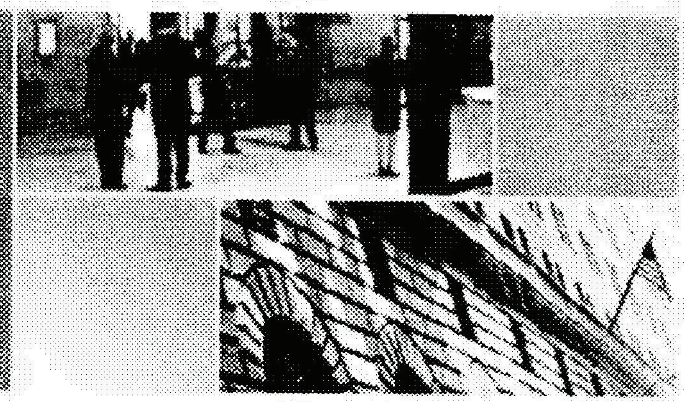
Primary Dealer Monitoring: Initial Assessment of CSEs



Bill Brodows
Til Schuermann

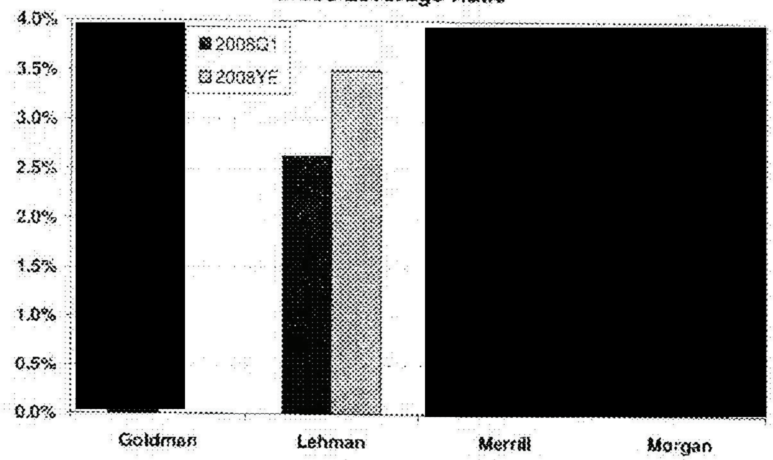
May 12, 2008

Presentation Overview

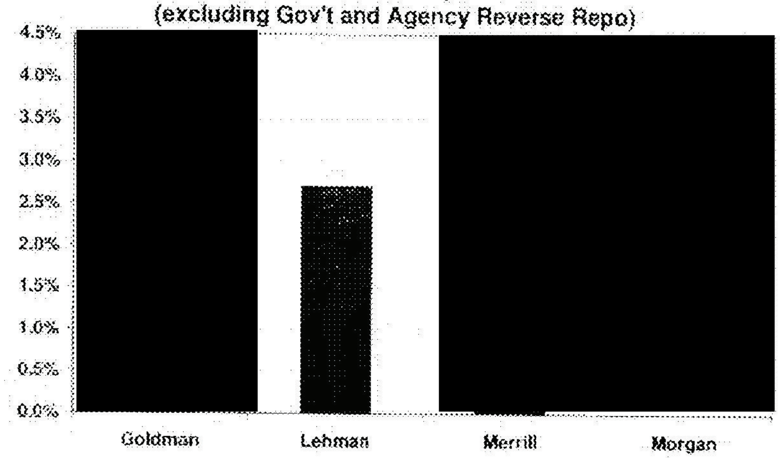
Four Views on Leverage

[redacted]

