

Secured Liquidity Risk Model

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LEHMAN BROTHERS

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Overview

- GCS, in conjunction with Treasury, is developing a model to measure, monitor, and manage the liquidity risk of the Firm's secured businesses.
- The new model is intended to improve upon the existing "Reliable Secured Funding" model and specifically aims to:
 - Evaluate the Firm's liquidity risk across a number of different market scenarios.
 - Calculate the liquidity position over the next 90 days, for each scenario, by business.
 - Include all secured businesses including the Matched Books and Yield Enhancement.
 - Define explicit rules for assessing the reliability of secured funding counterparties, minimizing the subjectivity that exists in the current model.
 - Provide a desktop application that will allow each funding desk to monitor and actively manage the liquidity risk of the assets they fund. This use of the model will create a common liquidity language across Treasury and the businesses. In addition, the desks will effectively ensure data quality for the Treasury's use of the model.
 - Offer a robust application that will easily accommodate changes in assumptions and other data inputs.
 - Produce daily MIS reports for a variety of interested parties.

Market Scenarios

The model measures liquidity in five market scenarios:

1. Losses: a liquidity crunch with large losses in the system, but no major financial institution at risk
2. Dealer Rumor: a liquidity crunch with one or more major financial institutions at some risk, but not insolvent
3. Dealer Bust: a major financial institution becomes insolvent
4. Lehman Brothers Event: a liquidity crunch with Lehman Brothers at some risk, but not insolvent
5. Nuclear Winter: financial disaster, multiple dealer collapses

While a liquidity gap will be calculated for all five scenarios it may only be most practical to manage to a single scenario with additional limits placed on the amount of risk we are willing to take under other scenarios.

Balance Sheet Assumptions

Assets

- Inventory positions are maintained throughout the 90-day reporting period.
- Matched book positions roll off unless they are reversed in for a specific term.
- Reverses to cover short positions roll off unless they are reversed in for term.
- Customer positions roll off unless there is a specific term commitment.

Liabilities

- Liabilities gap according to the retention matrix, including maturing term funding trades.*
- Inventory in the depo on Day 0 continues to be financed unsecured throughout the reporting period.
- Excess Non-Investment Grade funding is used to satisfy liquidity gaps for Investment Grade assets.
- Bankhaus and Lehman Brothers Bank are treated as Funding Partners; all other Lehman counterparties are treated as Neutral Funders.
- Diversification benefits will be included in the model. The greater the number of counterparties, the fewer “go” in a liquidity event.

Collateral and Counterparty Groupings

Fixed Income securities have been grouped into four collateral classes*:

- Investment Grade Collateral
- Non-Investment Grade Collateral
- Residential Whole Loans
- Assets Excluded From the Model (e.g., Treasuries, Agencies, 100% cash capital assets)

The Firm's secured funding counterparties have been allocated to one of five groups:

- Tier 1 - Funding partner, an institution that is strategically aligned to Lehman (e.g., Clearer)
- Tier 2 - Collateral swapper
- Tier 3 - Institutions that has strong relationships across senior management in both firms and a committed history with Lehman (primarily Treasury banking relationships)
- Tier 4 – Institution that good relationship with Lehman
- Neutral Funder – Institution that does not have a strong relationship with Lehman or has a history of scaling back in liquidity events

*Equivalent groupings will be created for equity securities.

Funding Retention Matrix

Funding Retention Matrix

Market Scenario	Tier 2 (Collateral Swappers)			Tier 3 (Strong Sr. Mgmt Relationship)			Tier 4 (Good Relationship)			Tier 5 (Neutral Funder)		
	Invest Grade	High Yield	Res W/L	Invest Grade	High Yield	Res W/L	Invest Grade	High Yield	Res W/L	Invest Grade	High Yield	Res W/L
Losses	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Go	Go
Dealer Rumor	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Go	Go	Go
Dealer Bust	Stay	Stay	Stay	Stay	Stay	Stay	Stay	Go	Go	Go	Go	Go
Lehman Event	Stay	Stay	Stay	Stay	Go	Go	Go	Go	Go	Go	Go	Go
Nuclear Winter	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go

- Tier 1 counterparties continue to fund all assets across all market scenarios
- The model will give some benefit for diversification within counterparty groups in those instances where we expect to lose financing. These diversification benefits have not been fully incorporated into the results presented on the following pages.

ABS and Private Label Securities

(liquidity results based on new model)

Balance Sheet

As expected, almost the entire Private Label and ABS balance sheet is financed secured, although there is approximately \$1.9B of non investment grade funding raised to fund investment grade assets.

