reporting Lehman’s financial resources. It incorporates a consolidation of accounts, positions, and trade level information. The GFS system contains four modules to provide a single source of data required to determine Lehman’s funding needs, identified as 1) Carry – Allocation of funding costs, 2) Sources and Uses – Allocation of secured financing and identification of unsecured funding requirements, 3) Balance Sheet - Statement of capital resources, and, 4) Cash Capital – Calculation and allocation of capital requirements. At each Valuation Date item 3, the Balance Sheet, is reconciled to the Quest Extract.

Using the reporting tool within GFS, a Custom Balance Sheet Positions report is run listing the position detail contained in GFS as of the valuation date. Custom filters are used to ensure that FID Product Control Mortgage Trading positions are captured. The report is run to Excel and is saved as a tab in the **GFS to Gquest Reconciliation file** labeled GFS Download. Certain positions are reflected in GFS that have not yet settled and would not be reflected in Gquest. These include “When Issued” and “Whole Loan Pending”. These positions are carved out and saved in a separate tab labeled “Removed Items”. A formula is added to the download tab that will “Link” the Acct\_Nbr and Sec\_Nbr fields. The data contained in the extract is lot level detail; the “Link” is used as an advanced filter to summarize the data in the “GFS Download Summarized Data” tab of the file. A copy of the Central File is pasted as an additional tab and is labeled Gquest Source Data. The record count, total UPB and total Market Value are checked to ensure that all the data was copied from the Central File. Using the “Link” a reconciliation of position amount and market value is performed between the Gquest Source Data and the GFS Download Summarized Data. Positions that are not in GFS are identified and saved in a separate tab identified as such.

It is important to recognize that GFS is a balance sheet system and Gquest is a P&L tracking system. The reconciliation between the two will normally have variances due to the timing of when mark to market information is updated in GFS. These variances can be attributable to system timing differences from collateral paydown and bond notional writedowns. In addition to the timing, the majority of the variances between the two systems relate to the following:

**Balance Sheet Gross Ups** are reflected in GFS and not in Gquest.

**Netted Hedges** (referred to as “Cusip Netting”) are reflected in GFS and not in Gquest.

**Forward purchases** (referred to as “TBA’s”) and Commitments are reflected in Gquest and not GFS because they are essentially options to purchase and have the same characteristics as a derivative.

A sample may be seen in **Appendix II** and can be found in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** folder under the applicable year and month.

**Whole Loan Tracking to Gquest**

Whole Loan Tracking is Lehman's loan tracking system referred to as ("WLT"). Using the reporting tool within WLT, an inventory download is run containing the detail of each loan on Lehman's balance sheet as of the specified valuation date. Each loan is part of a loan pool identified by MTS code. Since the data contained in Gquest reports all whole loans bucketed by MTS code the downloaded loan detail must be rolled up by MTS code. This process is facilitated by using MS Access. After the WLT detail is rolled up by MTS a file is created that contains the MTS Code and a total of the current balance of the loans contained in each. This data is saved as a tab labeled "WLT Data" in the "**Whole Loan Reconciliation**" file. The whole loan data is copied from the central file into a tab labeled "(Month Name) Rec". The record count, total UPB and total Market Value for the whole loan population are checked to ensure that all the whole loan data was copied from the Central File. Using the Vlookup function reconciliation is performed comparing the Gquest data to the WHL data. The total current balance of each MTS code is compared and a column is added identifying the Variance. Each variance is identified and a Comment column is added where each variance is explained.

In addition to the timing differences, the majority of the discrepancies between the two systems relate to Froward Purchases/Sales, HUD/Joint Venture, and Pipelines.

**Forward Purchases/Sales** are reflected in Gquest but not in WLT until settled. These positions are identified with MTYS codes that begin with "WH".

**HUD/ Joint Venture** activity is reflected in Gquest and in WLT.

**Pipeline information** is reflected in Gquest and not contained in WLT.

A sample of the **Whole Loan Reconciliation** may be seen in **Appendix II** and can be found in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month under the **Whole Loan** folder.

## 11.1. Whole Loans

### Deal P&L Sheets

Price transparency does not exist for whole loans. The exit strategy of the whole loans purchased by Lehman is securitization. Stemming from this concept, the whole loans in inventory are price verified based off the PnL on the last securitization of a particular class of whole loan collateral. This methodology is an alternative pricing methodology and is referred to as the “Mock Securitization Model”.

During the last week of the month the valuation team begins to compile the Deal P&L Sheets for those deals that are closing for the month. The Deal P&L Sheets are utilized by the P&L Management group as an aid in the reconciliation of flashed deal P&L and are incorporated into the price verification process for whole loans. The compilation of the Deal P&L Sheets ensures that the exit spread that will be utilized for whole loan testing is an accurate measure, since it has been validated by a variety of support systems and to the firm’s books and records.

The Deal P&L sheets consist of a description of the securities created with relevant information such as tranche type, current face, market price, unpaid balance (UPB), number of loans in deal, weighted average coupon, cost of loans, trapped interest and any other expenses. Since the Deal Sheets are utilized to reconcile recorded reserves and PnL flashed, transaction specific deal information is traced back to Whole Loan Tracking, MTS and Gquest. The tracing of this data is evidenced by pasting print screens from appropriate systems into the Deal P&L Sheets. These print screens include, a copy of the wire into the issuing trust of the Whole Loan, copies of MTS trade detail of any securities that sold prior to closing as support of the market price and copies of inventory mark as per Gquest for those tranches without a sale price.

A sample of the **Deal P& L Sheets** may be seen in **Appendix III** and can be found listed by deal name in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month under the **Whole Loan** folder.

In addition to the information listed above, a copy of the mid office deal P&L estimate work sheet (referred to as “Mid-Office Sheet”) is also pasted into the Deal P&L Sheet. A sample of the **Mid-Office Sheet Appendix III** and can be found in the **J:\ Mbs-mid on 'leh\corp\groups\fin.\DEALS** in the applicable year and month.

### Price Testing

In order to utilize the Mock Securitization model the whole loan population needs to be split into the various whole loan types. This is facilitated by pasting the “**Whole Loan**” tab of the “**Pricing File**” into a new file called “**Whole Loan Population**”. The record count, total UPB and total Market Value of the whole loan population are checked to ensure that all the whole loan data was copied from the Pricing File. Not all the fields from the Pricing file are required for this testing. The fields maintained in the Whole Loan population file include:

Control No.	Mat_dt
Profit_Center	Position
Trader	ABS Positions
Acct_No	Inv Price
Sec-Nbr	Mkt value
Issuer	Abs Mkt Val
Coupon	

By utilizing the profit center and trader information each position is assigned a type based on the categories listed below. Each type is tested based on the applicable Shelf Names indicated for each.

Category	Securitization Shelf Name
FHA/VA	SASCO Year - #RF
High LTV	SASCO Year - #H
Home Express	-----discontinued securitization as exit-----
Neg Am – Negative Amortization	LXS Year - #N
Prime Fixed	LXS Year - #
Prime Hybrid Arms	SARM Year - #
Reverse Mortgage	SASCO Year – RM#
SBF – Small Business Finance	LBSBC Year - #
SBA Non-performing	-----not securitized-----
Scratch & Dent	SASCO Year – GEL#
Sub Prime	SAIL Year - #
Sub Prime Seconds	SAIL: Year - #S
Pipelines	variety of deal structures listed above

Each collateral class has a specific deal structure or Lehman shelf securitization. Year indicates the calendar year of issuance and # indicates the chronological order of deal issued off that shelf. All categories listed above except for SBA Non-performing and Home Express are tested via the Mock Securitization model. No recent securitization exists for SBA so the average inventory market value is used. Since the Home Express product line has been discontinued, a price is calculated using the FNMA 30 year as a benchmark.

Essential to the price verification of whole loans, is the categorization of its performance. A file containing loan level performance information for each MTS code is provided by Aurora Loan Servicing (ALS) and aging information is provided by the Business Support and Analysis group. This information is divided into three categories, 1) legal status, 2) days delinquent, and 3) days aged. Legal status indicates if a loan is in bankruptcy, foreclosure or REO. This information is pasted as a tab labeled “MTS” into the Whole Loan Population file.

One final tab is created that is labeled “WAC from MTS”. It includes the MTS code and corresponding coupon for each. This is facilitated via an extract from Whole Loan Tracking. The extract is created by running the WAC By MTS report in the Whole Loan Tracking Reports section and downloading it to Excel.

A file for each type listed above is created and the Whole Loan Inventory and MTS data is pasted as a tab in each.

A “Summary” file is created linking the data from the spreadsheet for each type to ensure that the total UPB and Market Value of the whole loan population were included in the tested analysis.

The Whole Loan Population file, the individual files for each type and the Summary file may be viewed in **Appendix IV** and can be found in **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month under the **Whole Loan \ WL Testing** folder.

Not all whole loans meet the requirements of a securitization. In order to identify the whole loan inventory deemed securitizable, whole loans that can not be securitized must be identified. These loans include foreclosures, REO and any non-securitizable loans (delinquent loans or

loans aged more than 271 days). The VLookup function in Excel is utilized to populate the appropriate performance data from MTS to the positions in each whole loan type. The whole loans are then divided by legal status, performance, status and age.

Once this data has been updated algorithms in the Excel spreadsheet total the positions up into one of these categories and the loans are price tested as follows:

**Foreclosed** - Tested using the foreclosed value provided by ALS less REO expenses.

**REO** - Tested using the REO value provided by ALS less REO expenses.

**Non-Securitizable** – Tested by haircutting the “Estimated Market Price” (explained below) by the difference between 100 and the price of REO.

The **Securitizable** positions are price tested using the Mock Model. Based on the type of whole loans being tested, a copy of the applicable Deal PnL Sheet is pasted as a tab into each type file. Generally, the most recent securitization is utilized. For most this would translate into a transaction which closed in the prior month. Not all types are securitized every month. In some cases Deal PnL Sheets from securitizations that closed a year ago could be used. This is the best estimate available for testing.

The concept behind the Mock Model is to price test the positions utilizing the PnL from the last securitization and adjusting for the change in the **WAC** and **Duration** from the securitization date to valuation date (See Table 1 for an illustration of these calculations).

In order to calculate the WAC and Duration adjustments the Model is updated with the treasury rate and corresponding PV01 amount for the applicable valuation period. This information is obtained from the **USD\_Close\_Text1** spreadsheet that is e-mailed to FID NY Close from the Fixed Income - Interest Rate Products - Derivatives Trading Desk on a daily basis.

Where applicable, the “**FNMA 30Yr Hedge Ratio**” for 4.5, 5, 5.5, 6 and 6.5 coupons is updated. The hedge ratios are obtained by running the Fixed Rate TBA report from the Pricing Report section of the US MBS page found on LehmanLive.

These files may be viewed in **Appendix IV** and can be found saved in **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month under the **Whole Loan \ WL Testing** folder.

**The “Price Impact of WAC difference” is calculated as follows:**

The WAC from the Deal PnL Sheet is automatically updated to the file. A formula calculates the WAC of the Securitizable population. Some of the newer or repurchased positions may not have a coupon assigned or may be reflecting the teaser rate (blanks translate to a 0% and teaser rates are very low). Including these would skew the WAC. The population is analyzed and these positions are identified. Utilizing a Vlookup the information in the WAC from MTS tab is inserted to determine if a valid coupon has been reflected in MTS. Unless a coupon rate has been determined, the position will not be included in the WAC calculation.

Once the WAC has been calculated, the difference between the WAC from the Deal PnL Sheet and the WAC of the Securitizable population is calculated and expressed in basis points.

The basis point change in the WAC needs to be converted and expressed into a price. Based on the hedge ratios that were entered, formulas in the file calculate the Slope, Y Intercept and Interpolated Hedge ratio. It is then converted to a dollar amount by multiplying it by the PV01 amount.

Once all these components are determined, the Price Impact of WAC difference is calculated as follows:

$$(PV01 * \text{Interpolated Hedge ratio}) * (\text{WAC} - \text{Difference} / 100)$$

The “**Interest rate Duration Adjustment**” is calculated as follows:

The applicable treasury rate for the current month-end has already been entered. The prior month-end rate is updated by referencing the previous month-end **USD\_Close\_Text1** file. The change in the two rates is calculated and expressed in basis points. (NOTE: If a securitization was done during the valuation period no duration adjustment is necessary).