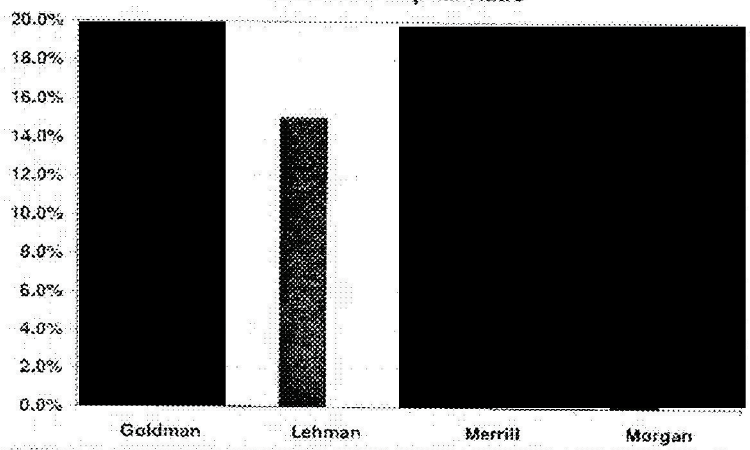
Gross Leverage Ratio



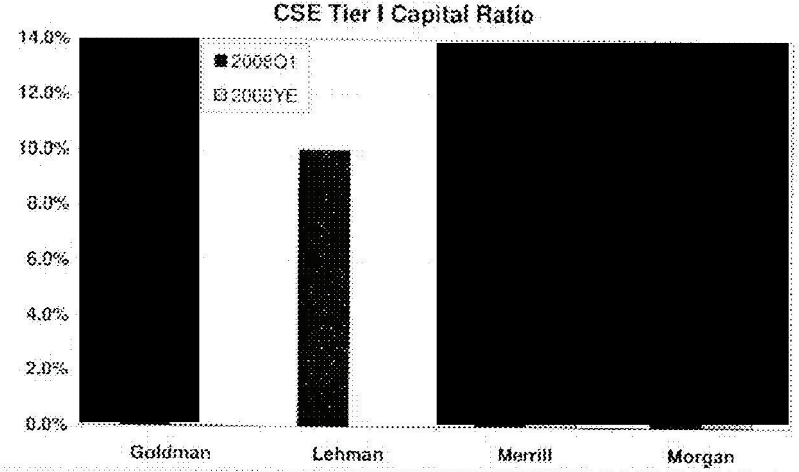
Adjusted Leverage Ratio
(excluding Gov't and Agency Reverse Repo)



Total CSE Capital Ratio



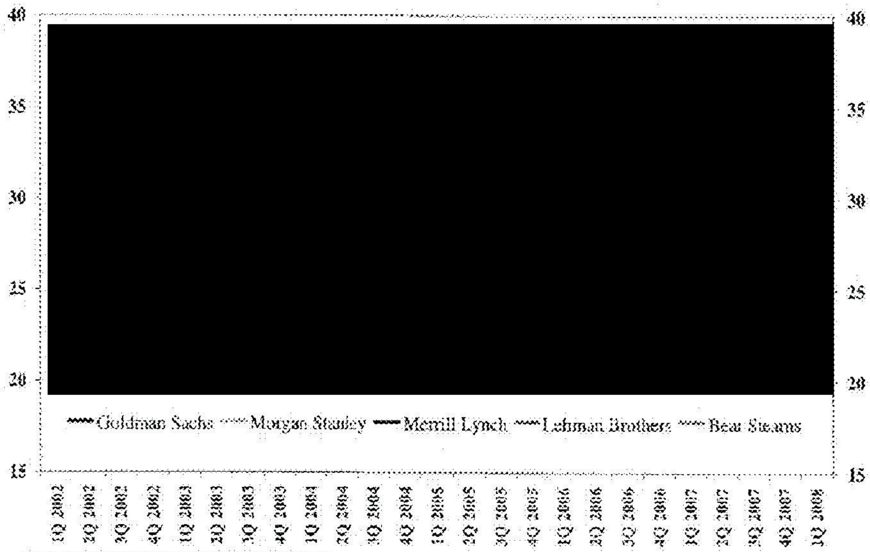
CSE Tier I Capital Ratio



Highly Confidential New York Fed Information

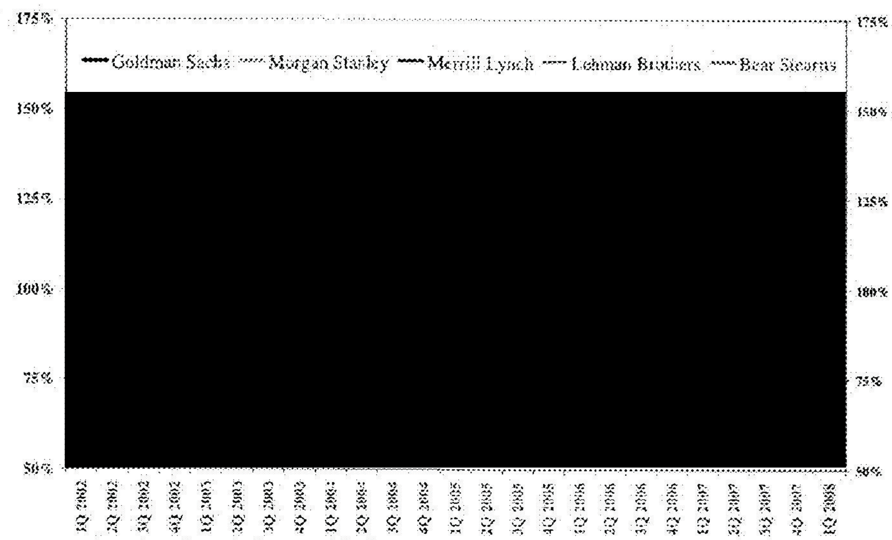
Gross Leverage Ratios (FRBNY Calculation)