Balance Sheet

<u>Asset Class</u>	<u>Collateral Quality</u>	<u>Inventory</u>	<u>Reverses</u>	<u>Total Assets</u>	<u>Repo</u>	<u>Shorts</u>	<u>Box</u>	<u>Cash Capital</u>	<u>Total Liabilities</u>	<u>Difference</u>
Asset Backs	Investment Grade	2,030	3,406	5,437	3,763	-	89	81	3,933	(1,503)
Private Label	Investment Grade	5,450	6,143	11,592	11,240	187	10	218	11,655	62
Asset Backs	Non Investment Grade	613	616	1,230	1,318	8	33	43	1,402	172
Private Label	Non Investment Grade	828	424	1,252	2,832	(0)	101	66	3,000	1,748
Total		8,922	10,589	19,511	19,153	195	234	408	19,990	479

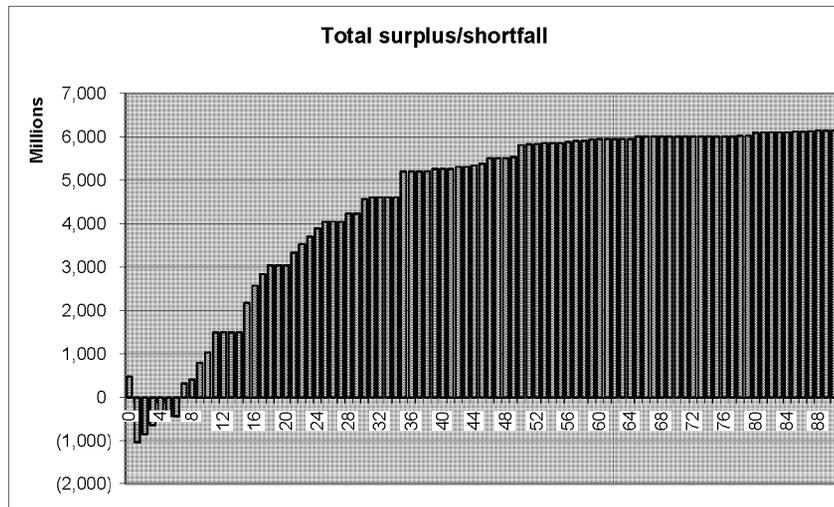
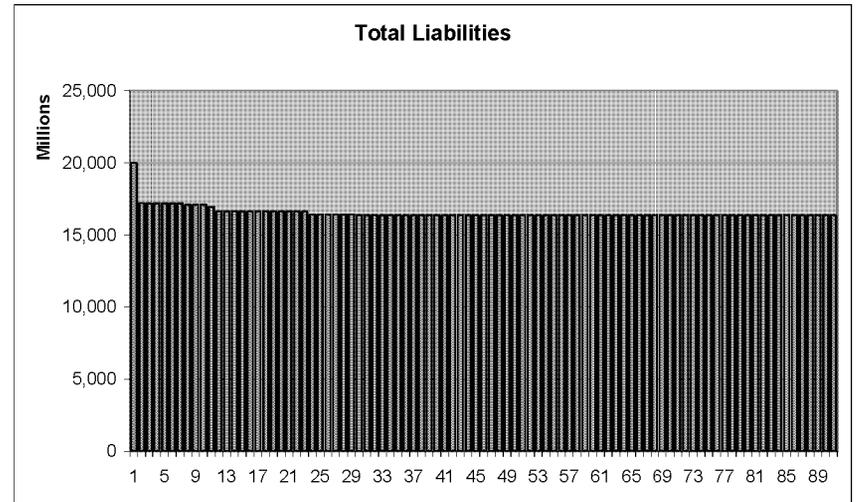
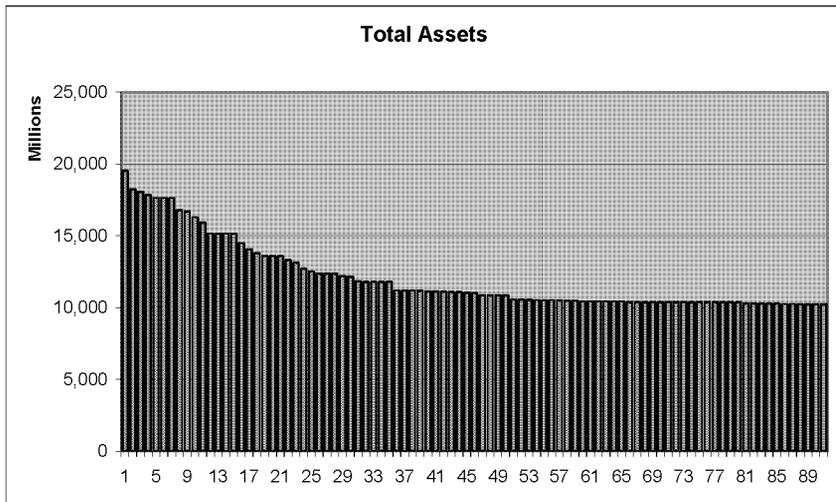
Liquidity Position for All Market Scenarios