The Price Adjustment due to Interest Rate Movement is calculated and expressed in basis points as follows:

$$(PV01) * (\text{Change in Note} / 100)$$

Adjustment Calculations				
<u>Price Impact of WAC difference</u>			<u>Notes:</u>	
7.39	WAC - Mock Securitization	(a)		
6.76	WAC - Securitizable WL population			**WL WAC is less than Mock Sec. WAC**
(63)	WAC - Difference (in bps)			
766	10YR PV01			
0.40	Interpolated HR of FNMA 30yr			
306	(10yr PV01 * HR)			HR convert to hedge amount
(1.94)	Price Adjustment due to WAC difference (in bps)			
<u>Interest Rate Duration Adjustment</u>			<u>Notes:</u>	
5.14	10YR note yield 6/30/2006			Settle Date
5.14	10YR note yield 6/30/2006			Test Date
0	Change in 10YR note yield (in bps)			
1	HR			
0.00	Price Adjustment due to Interest Rate movement (in bps)			
<u>FNMA 30Yr Hedge Ratio</u>			<u>Notes:</u>	
Rate	HR			
4.5		0.75000	-0.164	Slope
5.0		0.69000	1.508	Y Intercept

5.5	0.64000	0.39909	Interpolated Hedge Ratio
6.0	0.53000		
6.5	0.42000		

(Table 1)

The Adjusted Mock Exit Price of the bonds is calculated by taking the Mock Exit Price (the exit price of the prior securitization) and adjusting for the WAC and Duration calculated above (See Table 2 for an illustration of these calculations).

The Gain/Loss on Securitizable Inventory is calculated and expressed in basis points by taking the difference between the proceeds (Bonds at Mock Exit Price) less expenses (Securitizable Inventory

The “Estimated Market Price” of the population is then calculated by adjusting the “Original Securitizable WL Population Price” by Variance between the Pnl on the last deal and the current deal divided by 100.

Price testing is then performed by taking the difference between the inventory value of the Securitizable positions less the Estimated Market Price. The difference between the two is then expressed as a percentage change over the total inventory value.

<b>Exit Price Adjustments &amp; Market Data – PRIME FIXED</b>
---

Mock Sec Exit Price (Exit MV / Current Face)	100.97
Price Impact of WAC difference	(1.94)
Duration Adjustment	0.00
Adjusted Mock Sec Exit Price	99.03
Estimated Market Price	99.53
Original Securitizable WL population Price	100.04

Gain/Loss on Last Deal - (in Bps)	(53)
Gain/Loss on Securitizable Inventory - (in Bps)	(105)
Variance - (in Bps)	(52)

<b>Securitizable Inventory</b>	
UPB - Securitizable Inventory	2,581,958,250
Securitizable Inventory Value	2,583,100,544
Price Tested Market Value	2,569,719,511
<b>Variance for Securitized Population</b>	<b>(13,381,033)</b>

PASS

(.52 %)

(Table 2)

Given the collateral type and exit strategy of the whole loans, the tolerance level has been set at the default amount of plus or minus 3.0 percent variance. In some instances the testing of whole loans may exceed this tolerance magnitude.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

## **11.2. Pipelines**

Pipeline positions represent open commitments on Lehman's books. There are generally two positions open and reflected in Gquest; Prime Hybrid ARM and Prime Fixed. On a monthly basis Product Control obtains a copy of the Excel file that the Trader uses to mark the commitments to market. The file lists the prices of the various products included in the pipeline as well as, the WAC, Spread and coupon used to calculate the prices. Product Control uses the WAC and spread provided by the Trader and re-calculates the market value utilizing the "Quick Yield Analysis" page BC35 in Bloomberg. The re-calculated prices are reviewed to ensure they are reasonable compared to the valuation provided by the Trader. Print screens from Bloomberg are saved in the file as support.

The price tested performed is by comparing the prices calculated in Bloomberg versus those provided by the Trader. A resolution of reasonability is concluded upon. Since these pipeline amounts do not represent deals that have closed, we are estimating mortgage pool prices based on current market conditions.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

A sample of the **Pipeline pricing report** may be seen in **Appendix V** and can be found in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month.

### **11.3. Pass-Throughs**

This asset class generally is made up of Fannie Mae and Freddie Mac certificates. Since price transparency exists for this asset class the majority of the positions are price verified utilizing Bloomberg prices and roll forward values. The Gquest extract includes a small population of prices from EJV, IDC, Extel and ABSG.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

**The price tolerance for Passthroughs is .125 and Passthrough Arms is .25.**

Not all positions may have third party prices available at the time the extract was downloaded from Gquest. These positions would be flagged NPA and are reviewed and researched. Pricing for these positions could not be downloaded or obtained from Lehman’s Enterprise Security Master (ESM) database. In the event that an external price is not available via a third party vendor, a Bloomberg download is performed for the applicable positions.

Forward purchases or commitments identified as “TBA’s” are priced in Inventory at the forward settle date price. To price verify these positions a spreadsheet from LehmanLive trading activity is utilized for a price quote, or roll forward price. In addition roll forward prices are downloaded from Bloomberg based on Agency type and security WAC.

Once all the pricing that is available has been updated, the testing results are categorized and are reflected in the “Flag” column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have “Failed” the testing.

Almost 100 % of Pass-Through Deals are price tested using third party pricing

Once the verification is completed, the results of the testing are categorized and are reflected in the “Flag” column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have “Failed” the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control’s conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

#### **11.4. Agency CMO**

Agency CMOs are generally bonds backed by Fannie Mae and other government agencies. Positions are within a variety of profit centers and could include various types of CMO tranches. Since price transparency exists for this asset class the majority of the positions are price verified utilizing third party prices. The Gquest extract includes pricing from EJV, IDC, Extel and ABSG.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

#### **Tolerance for Agency CMO is based on the Tolerance Matrix**

Since this asset class includes many different tranche types, individual price tolerances for each have been determined and are used for the Dollar Spread Test. There is a matrix within the Pricing File in which the algorithm looks up the type of security being tested and reports the

Tolerance dollar amount for that type of security by its identifier. The Identifiers are reported from Bloomberg in the Pricing File. The main types of Identifiers are as follows:

1)	Interest Only	IO
2)	Principal Only	PO
3)	Inverse	INV
4)	Zero-Coupon	Z
5)	Subordinate	SUB
6)	Mezzanine	MEZ
7)	Supplemental	SUP

The Tolerance Matrix is broken up further by Agency, Prime and Non-Prime. Support for the magnitude of the tolerance Matrix amounts are revisited quarterly. The amounts consist of averages of the Third Party Prices from the prior quarter inventory. If a position is not flagged with one of the identifiers listed above, the default amount of plus or minus 1.5 is utilized.

Not all positions may have third party price available at the time the extract was downloaded from Gquest. These positions would be flagged NPA and are reviewed and researched. The research performed includes determining if there were any recent trade prices. If none are available, a yield table analysis generated in Intex Desktop is run. Each assumption input in IntexDesktop is validated by information provided in the Intex Desktop database or collateral performance parameters in Bloomberg. In some instances, the remittance report is utilized in support of collateral performance pricing assumptions. Other assumptions such as discount rate are substantiated by third party publications, or any other data source, including rates extracted from trader's sales of similar positions.

In order to run the yield tables CPR and CDR assumptions must be entered into Intex. The determination is made as follows:

#### Determination of CPR Assumptions

- Our CPR assumption is a best estimate of the actual prepayment characteristics of the collateral.
- 1 month, 3 month, 6 month, and 12 month CPR's are provided by Intex and Bloomberg
- If a CPR from Intex looks unusual then we cross reference that data with Bloomberg, making sure the integrity of the data is intact.
- We look at every duration of CPR when selecting which variable to use. This enables us to identify which time periods could have experienced an out of the ordinary spike or dip in the actual prepayment speeds. This allows us to more accurately project the actual prepayment risk of the bond.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc.

#### Determination of CDR Assumptions

- Our loss assumptions are pooled together from Intex and Bloomberg. We analyze delinquency information from Intex along with collateral performance data from Bloomberg.

- We use this data in conjunction with collateral composition (Prime, Subprime, and Home Equity) and tranche seniority when determining how losses will affect the value of each bond.
- Additionally, we also incorporate REO and foreclosure information from Intex and Bloomberg in order to accurately reflect losses flowing through to each bond.
- We also analyze past performance of similar deals, making sure the collateral we are analyzing follows past performance trends.

Almost 100 % of Agency CMO Deals are price tested using third party pricing

Once the verification is completed, the results of the testing are categorized and are reflected in the “Flag” column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have “Failed” the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control’s conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

#### **11.5. ABS Real Estate**

ABS Real Estate are generally bonds collateralized by home equity collateral in the ABS Secondary – Real Estate/HEQ profit center. Since price transparency exists for this asset class the majority of the positions are price verified utilizing third party prices. The Gquest extract includes pricing from EJV, IDC, Extel and ABSG.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ Dollar Value Test - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ Price Percentage Test – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

## **Tolerance for ABS Real Estate is based on the Tolerance Matrix**

Since this asset class includes many different tranche types, individual price tolerances for each have been determined and are used for the Dollar Spread Test. There is a matrix within the Pricing File in which the algorithm looks up the type of security being tested and reports the Tolerance dollar amount for that type of security by its identifier. The Identifiers are reported from Bloomberg in the Pricing File. The main types of Identifiers are as follows:

1)	Interest Only	IO
2)	Principal Only	PO
3)	Inverse	INV
4)	Zero-Coupon	Z
5)	Subordinate	SUB
6)	Mezzanine	MEZ
7)	Supplemental	SUP

The Tolerance Matrix is broken up further by Agency, Prime and Non-Prime. Support for the magnitude of the tolerance Matrix amounts are revisited quarterly. The amounts consist of averages of the Third Party Prices from the prior quarter inventory. If a position is not flagged with one of the identifiers listed above, the default amount of plus or minus 1.5 is utilized.

Not all positions may have third party price available at the time the extract was downloaded from Gquest. These positions would be flagged NPA and are reviewed and researched. The research performed includes determining if there were any recent trade prices. In some instances where the position is a AAA rated, floating rate position at a senior tranche level within its deal structure, a value of par is input into the system and it is noted in Comment/Trade Date column.

For the remaining unpriced, a yield table analysis generated in Intex Desktop is run. Each assumption input in IntexDesktop is validated by information provided in IntexDesktop database or collateral performance parameters in Bloomberg. In some instances, the remittance report is utilized in support of collateral performance pricing assumptions. Other assumptions such as discount rate are substantiated by third party publications, or any other data source, including rates extracted from trader's sales of similar position order to run the yield tables CPR and CDR assumptions must be entered into Intex. The determination is made as follows:

### Determination of CPR Assumptions

- Our CPR assumption is a best estimate of the actual prepayment characteristics of the collateral.
- 1 month, 3 month, 6 month, and 12 month CPR's are provided by Intex and Bloomberg
- If a CPR from Intex looks unusual then we cross reference that data with Bloomberg, making sure the integrity of the data is intact.
- We look at every duration of CPR when selecting which variable to use. This enables us to identify which time periods could have experienced an out of the ordinary spike or dip in the actual prepayment speeds. This allows us to more accurately project the actual prepayment risk of the bond.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc.

### Determination of CDR Assumptions

- Our loss assumptions are pooled together from Intex and Bloomberg. We analyze delinquency information from Intex along with collateral performance data from Bloomberg.
- We use this data in conjunction with collateral composition (Prime, Subprime, and Home Equity) and tranche seniority when determining how losses will affect the value of each bond.
- Additionally, we also incorporate REO and foreclosure information from Intex and Bloomberg in order to accurately reflect losses flowing through to each bond.
- We also analyze past performance of similar deals, making sure the collateral we are analyzing follows past performance trends.

Almost 100 % of ABS Real Estate Deals are price tested using third party pricing

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

#### **11.6. Prime**

Prime deals are predominantly bonds backed by prime mortgage collateral. Profit centers are mainly Hybrids Secondary, Fixed Rate New Issue and Short ARM-MTA New Issue. Positions in this product line are generally Lehman shelf name bonds with collateral purchased from ALS. Price transparency does not always exist for this asset class. These are positions are tested by using a combination of Third Party Prices (from EJV, IDC, Extel, ABSG), recent trade activity and Intex Modeling.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

**Tolerance for Prime is based on the Tolerance Matrix**

Since this asset class includes many different tranche types, individual price tolerances for each have been determined and are used for the Dollar Spread Test. There is a matrix within the Pricing File in which the algorithm looks up the type of security being tested and reports the Tolerance dollar amount for that type of security by its identifier. The Identifiers are reported from Bloomberg in the Pricing File. The main types of Identifiers are as follows:

- |    |                |     |
|----|----------------|-----|
| 1) | Interest Only  | IO  |
| 2) | Principal Only | PO  |
| 3) | Inverse        | INV |
| 4) | Zero-Coupon    | Z   |
| 5) | Subordinate    | SUB |
| 6) | Mezzanine      | MEZ |
| 7) | Supplemental   | SUP |

The Tolerance Matrix is broken up further by Agency, Prime and Non-Prime. Support for the magnitude of the tolerance Matrix amounts are revisited quarterly. The amounts consist of averages of the Third Party Prices from the prior quarter inventory. If a position is not flagged with one of the identifiers listed above, the default amount of plus or minus 1.5 is utilized.