Leverage Ratios* at the Large Securities Firms



* Leverage Ratio = Total Assets divided by Tangible Equity
Source: Company Reports

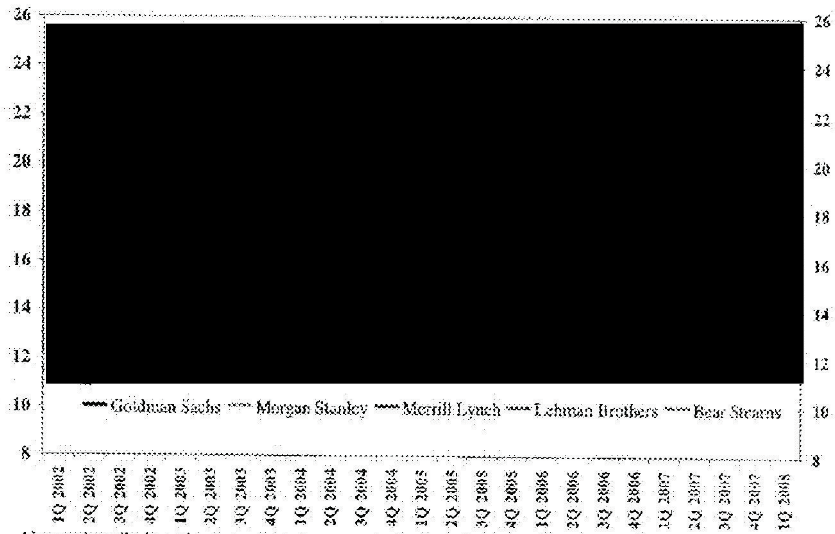
Leverage Ratios* at the Large Securities Firms: Indexed to 2002



* Leverage Ratio = Total Assets divided by Tangible Equity
Source: Company Reports

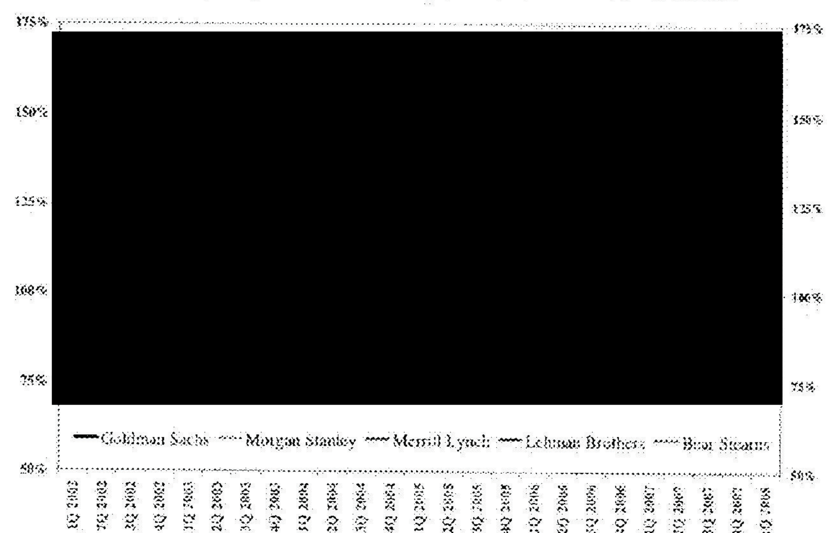
Adjusted Leverage Ratios (FRBNY Calculation)

Adjusted Leverage Ratios* at the Large Securities Firms



* Leverage Ratio = Total Assets less rev. repos, sec lending, segregated cash, and intangibles & goodwill divided by Tangible Equity
Source: Company Reports

Adjusted Leverage Ratios* at the Large Securities Firms: Indexed to 2002



* Leverage Ratio = Total Assets less rev. repos, sec lending, segregated cash, and intangibles divided by Tangible Equity
Source: Company Reports