<u>Liquidity</u>	Market Scenerio				
	<u>Losses</u>	<u>Dealer Rumor</u>	<u>Dealer Bust</u>	<u>Lehman Event</u>	<u>Nuclear Winter</u>
Day 1 Liquidity Position	846	(786)	(786)	(1,032)	(7,836)
Week 1 Liquidity Position	2,311	652	652	318	(6,667)
Week 2 Liquidity Position	3,941	1,983	1,983	1,497	(5,564)
Week 4 Liquidity Position	6,698	4,722	4,722	4,236	(4,207)
Largest Negative Liquidty Day	846	786	786	1,032	7,836
# of Negative Liquidity Days	none	6	6	6	1-90
		Days 1 - 6	Days 1 - 6	Days 1 - 6	All

Liquidity Position – Lehman Event

NON-INVESTMENT GRADE ABS & PRIVATE LABELS																			
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>Week 3</u>	<u>Week 4</u>	<u>Week 8</u>	<u>Week 12</u>
Assets	2,482	2,435	2,371	2,333	2,319	2,319	2,319	2,244	2,196	2,187	2,152	2,137	2,137	2,137	2,137	1,918	1,595	1,505	1,480
Liabilities																			
box	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134
cash capital	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109
short	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tier 1	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Tier 2	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038
Tier 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tier 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tier 5	912	201	198	198	198	198	198	198	198	198	198	198	198	198	198	198	0	0	0
Total Liabilities	4,402	3,683	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,482	3,482	3,482						
Liquidity Position	1,920	1,248	1,309	1,346	1,361	1,361	1,361	1,436	1,484	1,493	1,528	1,543	1,543	1,543	1,543	1,762	1,887	1,976	2,002
INVESTMENT GRADE ABS & PRIVATE LABELS																			
Assets	17,029	15,803	15,672	15,501	15,317	15,317	15,317	14,527	14,488	14,103	13,750	13,003	13,003	13,003	13,003	11,389	10,589	8,993	8,796
Liabilities																			
box	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
cash capital	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299
short	187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tier 1	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258
Tier 2	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976	7,976
Tier 3	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095
Tier 4	698	453	453	453	453	453	453	364	364	364	212	212	212	212	212	212	212	171	171
Tier 5	1,976	343	343	339	339	339	339	318	318	318	318	18	18	18	18	18	0	0	0
Total Liabilities	15,588	13,523	13,523	13,519	13,519	13,519	13,519	13,408	13,408	13,408	13,257	12,957	12,957	12,957	12,957	12,957	12,939	12,898	12,898
Liquidity Gap	(1,441)	(2,280)	(2,149)	(1,982)	(1,799)	(1,799)	(1,799)	(1,119)	(1,080)	(694)	(493)	(46)	(46)	(46)	(46)	1,568	2,350	3,904	4,102
Excess Non Invest Grade	1,920	1,248	1,309	1,346	1,361	1,361	1,361	1,436	1,484	1,493	1,528	1,543	1,543	1,543	1,543	1,762	1,887	1,976	2,002
Net Liquidity Gap	479	(1,032)	(841)	(636)	(438)	(438)	(438)	318	404	799	1,036	1,497	1,497	1,497	1,497	3,330	4,237	5,881	6,103
Total Assets	19,511	18,238	18,044	17,834	17,637	17,637	17,637	16,771	16,684	16,289	15,902	15,140	15,140	15,140	15,140	13,307	12,184	10,499	10,276
Total Liabilities	19,990	17,206	17,203	17,199	17,199	17,199	17,199	17,088	17,088	17,088	16,937	16,637	16,637	16,637	16,637	16,637	16,421	16,379	16,379
Net Liquidity Position	479	(1,032)	(841)	(636)	(438)	(438)	(438)	318	404	799	1,036	1,497	1,497	1,497	1,497	3,330	4,237	5,881	6,103

Liquidity Position – Lehman Event



Potential Remediation Steps

- Restructure the match book so that a larger portion is booked on open
- Migrate open and overnight funding trades away from Tier 4 and Tier 5 counterparts
- Execute short term trades
- Source extendible term financing with minimum maturity of 90 days

Time Line

- The data needed to calculate the liquidity position across all businesses will be sourced from multiple systems and will require cleaning by all of the funding desks. Initially, the exercise will be time consuming as we work through the data issues of each product. Listed below is the target completion time for each product.
- Together with the product-by-product analysis we will be building a desktop application to calculate daily liquidity. An IT resource has been allocated to this project and a project plan will be produced shortly.

<u>Region</u>	<u>Asset Class</u>	<u>Target Date</u>
US	Asset Back Securities / Private Labels	completed
US	Corporates	12/15/2005
US	Residential Whole Loans	12/31/2005
US	Money Markets	1/15/2006
US	Muni	1/23/2006
Euorpe	Corporate	2/7/2006
Euorpe	Soverigns	2/14/2006
Euorpe	EMG	2/21/2006
Asia	Corporate	3/7/2006
Asia	Soverigns	3/14/2006
Asia	EMG	3/21/2006
Global	Equities	4/30/2006