Not all positions may have third party price available at the time the extract was downloaded from Gquest. These positions would be flagged NPA and are reviewed and researched. In some instances where the position is a AAA rated, floating rate position at a senior tranche level within its deal structure, a value of par is input into the system, and a comment noted in the Comment/Trade Date column. For the remaining unpriced, a yield table analysis generated in Intex Desktop is run. Each assumption input in IntexDesktop is validated by information provided in IntexDesktop database or collateral performance parameters in Bloomberg. In some instances, the remittance report is utilized in support of collateral performance pricing assumptions. Other assumptions such as discount rate are substantiated by third party publications, or any other data source, including rates extracted from trader’s sales of similar position order to run the yield tables CPR and CDR assumptions must be entered into Intex. The determination is made as follows:

### Determination of CPR Assumptions

- Our CPR assumption is a best estimate of the actual prepayment characteristics of the collateral.
- 1 month, 3 month, 6 month, and 12 month CPR's are provided by Intex and Bloomberg
- If a CPR from Intex looks unusual then we cross reference that data with Bloomberg, making sure the integrity of the data is intact.
- We look at every duration of CPR when selecting which variable to use. This enables us to identify which time periods could have experienced an out of the ordinary spike or dip in the actual prepayment speeds. This allows us to more accurately project the actual prepayment risk of the bond.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc.

### Determination of CDR Assumptions

- Our loss assumptions are pooled together from Intex and Bloomberg. We analyze delinquency information from Intex along with collateral performance data from Bloomberg.
- We use this data in conjunction with collateral composition (Prime, Subprime, and Home Equity) and tranche seniority when determining how losses will affect the value of each bond.
- Additionally, we also incorporate REO and foreclosure information from Intex and Bloomberg in order to accurately reflect losses flowing through to each bond.
- We also analyze past performance of similar deals, making sure the collateral we are analyzing follows past performance trends.

Approximately 60% of the Prime Deals are price tested using recent trade prices, priced at par due to their AAA Senior Floating rate Par or, using Intex. The remaining 40% is tested using third party prices.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

## 11.7. Non Prime

Non Prime contains positions from the profit centers of Subprime Secondary and Subprime Second Lien. Most collateral consists of Alt-A borrowers. These positions are mostly Lehman shelf name securitizations as well as positions purchased from a variety of loan originators and other investment banks that contain collateral characteristics of Alt A loans. Price transparency does not always exist for this asset class. These positions are tested by using a combination of Third Party Prices (from EJV, IDC, Extel, ABSG), recent trade activity and Intex Modeling.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

### **Tolerance for Non Prime is based on the Tolerance Matrix**

Since this asset class includes many different tranche types, individual price tolerances for each have been determined and are used for the Dollar Spread Test. There is a matrix within the Pricing File in which the algorithm looks up the type of security being tested and reports the Tolerance dollar amount for that type of security by its identifier. The Identifiers are reported from Bloomberg in the Pricing File. The main types of Identifiers are as follows:

- |                   |     |
|-------------------|-----|
| 1) Interest Only  | IO  |
| 2) Principal Only | PO  |
| 3) Inverse        | INV |
| 4) Zero-Coupon    | Z   |
| 5) Subordinate    | SUB |
| 6) Mezzanine      | MEZ |
| 7) Supplemental   | SUP |

The Tolerance Matrix is broken up further by Agency, Prime and Non-Prime. Support for the magnitude of the tolerance Matrix amounts are revisited quarterly. The amounts consist of averages of the Third Party Prices from the prior quarter inventory. If a position is not flagged with one of the identifiers listed above, the default amount of plus or minus 1.5 is utilized.

Not all positions may have third party price available at the time the extract was downloaded from Gquest. These positions would be flagged NPA and are reviewed and researched. In some instances where the position is a AAA rated, floating rate position at a senior tranche level within its deal structure, a value of par is input into the system, and a comment noted in the

Comment/Trade Date column. For the remaining unpriced, a yield table analysis generated in Intex Desktop is run. Each assumption input in IntexDesktop is validated by information provided in IntexDesktop database or collateral performance parameters in Bloomberg. In some instances, the remittance report is utilized in support of collateral performance pricing assumptions. Other assumptions such as discount rate are substantiated by third party publications, or any other data source, including rates extracted from trader's sales of similar position order to run the yield tables CPR and CDR assumptions must be entered into Intex. The determination is made as follows:

#### Determination of CPR Assumptions

- Our CPR assumption is a best estimate of the actual prepayment characteristics of the collateral.
- 1 month, 3 month, 6 month, and 12 month CPR's are provided by Intex and Bloomberg
- If a CPR from Intex looks unusual then we cross reference that data with Bloomberg, making sure the integrity of the data is intact.
- We look at every duration of CPR when selecting which variable to use. This enables us to identify which time periods could have experienced an out of the ordinary spike or dip in the actual prepayment speeds. This allows us to more accurately project the actual prepayment risk of the bond.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc.

#### Determination of CDR Assumptions

- Our loss assumptions are pooled together from Intex and Bloomberg. We analyze delinquency information from Intex along with collateral performance data from Bloomberg.
- We use this data in conjunction with collateral composition (Prime, Subprime, and Home Equity) and tranche seniority when determining how losses will affect the value of each bond.
- Additionally, we also incorporate REO and foreclosure information from Intex and Bloomberg in order to accurately reflect losses flowing through to each bond.
- We also analyze past performance of similar deals, making sure the collateral we are analyzing follows past performance trends.

Approximately 60% of the Prime Deals are price tested using recent trade prices, priced at par due to their AAA Senior Floating rate Par or, using Intex. The remaining 40% is tested using third party prices.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

#### **11.8. NIM**

NIM's (Net Interest Margin bonds) are securitizations of the excess spread tranche and usually the prepayment penalty tranche of a non-passthrough deal structure. Price transparency does not exist for NIM's and Third Party Prices rarely exist. They are price verified by using a yield table analysis. Generally, the first tranche of a NIM, typically identified as the A tranche is usually sold at issuance. The B tranche and sometimes a C tranche are usually held in Inventory. The NIM structure is unique in that the deals are usually private placements and are structured with a priority of payments to satisfy the first tranche. The remaining tranches usually do not receive payments until the first tranche has paid down. Therefore, the values of the B and C tranches held in inventory are generally low. The C tranche typically is valued at zero until it starts to receive cash flow.

The price verification of the NIM bonds is performed by using both the NIM Static Model and the NIM OAS Model. The average of the prices calculated by these two models is used for testing purposes.

##### **NIM Static Model:**

In order to obtain the investment grade ratings for the NIM's, rating agencies have required a projected prepayment vector and projected loss vector. These vectors are obtained from research and the business. A performance file (referred to as "NIM Performance File") is created during the testing phase. It includes the projected prepayment and loss vectors and the actual performance of the NIM as recorded from LehmanLive Research. Depending upon the actual performance, the projected curves are stressed for valuation. LehmanLive research reports contain actual performance statistics of the NIM deals Lehman has issued. It primarily contains the most sensitive characteristics that impact the NIM's value, losses and prepayments. A performance file (referred to as "NIM Performance File") is created during the testing phase. It includes the projected prepayment and loss vectors and the actual performance of the NIM as recorded from LehmanLive Research. Depending upon the actual performance, the projected curves are stressed for valuation.

The projected vectors are inputted into Intex Desktop utilizing the Ramp Editor function. The stressing is applied by inserting the expected stress as a percentage of the projected vector in the scenarios tool. This will run a yield table analysis of the NIM in Intex Desktop utilizing the projected vectors as required of the rating agencies, stressed to reflect actual performance. The results are saved in the support files as if it were any other bond price verified using Intex Desktop yield analysis.

##### **NIM OAS:**

LehmanLive has a tool in the single security analysis function capable of valuing NIM's. The Single Security Analysis allows you to analyze securities. All the pertinent and material information needed to evaluate and calculate the risk measures of the security. The interactive calculators give you real-time option-adjusted spreads and durations along with other risk measures using Lehman Brother's industry-leading Prepayment, Default, and Term Structure Models. The calculator also returns yield tables and cash flows and provides pass-throughs prepayment analysis. The OAS model also takes into account a housing appreciation vector that is static and does not change over time. The significance of this curve affects the prepayment vector created in the modeling. The calculations resulting from this model could sometimes differ significantly from the NIM Static.

The files may be viewed in **Appendix VI** and can be found saved in **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month under the \NIM folder.

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as "NPA", if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as "Pass 1" as the variance is within the firm's key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as "Fail", if false, then flag as "Pass2"

**Since NIM deals are generally subordinate and have non-prime collateral, the tolerance for NIM is based off the Non-Prime SUB identifier in the tolerance matrix and equals 4.5.**

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

## 11.9. Residuals

Residual positions are made up of several different types that include: X-Class (excess spread class tranches or economic residual), non-economic residuals and prepayment penalty tranches. Not all positions held have significant value. Primarily, securitizations that are not pass throughs, contain an excess spread embedded in the structure. Lehman has developed a structure in which to securitize the excess spread class of a structure and form a Net Interest Margin securitization.

The bulk of market value within the Residuals category on Lehman's balance sheet is related to the X-Class. Non-economic residuals are generally the tax liability of the entire structure. This tax liability is based off the phantom income that is generated when the collateral amortized faster than the bonds early in the life of the structure. These positions have no value and are in fact a liability. Lehman would have to pay an entity to take them off its balance sheet. Non-economic residuals have no economic value and are classified as Below Scope for price verification purposes. In general, Prepayment penalty tranches have no value and are also classified as Below Scope for price verification purposes. In many cases however, these positions are part of a NIM securitization.

Price transparency does not exist for residuals and Third Party Prices rarely exist. This asset class is price verified utilizing the Intex Desktop yield analysis. The population is tested by generating a yield table analysis. Each assumption input in Intex Desktop is validated by information provided in Intex Desktop database or collateral performance parameters in Bloomberg. In some instances, the remittance report is utilized in support of collateral performance and pricing assumptions. Other assumptions such as discount rate are substantiated by third party publications, or any other data source, including rates extracted from trader's sales of similar position. In some instances, a residual may be placed into a NIM shortly after being issued. These positions are price tested by utilizing the value at which the residual was transferred into the NIM. In order to run the yield tables CPR and CDR assumptions must be entered into Intex. The determination is made as follows:

### Determination of CPR Assumptions

- Our CPR assumption is a best estimate of the actual prepayment characteristics of the collateral.
- 1 month, 3 month, 6 month, and 12 month CPR's are provided by Intex and Bloomberg
- If a CPR from Intex looks unusual then we cross reference that data with Bloomberg, making sure the integrity of the data is intact.
- We look at every duration of CPR when selecting which variable to use. This enables us to identify which time periods could have experienced an out of the ordinary spike or dip in the actual prepayment speeds. This allows us to more accurately project the actual prepayment risk of the bond.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc.

### Determination of CDR Assumptions

- Our loss assumptions are pooled together from Intex and Bloomberg. We analyze delinquency information from Intex along with collateral performance data from Bloomberg.
- We use this data in conjunction with collateral composition (Prime, Subprime, and Home Equity) and tranche seniority when determining how losses will affect the value of each bond.
- Additionally, we also incorporate REO and foreclosure information from Intex and Bloomberg in order to accurately reflect losses flowing through to each bond.
- We also analyze past performance of similar deals, making sure the collateral we are analyzing follows past performance trends.
- When selecting prepayment speeds we will look at the collateral composition as well in order to determine whether the speeds identified fall in line with the corresponding lending characteristics; whether that be subprime, prime, etc...

Formulas built into the spreadsheet perform the price verification which includes the following tests:

- ✓ If Model Price column equals NCF, then flag as NPA.
- ✓ If Average External Price (including model price) is equal to zero, then flag as “NPA”, if not perform Dollar Value Test.
- ✓ **Dollar Value Test** - If the absolute value of the Variance column, (calculated by the difference of the Average External Price column and the Inventory Price column, divided by 100 and multiplied by the Position size column, or face value), is less than \$200,000, then flag as “Pass 1” as the variance is within the firm’s key threshold, if false then perform Price Percentage Test.
- ✓ **Price Percentage Test** – If the Tolerance column is less than the absolute value of the difference of the Inventory Price and the Average External Price, then flag as “Fail”, if false, then flag as “Pass2”

**The tolerance level for Residuals equals 5.0.**

Once the verification is completed, the results of the testing are categorized and are reflected in the “Flag” column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have “Failed” the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control’s conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

### **11.10. Treasuries**

Treasuries are generally used for hedging purposes. Since price transparency exists for this asset class all of the positions are price verified utilizing third party prices. The Gquest extract includes pricing from EJV, IDC, Extel and ABSG.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

### **11.11. Futures**

Futures within the mortgage trading ledgers are generally Euro dollar futures for hedging purposes. During the Gquest Extract phase, Third Party Prices are downloaded for each of the futures positions. Essentially price verification is already performed in the setting up stages of the process. Therefore, it is included in the price verification process of Mortgage Trading and not sent over to the IRP group for the purposes of convenience and certainty of positions tested.