FEDERAL RESERVE BANK of NEW YORK

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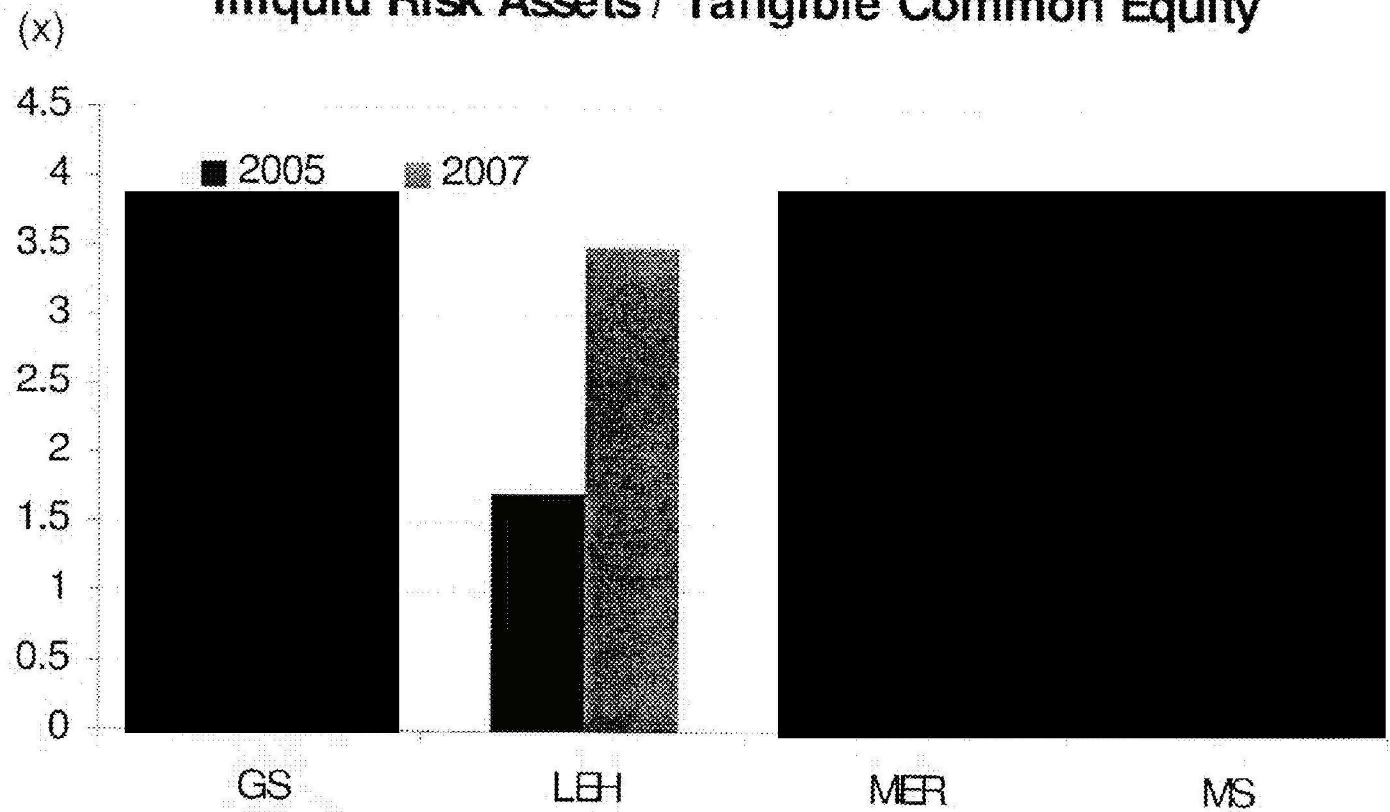
Illiquid Assets Comprise a Larger Portion of Balance Sheets

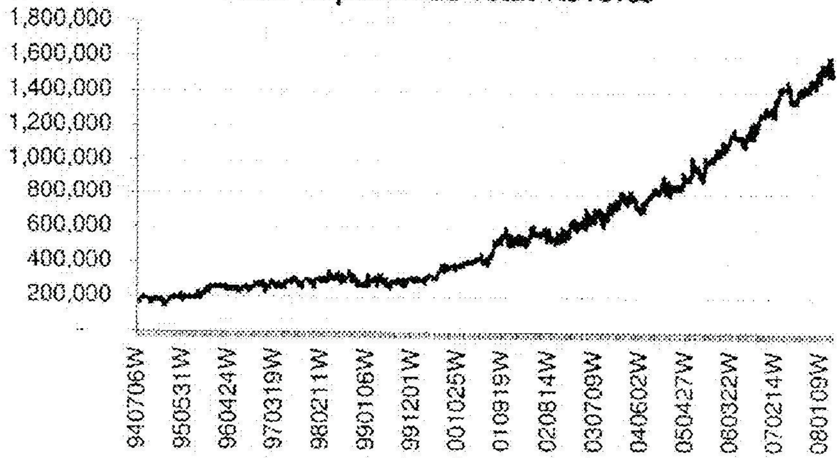
Illiquid Risk Assets / Tangible Common Equity