Once the verification is completed, the results of the testing are categorized and are reflected in the "Flag" column of the Pricing File. Any remaining NPA positions will be reviewed and alternative testing could be determined. Research is performed for those positions that are deemed to have "Failed" the testing. The research performed includes ensuring that the third party mark is correct or that Product Control ran the appropriate yield table in Intex. Product Control will then contact the trader to discuss the pricing of the position and a determination will be made as to re-marking.

In the instances where the pricing variance is outside of the tolerable range the issue is raised to the Trader who owns the position. Generally speaking Trading and Product Control will review the different marks along with the methodologies and assumptions used to obtain. As a result of this discovery process Product Control can either revise its mark based on information the Trader has provided, withdraw his request for a remark (tolerances outside of the acceptable range are explained and footnoted in the WL Summary File), or request that the trader remark his position. If the Trader does not accept Product Control's conclusion that a position be remarked then the issue will be raised senior Product Control and Trading management.

### **11.12. Servicing Rights**

There are two types of servicing rights currently on Lehman's balance sheet consisting of Primary Servicing Rights and Sub-Serviced Servicing Rights. While a tab exists in the Pricing file for Servicing, it is only used to identify and reconcile the positions. The information from the Servicing tab of the Pricing file is pasted into a new file called "MM-DD-YY Servicing". A tab in this file labeled "Priced Inventory Final" totals up the Servicing Rights positions to ensure that the total UPB and Market Value was copied over correctly from the Pricing File. It can be found in **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** in the applicable year and month. This is where the price verification of the Servicing Rights positions is performed.

Servicing Rights are price tested using two methodologies:

#### **RAMP**

Lehman's Risk system called RAMP is used to price test most of the MSR positions. A file which lists the positions and calculated market value and price is downloaded from RAMP and pasted into the "RAMP by MTS" tab of the pricing file. The market price contained in the file is used to price test the positions.

#### **Alternative Methodology**

The following Alternative Methodology is used to price test those positions not modeled in RAMP:

These valuations for these positions is calculated based on the product of the economic servicing fee and a market derived bid multiple. Information on the economic servicing fee comes from data supplied by Aurora Loans Service. The bid multiple information comes from the MSR Valuation Report that can be found on Lehman Live Fixed Income US Mortgages Reports and Analytics for MSR Valuation (Current Coupon Servicing), this data located in the "Build Price Matrix" tab.

On a monthly basis, ALS provides a file that contains loan level information for all loans Primarily Serviced and Master Sub-serviced by ALS. This information is pasted into the "ALS Inventory" and "Master Serviced ALS Inventory" tabs of the Servicing file. Since the data provided to us is at the loan level, it is necessary to filter the data by the unique MTS code for each collateral type. Algorithms are built into the spreadsheet to calculate the percentage of loans that have a certain collateral type for each MTS code. (For example, if there are 5 Prime ARM seasoned loans (55.5%) and 4 Alt-A FRM new loans (44.5%) for MTS code B033, we can use the average to calculate the weighted average price for each MTS code.) The file also provides the economic servicing fee information from which we multiply the current principal balance to obtain the weighted average economic servicing fee for each loan in the data.

Algorithms in the Priced Inventory tab populate the weighted average economic servicing contained in the ALS Inventory tab and the bid multiples from the Ramp and Build Price Matrix tab. The price is a function of the servicing fee and the multiplier. (Note: the weighted average-price is used instead in this analysis for reasons described above).

The positions are then tested by using either the RAMP market price or a market price calculated by multiplying the weighted-average price and the current face (UPB) and then comparing it to the market value obtained from the desk to come up with the difference/variance in the final column.

The “Priced Inventory by Trader” tab totals up the positions and categorizes them by trader name. The totals for UPB, Trader Market Value and PC Market Value are reflected. Using this information, average “Desk Mark” and “PC Average Mark” is calculated. The two marks are compared using a +/-10% variance in price. A comments section reflects the Pass/Fail status and conclusion reached.

In the instance when the price verification has resulted in a Fail status, the details of the trader’s inventory are reviewed. The Fail could be a result of zero priced MSRs. The positions are reviewed to determine which ones are being carried at a zero value. A separate tab labeled “Supported Zero” is added to the Servicing file to reflect these positions. Each one is analyzed to determine if the zero value is correct. Servicing Rights could be carried at a zero value for many reasons. The serviced loans could be delinquent and/or non performing or, the deal is not cash flowing. They could also have been sold. Information is gathered to confirm the zero balance. Information is obtained from Middle Office to determine if any cash flow has been received. Discussions with traders are also conducted to get color on the deal and remittance statements are reviewed.

### **11.13. Principal Finance Residential – PFR**

The Principal Finance Residential business of Lehman lends money to external financial institutions such as mortgage originators. Lehman receives home equity loans as pledged collateral for revolving lines of credit. These transactions are given banking book treatment. Banking book positions are those whose material economic risk is illiquid and not hedge-able, valuation is not robust and accurate, and, the underlying risks are managed actively in accordance with risk limits and trading strategies. As a result they are not subject to mark-to-market price verification. However, from a risk and collateral value control perspective, the Valuation team maintains a monthly process to validate the pledged collateral balances and values as booked within the management systems. This process also identifies any need for a margin call.

Around the 20<sup>th</sup> business day of each month, the Product Control group receives a “Mortgage Lending Mark to Market” report from the Principal Finance Residential (PFR) business listing Home Equity credit facility positions. The file contains Collateral UPB, outstanding balances for each credit facility and the mark of the pledged collateral.

The Product Control team creates a “PFR Valuation” file based on the Mark report received from the PFR group. The information received from the PFR group is included in the valuation file as a separate tab labeled Mortgage Lending Mark Report. The file is located in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** directory under the applicable year and month. For each of the core lending business, the Valuation file shows the commitment amount, funded amount, Mark per research, UPB of collateral, as well as the Market value of the collateral. It is important to ensure that the funded amount be greater than the market value of the collateral.

In order to ensure that all positions have been included in the PFR Valuation file, the positions obtained from the PFR group are reconciled to the Warehouse Lending System. The Historical Margin Report is run from the Warehouse Lending System on LehmanLive. The report is pasted as a tab into the Reconciliation file.

Comparing the PFR report and the Margin Report the Total UPB and Total Collateral amounts are reconciled. In some instances these amount may not match. In most cases additional funding may have occurred which has not yet been reflected in the PFR Report. As a result, the Margin Report is run for additional days which may be prior to the month-end valuation date. There could also be facilities included on the Margin Report which are not part of the PFR positions. These issues are researched and an explanation as to why they are not included is provided for each. In most cases these positions are either not warehouse facilities or non-performing troubled loans in workout.

A file named "PFR Reconciliation" is created and saved in the **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** directory under the applicable year and month.

Once the positions have been reconciled, Product Control performs a price verification of the valuations provided by the PFR Businesspeople. The home equity loans pledged as collateral for the Lehman Brothers Bank entity are priced utilizing a model called HEILoanpricer. HEILoanpricer is a financial valuation tool approved by Risk Management and is accessed through the firm's remote Tocket system on LehmanLive. The HEILoan Pricer is a first lien model only. As a result only first liens are priced through the model. Second liens do not properly run through the model and would skew the price. Second lien mortgage loans default to the first lien mark for the collateral.

Along with the Mortgage lending Mark to Market report, the PFR business people provide Product Control with the batch files which were used to value the collateral and the Zero Volatility (ZV) Spread information for each facility. The batch files contain loan level details for each facility that can be loaded in the HEILoanpricer model to obtain the marks. The batch file for each facility is saved in **G:\Capital Markets\FID Control\Mortgage Trading\Pricing** directory under the applicable year and month in the **PFR** folder.

The HEILoanpricer is launched via the Tocket applications menu found on the Lehmanlive home page. Once launched, an excel spreadsheet will open. This is the HEILoanpricer. The batch files are loaded individually into the model. All of the loan information from the batch file is copied and pasted into the LoanPricer Model price tab (starting with the field LOAN ID). The applicable ZV spread information is input directly into the model spreadsheet. No other data should be changed or updated to the model. If any inappropriate data is changed the model will not run and could freeze. If this occurs the PC needs to be re-boot so that a new CITRIX session is established. Once the data is updated the model is run by selecting the LoanPricer pull down menu at the top of the screen. The Preferences tab should be updated with the valuation date and the Use Realized Rates box should be checked. The calculate button is selected and the model incorporates all the data inputs to calculate the final mark and generates a summary report (e.g. UPB, FICO, LTV, WAC, Yield, Avg Life).

The price verification is performed by calculating a market value of the collateral using the prices calculated in the HEILoanpricer. The prices are multiplied by the collateral UPB and compared to the Mark received from the PRF business people. The testing performed ensures that the collateral balances are greater than the market values generated by Product Control.

The majority of positions tested generally have greater value of collateral pledged than funded loan balance of the credit facility. The difference provides a conservative cushion in the event the collateral value changes adversely. In the instance that the collateral value pledged equals or falls short of the funded balance, a discussion with the business is warranted. Values and amounts are reviewed a second time. If the results are similar, then a margin call is appropriate.

Discovery of such instances is the sole purpose of this exercise. Product Control monitors the collateral values.

## 12. Muni

The Product Control group performs price verification procedures in accordance with the following document. These procedures will be performed on a monthly basis, in order to ensure that the Firm's inventory is marked to fair market value. This document will apply towards Municipal Bonds Cash and Municipal Derivative Products. 100% of the Business' Inventory will be considered for Price Verification.

### Methodology:

- Inventory will be sourced from (Quest) for Cash products and (Iris) for derivative products. Cash product market value will be tied to Quest for population completeness evidenced by a reconciliation sheet on EXCEL. Population completeness for IRIS risk is ensured through Product Controls predictive p&l process and daily risk reporting. This is evidenced by our predictive p&l process which is compared to actual p&l results as well as our risk reporting spreadsheet that explains daily risk movement.
- With the exception of those positions that require alternative analytical procedures, 100% of cash positions at least (\$1M) or greater market value for cash products will be verified monthly.
- In general, for those positions that can only be priced through alternative analytical procedures, 100% of positions greater than (\$5m) for cash products and (\$10k) for derivative products will be verified within each reporting quarter or whenever external reports are produced and become available. Specifically, with regard to Municipal Structured Product transactions that involve real estate risk, Product Control will verify & review externally obtained monthly data that pertains to the underlying position cash flows, or collateral. When necessary, Municipal Product Control will collaborate with Real Estate Product Control and the Principal Transactions Group to obtain their assessment of potential impairment of the underlying real estate.
- Product Controller will follow the Inventory Pricing Hierarchy as set out below:
  - Cash Products:
    - Independent Market Quotes. This can include (Bloomberg, IDC, EJV, Other Broker Dealers, etc...)
    - Alternative Analytical Procedures
      - Prior Trades/Last Trade
      - Benchmarking within 1.Sector/Region, 2.Credit rating
      - Variance analysis as explained below
      - Real Estate asset analysis – PTG Portfolio Only
  - Derivative Products
    - Independent Market Quotes. This can include (Bloomberg, IDC, EJV, Eurobrokers, Tullett, Telerate, Other broker dealers, etc...)
    - Alternative Analytical Procedure
      - Model Spread Analysis
  - Documentation will include percentage priced vs. each source

### Variations

- Any variance over (\$300K for level 2 positions and \$500K for level 2 rib products) for cash products and over (\$1mm) for derivative exposures will be documented and considered for adjustment.
- Product Controller is required to research all potential adjustments.
- Further Research will include, but not be limited to:
  - Sourcing various external quotes
  - Industry practice
  - Lot size/ concentration
  - Discussion with trader

- Fundamental research
- Examination of trades executed in the market
- Communication with external brokers
- Product Controller will document all adjustments, or rationale behind the decision not to adjust a documented variance.

#### Escalation and Review

- Production Control conducts monthly price testing and resolves variances with individual traders. Unresolved Issues will be brought to the attention of Senior Product Controller, and Business Head.
- Final Price Verification Document will be reviewed by Senior Product Controller on a monthly basis which is to be completed by the 12<sup>th</sup> day of the new month.

All documentation will be retained in accordance to the firms' retention policy.

## **Valuation Adjustments by BPM0: Fixed Income (ASIA)**

### **Introduction and Policy Summary**

Price Testing is a detailed process to ensure that all material valuation risks are validated. The policy addresses the scope, method, reporting and application of price testing.

### **Responsibilities**

Product Control is responsible for the following:

- Price testing the front office valuations of risk/positions
- Ensuring testing methodologies are valid for the positions/risks being price tested
- Ensuring that an adequate level of price testing coverage is maintained on material positions/risks
- Reporting of price testing results with Finance management and Business management
- Escalation of material price testing variances to Finance management and Business management

#### A. Scope of Price Testing

Price Testing is performed on the material inventory and risk of the trading division. Inventory and risk selected for price testing should be consistent to the inventory and risk selected for P&L calculations. Positions that are grossed up for accounting consolidation purposes are excluded from price testing.