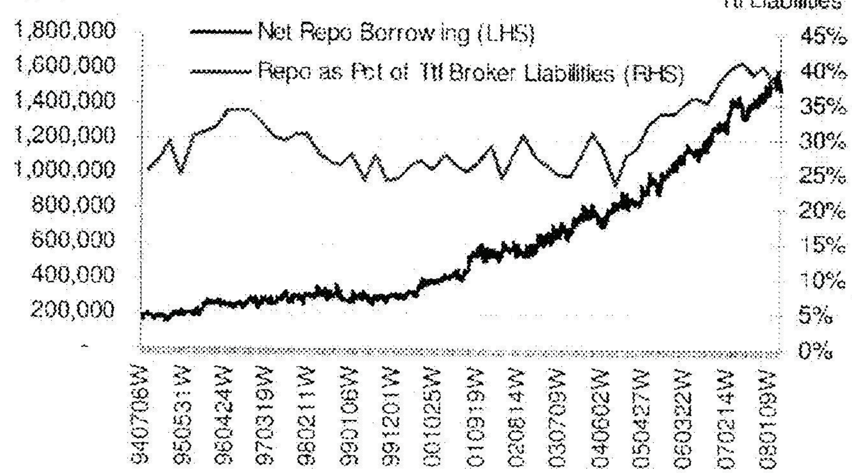
Source: Moody's

Net Repo Borrowing

Net Repo Borrowing - Total Repo Minus Total Reverse



Net Repo Borrowing and Dealer Repo Liabilities Total Repo Minus Total Reverse



A Framework for Setting Liquidity Standards

If Economic Capital is the capital needed, then Economic Liquidity is the liquidity needed to support business activities:

$$\frac{\text{Liquidity Sources}}{\text{Economic Liquidity}} > 100\%$$

- An Economic Liquidity model must specify Risk Tolerance (or desired survival probability) and Time Horizon.
  - Current models for Credit and Ops risk: 99.9% over 1 year; Market risk: 99% over 10 days.
  - Current contingency funding plans (CFPs) for Liquidity risk: no firm has explicitly stated a desired probability of survival (though they do target a credit rating).
    - Pre-Bear: CFPs assumed "no access to unsecured funds over a 1-year horizon" (i.e., a slow bleed).
    - Post-Bear: CFPs now modeling a "run on the bank over a 2 – 4 week horizon."

- Economic Liquidity modeling is scenario driven and does not lend itself naturally to a statistical approach.
  - CFPs are similar to internal models, like Market Risk (MRA) and Ops Risk (AMA), as well as to interest rate and liquidity risk treatments under Pillar 2.
    - There is enormous heterogeneity across firms, so a regulatory "one size fits all" approach is likely inappropriate.
  - CSE liquidity risk guidelines by the SEC are a series of scenarios, including:
    - 2-notch ratings downgrade, no unsecured funding for 1 year, deterioration of secured funding environment.
  - In an internal models approach to Economic Liquidity, stress assumptions and choice of scenarios can be guided by statistical analysis and form the basis for discussion with supervisors.
    - A similar approach, with perhaps some different (and some of the same) scenarios, could work for banks.

Liquidity Framework: "Bear" and "Bear Light" Scenarios

- The Liquidity Stress Analysis, which is summarized on slide 10, provides a preliminary analysis of "Liquidity Sources" versus "Liquidity Required" (i.e., Economic Liquidity) in two scenarios:
  - "Bear"
    - A run on the bank in all business areas: no rollover of secured funding except OMO eligible collateral; no rollover of unsecured funding; withdrawal of free credits; increases in margin requirements and on-boarding of assets due to collateral triggers and customer actions; and delays in receipt of operating cash flows (margin calls and derivatives receipts).
  - "Bear Light"
    - Same as Bear except severity is 35% of the Bear scenario. Conceptually, this scenario could be interpreted as a) the scope of the run is only 35% of the clients (versus 100% in Bear), or b) a run could be prevented if the market is aware that the firm maintains enough liquidity to withstand a 35% run, or c) contagion from a run on another investment bank.
- The data for the Liquidity Stress Analysis is drawn from CFPs developed by Morgan, Lehman and Merrill in response to an SEC request to estimate liquidity requirements in a "Bear Stearns" scenario. Goldman has yet to submit its CFP under this scenario, so FRBNY adapted Goldman's existing CFP for the analysis.
- Caveats:
  - The Liquidity Stress Analysis is very crude. FRBNY adjusted the Bear scenario submitted by the CSEs and Goldman's current CFP to make the projections more consistent across institutions. Time horizons and as of dates are different for each CSE.
  - Firms provided no input into the Bear Light scenario. That said, scaling the run on the bank to 35% is not difficult to conceptualize or calculate.