#### B. Price Testing Methodology

Appropriate price testing methodologies to be employed include external levels, transaction prices, benchmarking and alternative procedures. Price testing methodologies employed should be the best available within the constraints of access to market data and time available to perform price testing including alternative procedures.

#### C. Frequency

Price testing is required to be performed once a month for all business lines. Certain positions where there is an absence of an active daily market may be considered on a less frequent basis but at a minimum of once a reporting period (quarterly).

#### D. Documentation

Price testing reports are to be compiled individually for each business line once a month and then rolled up into a divisional report. Reports will include the coverage statistics and the final variance.

#### E. Application

Price testing results for each business will be reviewed with the business line management. Consolidated price testing results for the division are reviewed with the regional divisional head.

In the event of there being material price testing variances at the divisional level the results for the business will be adjusted for these.

#### F. Form

Price testing should be performed in accordance with the published Price Testing Standards. Exceptions to the standards must be approved by the divisional Product Controller. Each business line must have procedures for their price testing processes.

#### **1.1.4 Fair Value Hierarchy**

Fair Value Category	Criteria
Level 1	Quoted prices for identical assets or liabilities are available in active reference markets
Level 2	Quoted prices for similar assets or liabilities are available in active markets, adjusted as appropriate for differences that are "Objectively determinable"
Level 3	Quoted prices for similar assets or liabilities are available in active reference markets or based on the results of multiple valuation techniques
Level 4	Items where there are no observable markets and/or observable market inputs. In such instances, hypothetical market prices are replicated using entity inputs as a practical expedient.

### **13. High Grade Credit**

Price testing in this completed in accordance the Lehman Brothers Fixed Income Product Control Asia Price Testing policy and standards.

Included below is a high level procedural document which list how risk and positions are extracted and verified for completeness. Also the products covered and the sources used in the price test analysis.

#### **Overview**

All Products traded in High Grade Credit :

1. Bonds:
  - Corporate
  - Convertibles
  - Government Issues
  - Loans
2. Credit Default Swaps (this includes CDS within CLN's)

3. First to Default Baskets (individual risk deltas within a basket are included in the CDS testing)
4. Constant Maturity Credit Default Swaps (CMCDS)
5. Bond Options (Corporate + UST)
6. Convertible Spread Options
7. Asset Spread Options
8. Credit Default Swaptions
9. Equities
10. Interest Rate Swaps (includes Cross Currency Swaps)
11. Futures (Exchange traded)

## **Preparation**

### **Procedures:**

#### 1. *Webrisk*

All positions are queried from the Webrisk Database and downloaded to Price testing file. Note: Loan positions are not included in the Webrisk query. The Loan population is captured in the GQuest download.

#### 2. *GQuest Report*

Download Pricing Report from GQuest (Sources independent prices for cash products) and import into price testing file.

#### 3. *CDS file from London Product Control*

London IT and Product Control consolidate our risk combined with the Lehman mark and independent marks. They send this CDS price testing file to Tokyo via email and we import into High Grade price testing file. The file is received 2/3 days after month end. This file is used for price testing CDS curves only.

#### 4. *Untested file from London Product Control*

Receive *untested* CDS price testing file from London and obtain independent quotes for these untested curves so they can be included in the CDS price testing file. Once populated send this file back to London PC and they will then resend an updated CDS price testing file.

#### 6. *Bloomberg prices.*

Go to Bloomberg terminal and populate bond prices and option volatility numbers into Price Testing file.

#### 7. *Formulas and Pivot tables in Price testing file.*

Update all formulas and pivot tables in the price testing spreadsheet, and check for completeness and accuracy.

#### 8. *All Risk and Inventory is selected for price testing*

How do we ensure 100% Selection of each position/product

Check to ensure the total population of risk and inventory is selected by product. Independent price testing is performed on trading inventory and risk\*.

### **Calculation / Verification**

#### **Approved Independent Price Sources:**

Below are the independent sources we currently use for price testing:

- Bonds: EJV, IDC and Extel (All of these sources feed a GQuest report which can be downloaded daily). Bloomberg and MarkIT Partners are also used as a source.
- CDS: MarkIT (London PC send us the consensus quotes or we view directly from MIP website)
- Bond Options (Corporate + UST): Bloomberg
- Convertible Spread Options: Bloomberg bond price and bond floors
- Asset Spread Options: Bond prices (see Bonds above)
- Credit Default Swaptions: Not price tested due to insufficient market data
- Equities: Reuters
- IRS: Broker pages from Reuters

**Cash Positions:** The total population of cash positions is downloaded from GQuest which is reconciled to DBS on a monthly basis. GQuest is also reconciled to Laura on a daily basis for position and price.

**CDS/FTD:** We download the total population from Webrisk. A query is run from Webrisk for position and risk details by trade. London PC send us a file containing the Lehman spread, Independent spread, Lehman risk and the resulting PL variance. The risk in the file is reconciled to the risk from Webrisk to ensure that the price testing is analyzed on complete risk.

**Bond Options:** A download is taken directly from Picasso (booking system) and this is compared against the Webrisk query to verify full population.

**CSO:** We reconcile our CSO population to Webrisk

**ASO/CDSwaptions/CMCDS:** We don't price test these positions due to immateriality and small population.

**Interest Rate Swaps:** All trades are booked in Summit and these feed Webrisk. We download the population via Webrisk. (Excluded from price testing unless Swap desk have material variances in their books).

**Futures:** Trades booked in RISC. We exclude Futures from price testing as the closing prices are marked by the appropriate Futures Exchange.

Note:

Webrisk: Database of risk which queries Credit DB

GQUEST: PL/Reporting System

DBS: General Ledger

- **Data Analysis**

Once all the data is imported and the risk is reconciled, we analyze PL variances that are significant. A significant variance is either > \$300K for CDS by ticker and \$300K or 5% of MTM by position for cash. We also sense check that the independent market data is good. When direct independent quotes are not available we benchmark to related positions. While the position will be stated as not being tested it does not mean that the position has not had a qualitative review done. These positions will then be documented with that reference.

**Review / Escalation**

- **Coverage**

Some of the coverage percentages will be analyzed in relation to either Risk or MTM price tested.

With regards calculating price testing coverage different products coverage will be calculated as follows:

Cash Products: Percentage of MV price tested.

Bond Options: Percentage of \$Vega01 price tested.

Credit Default Swaptions: Percentage of \$Spd01 price tested

- **Identification of Significant Variances:**

Significant variances are individually identified at 3 levels, by position \$300K, by trader \$2mn, by business line \$3mn.

- **Price Test Meeting**

Once the data is analyzed, the Product Controller uses judgment as to which curves need to be brought up in the meeting to be held with the individual trader responsible for that curve. The first curves brought to the attention are the curves which are showing large PL variances. The trader is asked to explain his month end marks versus market data. The trader either provides evidence that his mark is reasonable or they are advised to remark.

### **Escalation**

- Significant variances must be discussed with product control management where variances are either documented explained or unexplained.
- Unexplained variances are escalated for discussion with the individual trader and trading desk management
- Unexplained variances are categorized as either disputed or agreed
- Agreed price testing variances are resolved in accordance with the resolution standard
- Disputed price testing variances may result in revised price testing with approval and documentation from Product Control Head

### **Resolution**

Material price testing variances are adjusted to the books and records for the appropriate month end. Materiality threshold is determined by regional product controller, global product controller and regional CFO.

### **Reporting**

- **Reporting**
  - a. Complete standards checklist for completed product line price testing
  - b. Reporting must allow for efficient validation of price testing standards conformity
  - c. Price testing summary and completed standards checklist to be passed to the price testing policy coordinator by due date

Write a report of results of this meeting plus giving coverage details and documenting as to the standards.

### **Price testing memo contents:**

- ⇒ Inventory/risk selected for testing
- ⇒ Inventory/risk excluded from price testing & reasons
- ⇒ Inventory/risk not price tested & justification (i.e. Materiality, compensating procedures, comfort)
- ⇒ Source of third party levels/ independent market inputs

⇒ Price testing results & follow up actions

- **Timeframe**

a. Final formal price testing reporting is due at the successive levels on the following business day (BD) dates:

- Section product controller      BD10
- Policy coordinator                BD12
- Divisional controller            BD13
- New York controllers            BD15

b. Significant unexplained variances are to be escalated according to the Price testing standards.

- **Report distribution**

Send out the report to Product Control senior management and the Trading Desk.

**Other issues**

All soft copy documents are in saved in the below folder:

\\tkgisfls111\walker\High Grade Credit Asia\Fiscal 2005\Price Testing 06\

## 14. Interest Rate Derivatives

### Preparation

- **Selection**

All risk and inventory must be selected for price testing. Product control must document the process that proves 100% selection.

- **Exclusions**

All exclusions from price testing need to be documented and concluded as to appropriateness.

### Calculation

- **Categorization**

All risk and inventory should be categorized into fair value hierarchy as applied by Global FID Product Control and in line with the fair value exposure draft.

- **Sources**

- a. Specify the independent sources used for each position type or parameter
- b. Sources should be from a pre approved list. If alternative sources are employed then the rationale for their use must be documented
- c. Sources must be obtained independently from the third party, ie direct transmission

- **Application**

Document and justify how any external data is adjusted

- **Models**

All models used for derivative valuation must be positively approved by Risk Management

## Review / Escalation

- **Coverage**

Product Control must calculate the price tested coverage percentage of the selected population. There should also be documentation that Product Control have concluded on the untested portion of inventory.

- **Identification of Significant Variances**

Significant variances are individually identified at 3 levels, by position \$300k, by trader \$2mn, by business \$3mn.

- **Escalation**

- a. Significant variances must be discussed with product control management where variances are either documented explained or unexplained.
- b. Unexplained variances are escalated for discussion with the individual trader and trading desk management
- c. Unexplained variances are categorized as either disputed or agreed
- d. Agreed price testing variances are resolved in accordance with the resolution standard
- e. Disputed price testing variances may result in revised price testing with approval and documentation from Product Control Head

- **Resolution**

Material price testing variances are adjusted to the books and records for the appropriate month end. Materiality threshold is determined by regional product controller, global product controller and regional CFO.

## Reporting

- **Reporting**

- a. Complete standards checklist for completed product line price testing
- b. Reporting must allow for efficient validation of price testing standards conformity
- c. Price testing summary and completed standards checklist to be passed to the price testing policy coordinator by due date

- **Timeframe**

- a. Final formal price testing reporting is due at the successive levels on the following business day (BD) dates:
  - Section product controller      BD10
  - Policy coordinator              BD12
  - Divisional controller            BD13
  - New York controllers            BD15
- b. Significant unexplained variances are to be escalated prior to reporting dates as follows:
  - For category 1 and 2 positions:
    - Section product controller      BD5
    - Divisional controller and policy coordinator      BD6
  - For category 3a and 3b positions:
    - Section product controller      BD8
    - Divisional controller and policy coordinator      BD10

## 15. Real Estate

### Overview

The purpose of this document is to establish policies and procedures for price testing that will ensure that the inventory balance recorded in the Asia PTG Real Estate balance sheet is measured at fair value. This will apply to all products traded and contained in the Balance Sheet as at the price testing date. The policy is effective October 1<sup>st</sup>, 2005 and will be updated from time to time to implement updated price testing methodologies, classifications etc.

### Preparation

The starting point for inventory to be verified is the balance sheet position report, which details all on system (eg GFS) and off-system (eg Spreadsheet) positions. Prior to commencing price testing, The Real Estate Control Group will:

- Reconcile the position report by asset class to the general ledger inventory accounts and GFS
- Reconcile On-system positions to the underlying settlement system
- Acquire price / cash flow projections from the external servicers
- Obtain underwriting / pricing models from traders, where applicable
- Obtain most recent Servicing reports for all asset classes
- Retrieve price quotes from Bloomberg where applicable
- Retrieve all other independent price data (Audit F/S etc)

### Calculation / Verification

#### Frequency:

Position Level	Frequency
Level 1	Monthly
Level 2	Monthly
Level 3	Quarterly
Level 4	Semi annual (April and Oct) **

\*\* Non Performing Loans (NPL's) are considered level 4 positions but will have some degree of price verification quarterly. For the semi-annual testing (April/Oct), NPL's will use a different balance sheet date for current basis from other Real Estate products due to the extended time (4-5 weeks) it requires to obtain the cash flow forecast from the 3<sup>rd</sup> party servicer. As such, the February and August balance sheet balance will be used as the basis for price testing to be completed during the same timing as the other products (ie NPL price testing will be completed at the same time as other Real Estate Products which will use the April/Oct basis). Since Cash flow forecast on NPL are inherently imprecise, back testing will be performed at each quarterly reporting date (Feb /May/Aug/Nov) to ensure the Fair Value is reasonable.