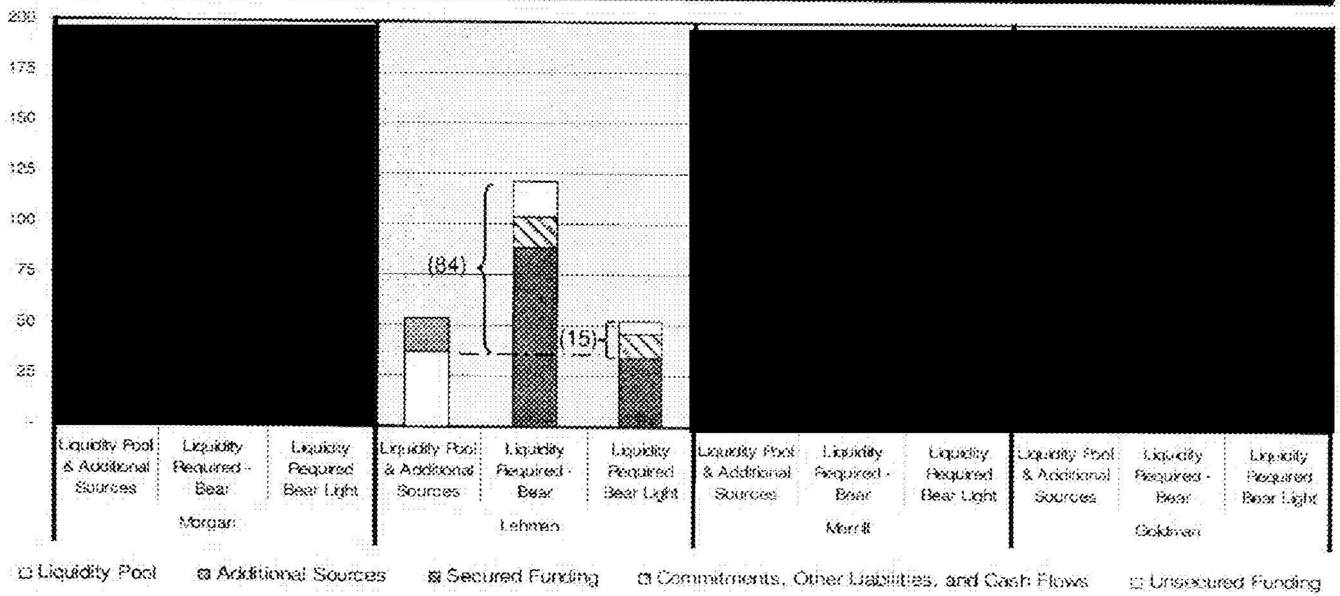
Summary of Liquidity Stress Analysis

- For each institution, the table below compares the size of the current "Liquidity Pool" to the amount of "Liquidity Required" in the Bear and Bear Light scenarios (see Appendix for details).

$ in billions

Liquidity Pool vs. Liquidity Required: (Deficit)/Cushion
("Additional Funding Sources," red bar, not included in (Deficit)/Cushion calculation)

Morgan		Lehman		Merrill		Goldman	
Bear	[redacted]	Bear	(84)	Bear	[redacted]	Bear	[redacted]
Bear Light		Bear Light	(15)	Bear Light		Bear Light	



"Bear" and "Bear Light" Scenarios: Preliminary Conclusions and Suggested Approach

[redacted]

- Lehman's deficits in the two scenarios, $84 billion and $15 billon, are large in relation to the size of its Liquidity Pool.
  - Lehman has plans to improve its Liquidity Pool by $19 billion by the end of June 2008, including the sale of $16 billion in illiquid assets.

[redacted]

- <u>Suggested Near-Term Approach</u>: Refine and bring consistency across institutions to the scenario-based methodology of estimating Economic Liquidity.
  - Work with each institution to bring consistency to the Bear scenario in terms of categories used and severity of assumptions.
  - Ask each institution to develop a second scenario, largely specified by the regulators, with a severity similar to the Bear Light scenario. The institutions would be required to demonstrate they could survive this scenario without PDCF or other central bank support.
    - Such an approach could be the first step in moving to a multiple scenario approach.

Risk Management

	MORGAN	LEHMAN	MERRILL	GOLDMAN
Risk Appetite / Economic Capital	[redacted]	• Have a new equity allocation framework geared to balance sheet reduction.	[redacted]	[redacted]
Balance between Risk Taking and Risk Management Culture	[redacted]		[redacted]	[redacted]
Senior Management's Role in Understanding and Acting on Risks	[redacted]	• Senior management is aggressively involved in risk management at the qualitative and quantitative levels.	[redacted]	[redacted]
Liquidity Risk Management	[redacted]	• Treasury management appears strong. • Involved in virtually all aspects of market-based and corporate finance activities.	[redacted]	[redacted]
Credit and Market Risk Management	[redacted]	• MIS on counterparty credit appears generally robust.	[redacted]	[redacted]
Overall Assessment	[redacted]	Active management from the top, capable of quickly implementing change.	[redacted]	[redacted]

Conclusions: Capital, Liquidity, and Risk Management

	Leverage / Capital	Liquidity	Risk Management	Overall
Goldman	[redacted]			
Morgan				
Lehman	○	●	○ +	○ –
Merrill	[redacted]			

[redacted]

- **Lehman**: Reasonable capital ratio; poor, but improving liquidity position; moderate risk appetite; no view from FRBNY on depth of controls.