#### Approved Independent Price Sources:

Source	Applicability
3 <sup>rd</sup> party Servicer	Loans, real estate properties
Japan / Korea Land	Real Estate Properties

Survey Website / 3 <sup>rd</sup> party valuations	
CMA Alert Newsletter	CMBS securities, Performing loans
Audited Financial statements	TK investments, Retained interest
Bloomberg	Bond equity prices, CMBS securities spreads and prices

\* If alternative price sources are employed then the rationale for their use must be approved by the Real Estate Control Group Manager and be documented in testing results.

**Price Testing Selection:**

<b>Product</b>	<b>Population to be tested</b>
Performing Loans	100% coverage. Combination of quantitative and qualitative.
Non Performing Loan	<ol style="list-style-type: none"> <li>1. April &amp; Oct (using Feb/Aug basis) <ul style="list-style-type: none"> <li>● NPL &gt; \$1mm and &gt; 1year</li> </ul> </li> <li>2. Quarterly back testing (Feb/May/Aug/Nov) <ul style="list-style-type: none"> <li>● NPL &gt;\$1mm and &gt;1year - back test to previous Servicer Cash flow price testing data (ie: April or Oct Price testing)</li> <li>● NPL &gt;\$1mm and &lt; 1 year - back test to roll up sheet provided on trade closing.</li> </ul> </li> </ol> <p>Exclusions: all NPL will be reviewed at least quarterly</p>
CMBS Securities	100% coverage. Combination of quantitative and qualitative.
Real Estate Properties (REO)	<p>REO &gt;\$2mm and &gt;1year</p> <p>Exclusions: REO that had 3<sup>rd</sup> party valuation within previous 18months</p> <p>REO that has a Firm offer to buy from 3<sup>rd</sup> party.</p>
REO Equity	100% coverage
Equity investment	100% coverage. Combination of quantitative and qualitative.
<ul style="list-style-type: none"> <li>● Listed equity</li> <li>● Unlisted equity</li> <li>● Japan TK Investments</li> </ul>	

**Verification Procedures:**

**LOANS / BONDS**

All loan portfolios (NPL & PL) on the Balance Sheet position report are selected for price testing. Verification is performed on balance sheet at risk, which excludes:

- Cash at bank
- JV equity gross ups (ie. partners equity)
- Accounting gross ups (ie. on balance sheet securitization, FIN 46, FAS 144, etc.)





	Standard / Procedures
<ul style="list-style-type: none"> <li>• <b>REO (hard asset)</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ FAS 144 accounting is applied to real estate owned properties. Under FAS 144, properties are held at lower of cost or market (LOCOM).</li> <li>▪ Under a LOCOM approach, no mark ups can be taken. Potential losses have to be calculated using an undiscounted cash flow approach. <ul style="list-style-type: none"> <li>➤ Inputs for determining operating income are obtained from Servicer's reports. This is typically the previous 3-6 months stabilized cash flow as reported on the Servicer Report.</li> <li>➤ Useful life is obtained from trader and reviewed for reasonableness based on recent filed Tax returns/Financial Statement etc.</li> <li>➤ Supplemental to reviewing undiscounted cash (or in lieu if information is not obtainable), an income approach to valuation and a yield analysis is performed to ascertain / validate market value.</li> <li>➤ The income approach uses current and projected stabilized cash flows along with an appropriate capitalization rate to determine market value.</li> <li>➤ For loss making property, "comparable property" approach is employed whereby the market value on similar property(s) (recent sold properties.) analyzed.</li> <li>➤ The resulting potential loss is calculated based on the carrying value compared to the implied value.</li> <li>➤ 3<sup>rd</sup> party appraisal is valid for 18 months.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Equity Investment</b></li> </ul> <p><b>Listed Equity</b></p> <p><b>Unlisted Equity</b></p>	<ul style="list-style-type: none"> <li>▪ Prices are verified to Bloomberg quotes</li> <li>▪ Qualitative testing method applies to unlisted equity investment, including analyzing financials of the company provided by servicer, reviewing management account, reviewing underwriting sheet provided by FO.</li> </ul>

**Review / Escalation****• Coverage**

Coverage is calculated as:

$$\frac{\text{Tested balance sheet at risk}}{\text{Total balance sheet @ risk - Exclusions}} \times 100 \%$$

The appropriateness of the coverage percentage must be documented by asset class and by country and signed off in totality by section manager.

For the untested population and positions excluded from price testing, proper documentation must be provided on the price testing calculation sheet. The documentation must provide reasonable comfort on the current valuation.

**• Identification of Significant Variances**

The price testing procedures outlined above are primarily used to identify potential mark downs. Negative significant variances are individually identified as: **1)** by position \$300k **2)** by trader \$2mn, **3)** by business \$3mn.

Large positive variances that result due to recent market activities are flagged for escalation. Examples would be unsettled trades recently transacted or trades with a high correlation to a direct market observable transaction.

**• Escalation / Resolution**

There will be 3 phases of escalation:

**1)** Significant variances, as discussed above, must first be raised to the section manager for review.

**2)** Variances deemed material ( approximately > \$300K and > 10% of basis are short listed and discussed with the business. After discussion with section manager and business, the variances will be categorized as Agreed or Disputed.

**3)** Agreed variances, the resolution must be documented and MTM adjustment recorded in a timely manner (ie: the earliest possible month end) Given the lack of an observable market for most products, a reasonable period of time will be given to the business to conduct due diligence and examine positions for re-underwriting and re-marking. The time frame will be agreed with the trades and senior finance management if the variances are material. However this timeframe should not exceed a maximum of 6 weeks or the financial year end, 30<sup>th</sup> November.

Disputed variances must be escalated to senior finance management for discussion and re-addressed if necessary with the business. All resolutions must be documented in the price testing files. Disputed variances must be signed off by senior finance management, regardless if there is no follow up action.

**Reporting**

All documentation produced to substantiate the performance of price testing must be reviewed and signed off by the section manager. All Regional and Global price testing summaries will be updated with the approved price testing results.

**Completion Checklist**

The following list must be compiled into a price testing package and signed off by section Product Controller and by Business Line Product Controller. This represents the minimum requirements.

- ↙ Fixed income division price testing checklist
- ↙ Summary of Price testing results (Agreed Variances)
- ↙ Completion Selection and Reconciliation of Inventory
- ↙ Excluded Price-tested Inventory documentation and explanation
- ↙ Inventory categorization
- ↙ Independent price sources
- ↙ Calculation of Price testing variances
- ↙ Coverage Calculation
- ↙ Documentation on Variance Findings
- ↙ NPL's – summary and documentation of quarterly back testing

The Price testing package must be completed by November 20<sup>th</sup> and May 20<sup>th</sup> or the first business day following if these dates fall on a weekend.

**Report Review**

- ↙ The final report is reviewed by the Head of Real Estate Control Group and Head of Financial control.

**16. High Yield****Overview**

The High Yield business is separated into two distinct asset classes:

Flow books / Derivatives

1. HY Straight Bonds
2. Convertible Bonds
3. CDS
4. Swaps
5. FX

Distressed Debt (Equity)

1. (Un)secured loans
2. Equity – common / preferred

The product listing above is not exhaustive, but covers a majority of products traded.

**Preparation**

- All inventory on the balance sheet report are selected for price testing. A risk based approach is taken for all positions.
- For loan & bond inventory booked in Loan IQ and ITS settlement systems, the balance sheet report is reconciled by:
  - All positions in Loan IQ are downloaded onto Excel. The balances are reconciled between Loan IQ and Excel.
  - All positions in ITS are downloaded onto Excel and reconciled between ITS and Excel.
- For off-system inventory, the inventory listing file is obtained from Middle Office and reconciled to the G/L by Product Control.
- Retrieve price quotes from Bloomberg and Exotix, where applicable
- Any available documentation (ie. court resolution plans, etc.), pricing models, Servicer Reports and relevant industry news are obtained.

**Calculation / Verification****Approved Independent Price Sources:**

Independent price testing data can be sourced from the following pre-approved list of sources:

Source	Applicability
Bloomberg	Bond & Equity prices
Exotix	HY Bonds & Loans
Servicer Report	Loans
External Court Documentation	Bonds, Loans
Publications (Wall Street Journal, FT, IFR, etc.)	Loans, Bonds
Market Activity (observed from publications)	Loans, Bonds, Equity

All alternative pricing sources must be reviewed for suitability, approved and documented. Evidential proof of the data used to price test will be part of the price testing support documentation.

**Verification Procedures:**

All bonds, equity and loan portfolios (NPL & PL) on the Balance Sheet position report are selected for price testing. Verification is performed on balance sheet at risk, which excludes:

- Cash at bank
- JV equity gross ups (ie. partners equity)
- Accounting gross ups (ie. on balance sheet securitization, FIN 46, FAS 144, etc.)
- Reserves held against positions

**Secured Debt / REO (hard asset)**

For secured debt collateralized by real estate, the underlying properties are price verified in accordance to the Real Estate price testing procedures:

- Where available, recent 3<sup>rd</sup> party appraisals are obtained from the external asset manager or Servicer.
- In the absence of appraisals, desk top valuations are calculated on inputs from the Servicer Reports & published data gathered from websites or industry publications. An implied value is calculated using NOI cash flows and appropriate capitalization rates.
- Cash yields are computed and compared to underwriting stabilized values. Where available, price discovery obtained from recent Lehman transactions are used as market level comparatives.
- Lehman's carrying bases of the properties are compared to the valuations calculated above. Significant variances prescribed by the "Price testing standards" are investigated.

**Review / Escalation**

- **Coverage**

Coverage is calculated as:

$$\frac{\text{Tested balance sheet at risk}}{\text{Total balance sheet @ risk - Exclusions}} \times 100 \%$$

The appropriateness of the coverage percentage must be documented by asset class and by country and signed off in totality by section manager. For the untested population and positions excluded from price testing, proper documentation and alternative testing must be provided on the price testing calculation sheets. The documentation must provide reasonable comfort on the current valuation.

- **Identification of Significant Variances**

The price testing procedures outlined above are primarily used to identify potential mark downs. Negative significant variances are identified as prescribed by the Price Testing Standards: by position \$300k, by trader \$2mn, by business \$3mn.

Large positive variances that result due to recent market activities are flagged for escalation. Examples would be unsettled trades recently transacted or trades with high correlation to a direct market observable transaction.

No MTM issue is resolved without discussions with the business and senior Finance management.

- **Escalation / Resolution**

Significant variances must first be raised to the section manager for review. Variances deemed material are short listed and discussed with the business. For accepted variances, the resolution must be documented and adjustments timely booked. Given the lack of an observable market for

most products, a reasonable period of will be given to the business to conduct due diligence and examine positions for re-underwriting and marking.

Unaccepted variances must be escalated to senior finance management for discussion and re-addressed if necessary with the business. All resolutions must be documented in the price testing files.

In instances where no follow up actions are deemed necessary, changes to price testing models must be documented.

**Reporting**

All documentation produced to substantiate the performance of price testing must be reviewed and signed off by the section manager. All Regional and Global price testing summaries will be updated with the approved price testing results.

• **Timeframe**

a. Final formal price testing reporting is due at the successive levels on the following business day (BD) dates:

- Section product controller      BD10
- Policy coordinator              BD12
- Divisional controller            BD13
- New York controllers            BD15

b. Significant unexplained variances are to be escalated prior to reporting dates as follows:

- For category 1 and 2 positions:
  - Section product controller              BD5
  - Divisional controller and policy coordinator      BD6
- For category 3a and 3b positions:
  - Section product controller              BD8
  - Divisional controller and policy coordinator      BD10

**17. Real Estate and Securitized Finance**

**Overview**

The purpose of this document is to establish policies and procedures for price testing that will ensure that the inventory balance recorded in the Global Real Estate Group (“GREG”) and Structured Finance balance sheet is measured at fair value. This will apply to all positions traded and contained in the Balance Sheet as at the price testing date. The original price testing policy was effective from October 1st, 2005 and this updated version is effective from February 25, 2008 and will be further updated from time to time to implement updated price testing methodologies, classifications etc.

- **Fair value**

SFAS 157 defines fair value as 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. Fair value represents an exit price, not an entry price (i.e., the transaction price). Exit and entry prices may be identical in many cases. However, we cannot (and do not) presume the entry price represents the fair value of an asset, liability, or commitment upon initial recognition.

We determine the exit price from the perspective of market participants broadly and not from our own perspective. A market participant is a hypothetical composite of all buyers and sellers in the principal (or the most advantageous) market for the asset or liability who are independent of Lehman, knowledgeable, able and willing to transact, and are not forced or compelled to transact.

- **Transaction costs**

The price in the principal market is not adjusted to reflect transaction costs (e.g., commissions, due diligence costs). Transaction costs are incremental direct costs to sell the asset or transfer the liability in the principal (or the most advantageous) market and are not included in the fair value measurement of the asset or liability.