[redacted]

Appendix: Liquidity Stress Analysis, Assumptions

Assumptions are given below for the "Bear" scenario. "Bear Light" scenario assumes a 35% severity compared to "Bear."

- SECURED FUNDING MATURING WITHIN 2-4 WEEKS (lines 1-6)
  - Fixed Income: all maturing OMO Eligible securities can be rolled at an increased haircut of 4%. All Less Liquid securities cannot be rolled. No cash inflow from reverse repos of Less Liquid securities.
  - Equity: all maturing equity financing either does not roll or is subject to increased haircuts.
- UNSECURED FUNDING MATURING WITHIN 2-4 WEEKS (lines 7-13)
  - All maturing unsecured funding is not rolled over and no new unsecured funding is available.
- COMMITMENTS, OTHER LIABILITIES AND CASH FLOWS (lines 14-22)
  - Various assets are brought on balance sheet due to contractual commitments and ratings downgrades.
  - Operating Cash Flows: the Prime Brokerage business experiences 100% withdrawal of Free Credit balances; in the Derivatives business, counterparties delay payments under swap obligations while margin requirements increase due to collateral triggers.
- LIQUIDITY REQUIRED/PARENT COMPANY LIQUIDITY POOL (lines 23-24)
  - Liquidity Required is the sum of Secured Funding, Unsecured Funding and Commitments, Other Liabilities and Cash Flows.
  - Liquidity Pool is the actual Parent Company Liquidity Pool as of the date of the CFP.
- ADDITIONAL FUNDING SOURCES (lines 25-29)
  - The CSEs draw on available bank lines and affiliates to provide cash. In addition, moderate amounts of assets are sold.

Appendix: "Bear" Liquidity Stress Analysis

Note: Figures highlighted in yellow indicate where one institution calculates a liquidity outflow or inflow, but others do not have an assumption for that category. Where possible, FRBNY provides an estimate for these categories to make the stress tests more consistent across institutions.

$ in billions

#		MORGAN			LEHMAN			MERRILL[1]			GOLDMAN		
		[redacted]			1 Notch Downgrade to A 4 Week Horizon			[redacted]					
		Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total
1	**SECURED FUNDING MATURING WITHIN 2-4 WEEKS**												
2	**Fixed Income, Total**[2]	[redacted]			152	(74)	-48%	[redacted]					
3	OMO Eligible	[redacted]			82	(3)	-4%	[redacted]					
4	Less Liquid, Total	[redacted]			70	(70)	-100%	[redacted]					
5	**Equity, Total**	[redacted]			21	(14)	-67%	[redacted]					
6	**TOTAL: SECURED FUNDING MATURING WITHIN 2-4 WEEKS**	[redacted]			174	(88)	-51%	[redacted]					
7	**UNSECURED FUNDING MATURING WITHIN 2-4 WEEKS**	[redacted]						[redacted]					
8	CP, STD, AND LTD < 1 Year	[redacted]				(15)		[redacted]					
9	Buybacks (CP, LTD, Other)	[redacted]						[redacted]					
10	Other Unsecured Liabilities	[redacted]						[redacted]					
11	Equity Financing, Total Return Swaps	[redacted]						[redacted]					
12	Deposit Outflows	[redacted]						[redacted]					
13	**TOTAL: UNSECURED FUNDING MATURING WITHIN 2-4 WKS**	[redacted]				(18)		[redacted]					
14	**COMMITMENTS, OTHER LIABILITIES AND CASH FLOWS**	[redacted]						[redacted]					
15	**Loan Commitments/Other Contractual Uses**	[redacted]				(6)		[redacted]					
16	**Other Liabilities/Commitments**	[redacted]						[redacted]					
17	**Operating Cash Flows, Total**	[redacted]				(9)		[redacted]					
18	Prime Brokerage, Free Credits	[redacted]			9	(7)	-74%	[redacted]					
19	Derivative Cash Flow Mismatches, Total	[redacted]				(3)		[redacted]					
20	Contractual Payments (Pay 100%, Receive 70%)	[redacted]						[redacted]					
21	Margin Payments/Collateral Calls	[redacted]				(3)		[redacted]					
22	**TOTAL: COMMITMENTS, LIABILITIES AND CASH FLOWS**	[redacted]				(15)		[redacted]					
23	**LIQUIDITY REQUIRED (6+13+22)**	[redacted]				(121)		[redacted]					
24	**LIQUIDITY POOL**	[redacted]				37		[redacted]					
25	**ADDITIONAL FUNDING SOURCES**	[redacted]						[redacted]					
26	Bank Lines	[redacted]				5		[redacted]					
27	Affiliate Bank and Broker Dealer Sources	[redacted]				6		[redacted]					
28	Asset Sales	[redacted]				6		[redacted]					
29	**TOTAL: ADDITIONAL FUNDING SOURCES**	[redacted]				17		[redacted]					