Principal businesses often incur transaction costs prior to acquiring a financial asset (e.g., due diligence costs related to acquiring a non-performing loan portfolio) or transferring/extinguishing a financial liability. These costs must be recognized in contra revenue as incurred. They cannot be deferred as an asset on our balance sheet. If a transaction is not completed (i.e., it is a “busted deal”), the costs recognized in contra revenue are reclassified to appropriate non-personnel expenses.

- **Valuation Approaches**

There are three generally-recognized approaches to measure fair value:

**Market Approach** - This approach uses observable prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The fair value measure is based on the value those transactions indicate.

**Income approach** - This approach uses valuation techniques to convert future amounts (e.g., cash flows or earnings) to a single, discounted amount. The fair value measure is based on the value indicated by market expectations about the future amounts. The income approach includes present-value techniques.

**Cost approach** - This approach is based on the amount that currently would be required to replace the service capacity of an asset and often is referred to as current replacement cost. The approach assumes the fair value would not exceed what it would cost a market participant to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence.

In all cases, fair value can be measured by using a valuation approach (or a combination of valuation approach) that is appropriate in the given circumstances and for which sufficient data is available. When multiple valuation approaches are used to measure fair value, the results to determine a single best fair

value measure should be evaluated and weighted based on the reliability of the valuation approaches and the inputs that are used in the approaches.

### PRODUCT CATEGORIZATION

Fair Value Category	Criteria
Level 1	Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. An active market is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.
Level 2	Quoted prices for similar assets or liabilities in active markets; 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, or in which little information is released publicly.
Level 3	<p>For Positions with no observable markets and/ or observable market inputs. In such instances, hypothetical market prices are replicated using entity inputs, including correlated, interpolated, or extrapolated measures that are not corroborated by direct market inputs.</p> <p>Unobservable inputs to the fair value measurement 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).</p> <p>Unobservable inputs shall be developed based on the best information available in the circumstances, which might include the reporting entity's own data. In developing unobservable inputs, the reporting entity need not undertake all possible efforts to obtain information about market participant assumptions. However, we should not ignore information about market participant assumptions that is reasonably available without undue cost and effort. Therefore, our own data used to develop unobservable inputs shall be adjusted if information is reasonably available without undue cost and effort that indicates that market participants would use different assumptions.</p>

**FREQUENCY**

Position Level	Frequency
Level 1	Monthly
Level 2 & 3	Semi annual (April and Oct) **

\*\* Non Performing Loans (NPL's) are considered level 3 positions but will have additional price verification performed quarterly. For the semi-annual testing (April/Oct), NPL's will use a different balance sheet date for current basis from other Real Estate products due to the extended time (4-5weeks) it requires to obtain the cash flow forecast from the 3rd party servicer. Accordingly, the February and August balance sheet amount will be used as the basis for price testing (ie NPL price testing will be completed at the same time as other Real Estate Products which will use the April/Oct basis). Back testing will be performed at each quarterly reporting date (Feb /May/Aug/Nov) to ensure the cash flow forecast from recent price testing or roll up sheet is reasonable.

**INDEPENDENT PRICE SOURCE**

Applicability	Source Examples
Loans, Performing and Non-performing Real Estate Properties	<ul style="list-style-type: none"> <li>• 3<sup>rd</sup> party Servicer</li> <li>• Japan / Korea Land Survey Website</li> <li>• 3rd party property appraisal reports</li> <li>• 3rd party Servicer</li> </ul>
CMBS securities, RMBS Securities, Performing loans	<ul style="list-style-type: none"> <li>• Commercial Mortgage Alert ("CMA") Newsletter, 3rd Party Servicer</li> </ul>
TK investments, Retained interest	<ul style="list-style-type: none"> <li>• Outsourced Financial Statements</li> <li>• Servicer reports</li> </ul>
Bond equity prices, CMBS securities spreads and prices	<ul style="list-style-type: none"> <li>• Bloomberg</li> </ul>

\* If alternative price sources are employed then the rationale for their use must be approved by the Real Estate Product Control Manager and be documented in testing results.

**PREPARATION**

The starting point for inventory to be verified is the GREG balance sheet position report, which details all on system (eg GFS) and off-system (eg Spreadsheet) positions. Prior to commencing price testing, The Product Controller will:

- Reconcile the position report by asset class to the general ledger inventory accounts and GFS
- Reconcile On-system positions to the underlying settlement system

- Obtain future cash flow projections from the external servicers, where applicable
- Obtain underwriting / pricing models from traders, where applicable
- Obtain most recent Servicing reports for all asset classes, where applicable
- Retrieve price quotes from Bloomberg where applicable
- Retrieve all other independent price data e.g. Financial Statements

**PRICE TESTING SELECTION**

Product	Level	Population to be tested
Performing Loans	2 / 3	> 90% coverage. Combination of quantitative and qualitative.
Non Performing Loan	3	<p>3. April &amp; Oct (using Feb/Aug basis)</p> <ul style="list-style-type: none"> <li>▪ Portfolio's &gt; \$1M and &gt; 1year - Servicer provides CF forecast</li> <li>▪ Individual loans &gt; \$250k and &gt; 1 year – Servicer provides CF forecast</li> <li>▪ Portfolio's &lt; \$250K (incl. zero basis) may be reviewed individually and additional follow will be done with the Servicer if it is determined there is a potential valuation issue.</li> </ul> <p>4. Back testing will be performed on semi-annual basis</p> <ul style="list-style-type: none"> <li>▪ Loans &gt;\$250K and &gt;1year - back test to previous Servicer Cash flow price testing data (ie: April or Oct Price testing)</li> </ul> <p>3. Analysis of Loan Pool performance for Residential NPLs</p>
CMBS Securities	3	> 250k Combination of quantitative and qualitative.
Real Estate Properties (Equity)	3	Real Estate>\$2mm and age>1 year Exclusions: Real Estate that has a commitment /bid to buy from 3 <sup>rd</sup> party.
Equity investment		> \$250k Combination of quantitative and qualitative.
▪ Listed equity	1	
▪ Unlisted equity	3	
▪ TK Investment	3	

Coverage is calculated

Tested balance sheet at risk  $\times 100\%$   
Total balance sheet @ risk -Exclusions

The appropriateness of the coverage percentage must be documented by asset class and by country and signed off in totality by section in charge.

For the untested population and positions excluded from price testing, proper documentation must be provided on the price testing calculation sheet. The documentation must provide reasonable comfort on the current valuation.

## VERIFICATION PROCEDURES

All portfolios on the Balance Sheet position report are selected for price testing according to the selection criteria in section 6. Verification is performed on balance sheet at risk, which excludes:

- Cash at banks
- JV equity gross ups (ie. partners equity)
- Accounting gross ups (ie. on balance sheet securitization, FIN 46, FAS 144, etc.)

<i>Products</i>	<i>Standards / Procedures</i>
<b>Non- performing loans</b>	<ul style="list-style-type: none"> <li>▪ A discounted cash flow approach is used to calculate the Net Present Value (“NPV”) of the portfolio.</li> <li>▪ Price Testing sample is selected based on criteria outlined in section 6.</li> <li>▪ Cash flow projections are obtained from external 3<sup>rd</sup> party servicers or based on the underwriting models from FO with necessary adjustments to reflect the latest borrowers’ performance status, etc, if applicable.</li> <li>▪ Haircut adjustments to be put on future cash flows or collateral values if necessary to reflect liquidity, selling costs, related taxes when foreclosing/selling the underlying collaterals, etc.</li> <li>▪ Cash flow projections or Front Office pricing roll up sheets (if applicable) are used for back testing against actual cash collections on a semi-annual basis.</li> <li>▪ When servicer cash flow projections have been much lower than actual cash collection, then a haircut based on a back testing approach may be applied to the servicer cash flow data.</li> <li>▪ Discount rate is applied to calculate NPV. Factors in considering discount rates are liquidity adjustments, collateral’s property types, current market level pricing, country risk, collateral quality, discussions with traders, historical borrower’s performance, etc. Discount rate is reviewed by Product Control and agreed with Front Office.</li> <li>▪ Significant variances between NPV and current basis are flagged for escalation in compliance with the “Price Testing Standards” in section 10.</li> </ul>

<i>Products</i>	<i>Standards / Procedures</i>
<p><b>Program Loans / Apartment Loans</b></p>	<ul style="list-style-type: none"> <li>▪ Program Loans are priced as a portfolio by taking the aggregate face value of the loan population and computing a “mock” securitization modeled after a recent comparable Lehman deal or Market deal.</li> <li>▪ Product controllers apply the tranche percentages, I/O strips, average lives, and coupon rates from the model securitization for the hypothetical deal. Product controllers then apply an appropriate discount rate derived from JGB curve/swap yield/market CMBS spreads.</li> <li>▪ Positive variances are not recognized into P&amp;L since the majority of the P&amp;L is contingent upon the successful execution of a CMBS transaction.</li> <li>▪ Product controller tracks those loans which are excluded from previous securitizations on a spread sheet with reasons for exclusions and estimated ready for securitization date, obtained from traders.</li> <li>▪ Product controller updates unsecuritized loan tracking spread sheet upon a new securitization and /or check the status with Front Office after estimated ready for securitization date.</li> <li>▪ An appropriate liquidity adjustment is taken to account for loans that will be omitted from a securitization without having an appropriate reason, such as inheritance, pending on modification of the property, etc.</li> <li>▪ The resulting proceeds are then compared with Lehman’s market value of those loans to determine the potential profit/loss.</li> <li>▪ Aged positions with exit plan of securitization should be investigated if they have been held for long time. In each case, the business is consulted for an explanation of the reason for holding and an understanding if there has been any impact to the collateral value. If the loan remains securitization or syndication eligible, Product controller will compare the loan’s spreads to published market data. In cases where the collateral value has deteriorated, Product controller will price as a principal position.</li> </ul>
<p><b>Large/Small Commercial Loans</b></p>	<ul style="list-style-type: none"> <li>▪ Qualitative testing method applies to Commercial Loans, including P &amp; I collection monitoring and reviewing DSCRs (Debt Service Coverage Ratio).</li> <li>▪ Product Controller keeps track of DSCR testing population and results provided by servicer on a separate spread sheet. If any Loans failed DSCR testing, the position will be listed on a monthly “Watch List” and escalated to Front office.</li> <li>▪ Aged positions with exit plan of securitization should be investigated if they have been held for long time. In each case, the business is consulted for an explanation of the reason for holding and an understanding if there has been any impact to the collateral value. If the loan remains securitization or syndication eligible, Product controller will compare the loan’s spreads to published market data. In cases where the collateral</li> </ul>

	value has deteriorated, Product controller will price as a principal position.
<i>Products</i>	<i>Standards / Procedures</i>
<b>CMBS Securities</b>  <b>Non-IO tranches</b>	<ul style="list-style-type: none"> <li>▪ A discounted cash flow approach is used to calculate the NPV of the positions.</li> <li>▪ Future cash flow projection takes consideration of underlying loan prepayment ratio.</li> <li>▪ A suitable prepayment ratio (Constant Prepayment Ratio = CPR) is set on each position for future outstanding notional projection. Product Controller tests both conservative and aggressive cases and discuss with business for reasonableness check.</li> <li>▪ Alternatively, if weighted average life (WAL) on comparable securities is observable in the market, use such WAL for NPV calculation.</li> </ul>
<b>IO tranche</b>	<ul style="list-style-type: none"> <li>▪ Future cash flow is calculated as a difference between interest income from underlying loans and coupon payments on non-IO tranches.</li> <li>▪ Both cash flows (in and out) are projected using suitable CPR if the loan is prepayable.</li> <li>▪ A suitable CPR (both conservative and aggressive) are determined on each position, which PC will discuss with business for reasonability check.</li> <li>▪ If the loan is not prepayable, calculate future cash flow and discount back using a suitable discount rate stated above.</li> <li>▪ For Non-IO/IO tranches, discount rate is derived from swap curve corresponding to remaining maturity of the note adding credit spread obtained from same rated notes in the recent market issuances.</li> </ul>

<i>Products</i>	<i>Standards / Procedures</i>
REO (hard asset)	<ul style="list-style-type: none"> <li>▪ FAS 144 accounting is applied to real estate owned properties and consolidated hard asset investments. Under FAS 144, properties are held at lower of cost or market (LOCOM).</li> <li>▪ Under a LOCOM approach, no mark ups can be taken. Potential losses have to be calculated using an undiscounted cash flow approach. <ul style="list-style-type: none"> <li>➤ Inputs for determining operating income are obtained from Servicer's reports. This is typically the previous 3-6 months stabilized cash flow as reported on the Servicer Report.</li> <li>➤ Useful life is obtained from trader and reviewed for reasonableness based on comparison to roll up sheets and or recent filed Tax returns/Financial Statement etc.</li> <li>➤ Supplemental to reviewing undiscounted cash (or in lieu if information is not obtainable), an income approach to valuation and a yield analysis is performed to ascertain / validate market value.</li> <li>➤ The income approach uses current and projected stabilized cash flows along with an appropriate capitalization rate to determine market value.</li> <li>➤ For loss making property, "comparable property" approach is employed whereby the market value on similar property(s) (recent sold properties.) analyzed.</li> <li>➤ The resulting potential loss is calculated based on the carrying value compared to the implied value.</li> </ul> </li> <li>▪ 3<sup>rd</sup> party appraisal are valid for 18 months and each fiscal year end we will review material (&gt;\$8m) real estate positions and exit strategy and based on this will have a discussion with the business to obtain appropriate 3<sup>rd</sup> party valuations. Reason for not obtaining 3<sup>rd</sup> party valuation from selection will be documented as part of the price testing.</li> </ul>