[1] Merrill Secured Funding (lines 1-6) is a 2-week time horizon.
[2] OMO Eligible: Treasuries, Agencies, Agency MBS, G7 Sovereigns. Less Liquid: Agency CMO, Asset Backed Securities, Bank Loans, Whole Loans, CMO Private Label, CP/Money Markets, Corporates, International Bonds, Municipals.

Appendix: "Bear Light" Liquidity Stress Analysis

	Note: Figures highlighted in yellow indicate where one institution calculates a liquidity outflow or inflow, but others do not have an assumption for that category. Where possible, FRBNY provides an estimate for these categories to make the stress tests more consistent across institutions. ($ in billions)	MORGAN			LEHMAN			MERRILL[1]			GOLDMAN		
		[redacted]			1 Notch Downgrade to A 4 Week Horizon			[redacted]					
		Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total	Total	Net Liquidity Drain	% of Total
1	**SECURED FUNDING MATURING WITHIN 2-4 WEEKS**												
2	**Fixed Income, Total**[2]	[redacted]			152	(26)	-17%	[redacted]					
3	OMO Eligible	[redacted]			82	(2)	-2%	[redacted]					
4	Less Liquid, Total	[redacted]			70	(25)	-35%	[redacted]					
5	**Equity, Total**	[redacted]			21	(7)	-35%	[redacted]					
6	**TOTAL: SECURED FUNDING MATURING WITHIN 2-4 WEEKS**	[redacted]			174	(34)	-19%	[redacted]					
7	**UNSECURED FUNDING MATURING WITHIN 2-4 WEEKS**	[redacted]						[redacted]					
8	CP, STD, AND LTD < 1 Year	[redacted]			18	(6)	-35%	[redacted]					
9	Buybacks (CP, LTD, Other)	[redacted]						[redacted]					
10	Other Unsecured Liabilities	[redacted]						[redacted]					
11	Equity Financing, Total Return Swaps	[redacted]						[redacted]					
12	Deposit Outflows	[redacted]						[redacted]					
13	**TOTAL: UNSECURED FUNDING MATURING WITHIN 2-4 WKS**	[redacted]			18	(6)	-35%	[redacted]					
14	**COMMITMENTS, OTHER LIABILITIES AND CASH FLOWS**	[redacted]						[redacted]					
15	**Loan Commitments/Other Contractual Uses**	[redacted]				(6)		[redacted]					
16	**Other Liabilities/Commitments**	[redacted]						[redacted]					
17	**Operating Cash Flows, Total**	[redacted]			12	(6)	-50%	[redacted]					
18	Prime Brokerage, Free Credits	[redacted]			9	(3)	-35%	[redacted]					
19	Derivative Cash Flow Mismatches, Total	[redacted]			3	(3)	-100%	[redacted]					
20	Contractual Payments (Pay 100%, Receive 70%)	[redacted]						[redacted]					
21	Margin Payments/Collateral Calls	[redacted]			3	(3)	-100%	[redacted]					
22	**TOTAL: COMMITMENTS, LIABILITIES AND CASH FLOWS**	[redacted]				(12)		[redacted]					
23	**LIQUIDITY REQUIRED (6+13+22)**	[redacted]				(52)		[redacted]					
24	**LIQUIDITY POOL**	[redacted]				37		[redacted]					
25	**ADDITIONAL FUNDING SOURCES**	[redacted]						[redacted]					
26	Bank Lines	[redacted]				5		[redacted]					
27	Affiliate Bank and Broker Dealer Sources	[redacted]				6		[redacted]					
28	Asset Sales	[redacted]				6		[redacted]					
29	**TOTAL: ADDITIONAL FUNDING SOURCES**	[redacted]				17		[redacted]					

[1] Merrill Secured Funding (lines 1-6) is a 2-week time horizon.
[2] OMO Eligible: Treasuries, Agencies, Agency MBS, G7 Sovereigns. Less Liquid: Agency CMO, Asset Backed Securities, Bank Loans, Whole Loans, CMO Private Label, CP/Money Markets, Corporates, International Bonds, Municipals