<i>Products</i>	<i>Standards / Procedures</i>
<b>Equity Investment</b> <ul style="list-style-type: none"> <li>• <b>Listed Equity</b></li> <li>• <b>Private Equity</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Prices are verified to Bloomberg or other applicable market quotes</li> <li>▪ Fair value of private equity is determined by considering a range of factors including, but not limited to, the price at which the investment was acquired, the nature of the investment, local market and industry conditions, trading values on public exchanges for comparable securities, current and projected operating performance, and financing transactions subsequent to the acquisition of the investment.</li> <li>▪ Qualitative testing method applies to unlisted equity investment, including analyzing financials of the company provided by servicer / accounting firms, reviewing management accounts, reviewing underwriting models provided by FO.</li> <li>▪ Product controller price verifies Equity Partnership Interests individually by examining the deal waterfalls under a current partnership liquidation scenario based on current values (as reported by the servicer). There are four components: <ul style="list-style-type: none"> <li>a) return of capital;</li> <li>b) cumulative preferred return;</li> <li>c) current year preferred return;</li> <li>d) Lehman's share of the excess profits (if at all).</li> </ul> Returns are deemed to be pari passu. Model assumes distribution of cash flows in the following order: <ul style="list-style-type: none"> <li>- Pay-off the full amount of any debt;</li> <li>- Distribution to owners for accumulated preferred returns;</li> <li>- Distribution to owners for return of capital; and</li> <li>- Distribution to owners for split of any remaining profit according to their profit and loss sharing ratios.</li> </ul> </li> <li>▪ In cases, where waterfall agreements differ from model assumptions, modifications are made in the model by over-riding the formulas and the reason/justification noted.</li> <li>▪ When the securities has restrictions on its sale or transferability (i.e., a restricted security), we based the measurement of fair value of an identical unrestricted security adjusted for the amount marketplace participants would demand to assume the risk resulting from the inability to access a public market for the security during the specified period. Business is responsible for determining the discount and fair value and product control has to review both to ensure they are reasonable.</li> </ul>

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**IDENTIFICATION OF SIGNIFICANT VARIANCES**

Significant variances, positive or negative, are identified for:

- 1) Non performing loans on a individual loan basis with variance of > \$1million.
- 2) Performing loans on a portfolio basis with variance of > 1% of notional and > \$3million
- 3) Real Estate positions with variance of > \$1million
- 4) Equity investment positions with variance of >\$1 million

**REVIEW / ESCALATION**

There will be 3 phases of escalation:

- Significant variances, as discussed above, must first be raised to the manager of Real Estate Product Control for review and to be further discussed with business.
- Variances deemed material will be short listed and discussed with the Head of Asia FID Product Control. A final Price variance listing is compiled and presented to the business. After discussion with the business the price variances are categorized as agreed and disputed.
- Agreed variances, the resolution must be documented and MTM adjustment recorded in a timely manner (ie: the earliest possible month end). Given the lack of an observable market for most products, a reasonable period of time will be given to the business to conduct due diligence and examine positions for re-underwriting and re-marking. The time frame will be agreed with the trades and senior finance management if the variances are material. However this timeframe should not exceed a maximum of 6 weeks or the financial year end, 30th November.

Disputed variances must be escalated to senior finance management for discussion and re-addressed if necessary with the business. All resolutions must be documented in the price testing files. Disputed variances must be signed off by the Head of Asia Fixed Income Product Control, regardless if there is no follow up action.

Price testing results will be primarily used for internal USGAAP reporting purposes. In case of preparation of financial statements under local GAAP of those price-tested investments' holding entities, product controllers should be informed before the price testing results being used for any adjustments on legal books and records prepared under the local GAAPs.

## REPORTING

All documentation produced to substantiate the performance of price testing must be reviewed and signed off by the section in charge. All Regional and Global price testing summaries will be updated with the approved price testing results.

- **Completion Checklist**

The following list must be compiled into a price testing package and signed off by section Product Controller and by Business Line Product Controller. This represents the minimum requirements.

- Summary of Price testing results – Lead Sheets (Agreed Variances)
- Completion Selection and Reconciliation of Inventory
- Excluded Price-tested Inventory documentation and explanation
- Independent price sources
- Calculation of Price testing variances
- Coverage Calculation
- Documentation on Variance Findings
- NPL's – summary and documentation of semi-annual back testing (will be completed later as actual cash flows in the following months is needed to back test the projected future cash flows)

The Price testing package must be completed by end of November and May or the first business day following if these dates fall on a weekend.

- **Report Review**

The final report is reviewed by the Head of Asia Fixed Income Product Control. Required signoffs are obtained.

## ASIA APPROVAL

Asia FID Product Control:

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**Valuation Adjustments by BPM0: Equities****18. GLOBAL EQUITY DIVISION****Version Control****Jan. 2008: Initial Write up****May 10, 2008: Change Focus List threshold from \$300k to \$500k**

The following document for price verification and valuation, together with the global policy provide a guideline for Equity Valuation teams to perform price verification. Each Equity Valuation team should maintain a more detailed procedure document for their day to day work and training.

**Key Responsibility and Product Overview**

The global Equity Valuation Group (EVG) is responsible for the price verification of deals to ensure the product inventory in the EQUITY DIVISION is marked to a fair market value *with* the consideration of the valuation adjustment. While some sub-businesses or products are price tested by line product controllers or other valuation teams, EVG is still responsible to review and report price verifications to ensure that price testing policies and standards are adhered to.

EQUITY DIVISION, aka, CORE Equity, consists of the following, although not limited to, products:

Core Products	Hedging Products	Non-Core Equity Products
<ul style="list-style-type: none"> <li>• Cash Equities</li> <li>• Equity Futures</li> <li>• Volatility Options and Futures</li> <li>• Convertible Bonds and Preferred Shares</li> <li>• Listed Equity Options</li> <li>• Equity Linked Notes</li> <li>• OTC Derivatives</li> <li>• Warrants</li> </ul>	<ul style="list-style-type: none"> <li>Interest Rate Swaps</li> <li>Interest Rate Futures</li> <li>Bonds</li> <li>Currencies (Spot or Forwards)</li> <li>CDS</li> </ul>	<ul style="list-style-type: none"> <li>Hybrids</li> <li>Commodities</li> <li>Restricted Equities</li> <li>Private Equities</li> <li>Trade Claims</li> <li>Flex Options</li> </ul>

**Price Testing Components**

- **Frequency**

Price verification with a focus on the quarter end should be performed monthly.

- **Completeness of Positions**

Each regional team should quarterly ensure that all these positions are captured in the price testing populations by performing reconciliation to the PnL systems quarterly. It is assumed the booking in the PnL systems are complete and correct.

The total population resides on the PnL systems: GQuest for listed products, and GEDS for OTC derivatives. However, for the price testing purpose some products may be found in both GEDS and GQUEST such as Warrants and Flex Options. EVG should ensure these products are tested.

The use of Position data from the Front Office Systems (SnM, Euclid, and AMM) is acceptable as long as a procedure is in place to ensure the completeness.

- **Output and Input Testing**

EVG should strive to perform the so-called *output testing* to test the market price as a whole. For example, the following cases are considered output testing:

- Listed products such as common equities, stock index futures and convertible bonds, etc.
- OTC Products where Broker or Totem quotes prices for the exact or almost the exact product(s) are available.

When output testing is not possible, EVG performs input testing to determine the variance by examining the difference between traders' inputs/marks and comparable EVG's benchmarks. During the input testing, we assume:

- The valuation models are accurate
- The risk sensitivities to the inputs are accurate.

- **EVG's Benchmarks:**

EVG should apply its technical skills and business judgement to obtain independent market data to derive appropriate and fungible benchmarks for output or input testing.

Independent data sources include but are not limited to:

- Bloomberg /Reuters
- MarkIt (Totem)
- Broker Quotes
- Other third party pricing sources such as IDC.

EVG should be aware of the quality of the quotes and not apply the quotes blindly. The following examples of data are not considered to be quality data:

- Bloomberg data solely derived from Lehman’s trader quotes
- If only one broker quote is available (which was not collaborated on by another quote).

To derive the comparable benchmarks, analytical techniques may be needed:

- Data calibration with approved models
- Interpolation
- Extrapolation
- Statistical Analysis such as regression and volatility estimation.

• **Variance Calculation**

Once EVG’s benchmarks are determined, the PnL impact or price testing variance, resulted from the difference between EVG’s benchmarks and traders’, is calculated.

The variance can be calculated on a *testing unit* as long as the testing design is meaningful. A testing unit may be an input, position or a group of positions.

For output testing:

$$\text{Variance} = \text{Position} * (\text{EVG Benchmark Price} - \text{Mark Price})$$

For input testing related to an input X:

$$\text{“Variance related to input X”} = \text{Position} * [f(\text{EVG’s X, ...}) - f(\text{Trader’s X, ...})]$$

Where  $f(\dots)$  is the valuation model and “Variance related to input X” can be approximated by the first degree approximation:

$$\text{“Variance related to input X”} = \text{Position} * \text{Risk Sensitivity to X} * (\text{EVG’s X} - \text{Trader’s X})$$

This calculation can be applied to one position or a group of positions.

The final variance for a position or a group of positions is the sum of the variances related to all inputs X1, X2... Occasionally, the final variance should be obtained from using the full valuation with the model instead of using this approximation.

• **Completeness of Inputs in the input testing:**

In Equities, the inputs can be divided into three groups:

<b>Group 1: Most Significant Inputs</b>	<b>Group 2: potentially significant for long dated trades</b>	<b>Group3: Others</b>
• Underlying Spot	• Dividends	• FX vols

**Price Verification Policy**

<ul style="list-style-type: none"> <li>• Underlying Volatilities</li> <li>• Underlying Correlations</li> </ul>	<ul style="list-style-type: none"> <li>• Repo rates</li> <li>• Interest Rates</li> <li>• Borrowing Rates</li> </ul>	<ul style="list-style-type: none"> <li>• FX_EQ_correlation</li> <li>• Credit spreads</li> <li>• Model Inputs such as local vol model, stochastic model parameters, Vol Skews / Smiles</li> </ul>
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- All the above inputs should be tested for large or long dated transactions (>5year)
- Group 1 inputs should be tested
- Group 2 inputs should be tested for long dated transactions on a limited basis.
- Group 3 inputs should be tested (they are not systematically tested due to system limitation at this time).

Each Valuation Team should report MIS on the completeness of inputs monthly.

• **Untested Positions**

For untested positions, EVG should

- Assess the significance at a rough high level
- Report MIS on the untested positions
- Determine the issue and find a resolution

The following table lists potential issues and resolutions

Issue	Possible Resolution
Independent market data are not available	Review the positions and determine the valuation policy Potential FAS 157 Level 3
Incorrect position / risk data that are needed for testing	Determine and resolve the data issue
System limitations (e.g. calibration of model inputs)	Work with IT to come up with a long term solution
Lack of time to complete the testing for the month	Plan ahead for next month

• **Production Process**

To handle the large volume of positions, EVG's approach is as follows:

- Apply either a generic approach such as Vol/Vega Matrix method or alternative analytical procedures to all testing units (defined in Section 8.2.5) to derive the price testing variances.
- Compile an initial focus list which includes all testing units that have initial variances greater than the pre-determined price testing threshold (it was \$300k and was changed to \$500k in April 2008). A testing unit on the focus list is called a focus item.
- Investigate the focus items on the initial focus list by doing additional research.
- Compile another focus list for the remaining focus items to discuss with traders.
- Finalize the focus list, classify the items into three categories and comment conclusively about the resolution:
  - Without tolerance (W): EVG accepts the variance, likely due to a small mark difference and large position
  - Outside of tolerance (O): EVG believes the unit is mismarked and remarking should occur.
  - Subjective (S): due to the subjectivity nature, EVG can not be certain whether the remarking should occur. As key steps, EVG should monitor the consistency of the marking, testing benchmarks and the level of subjectivity.
- The total Variance for non-focus items should be kept within  $\pm$  \$10mm (portfolio threshold at BPM Level 2).

- **Escalation**

Disputed issues between the regional EVG's and traders should be escalated to senior controllers or senior business management for further resolution.

- **Reporting**

A standardized summary of pricing results is submitted for inclusion into the Capital Markets Valuation package.

- **Detailed Responsibilities**

**TBD**