



PF2 SECURITIES EVALUATIONS, INC.

Corporate-backed CDO Evaluations



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Overview

- Credit Crisis and Illiquidity
- PF2 Market Focus and Research
- PF2's Valuation Methodology
- Biographies



Credit Crisis and Illiquidity



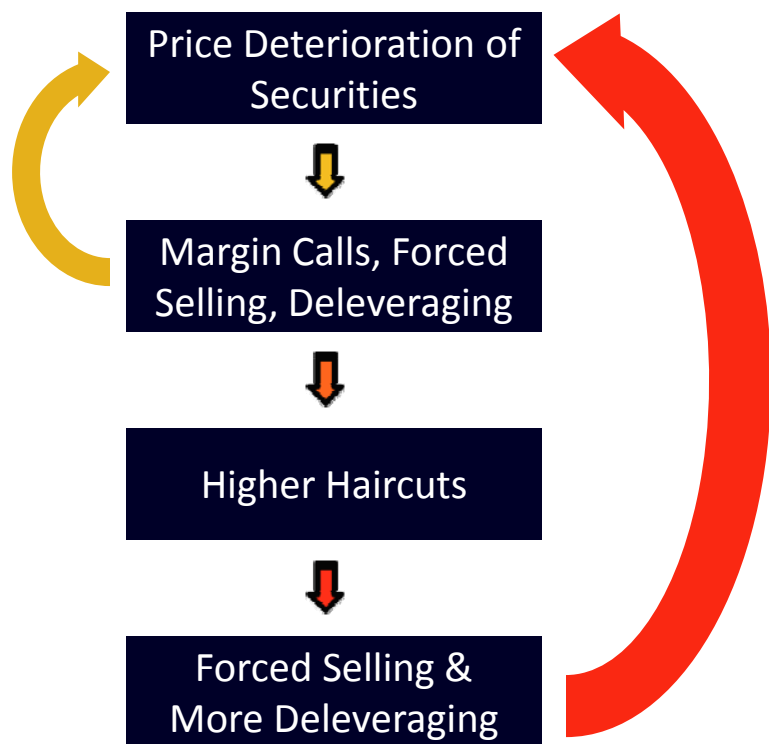
Credit Crisis and Illiquidity

Context

- US subprime delinquencies and defaults trigger crisis in credit markets
- RMBS rating downgrades and market-value deterioration worsen CDO illiquidity (including CLOs)
- Illiquidity increases challenge of valuing many CDOs:
 - CDOs backed by RMBS
 - Hybrid CDOs synthetically backed by RMBS
 - CLOs backed by broadly-syndicated loans (especially covenant-lite loans)

Credit Crisis and Illiquidity

Vicious Circle: De-leveraging in a Stressed Market



And that's not to mention...
a higher cost of funding

TYPICAL HEDGE FUND HAIRCUTS

Asset Class	Mar-07	Mar-08	Δ%
Synth Super Sen	1%	2%	100%
AAA ABS CDO	4%	N/A	N/A
AAA CLO	4%	20%	400%
AAA RMBS	2%	20%	900%
AA Corp Bond	3%	12%	300%
IG CDS	1%	5%	400%
BB HY Bond	15%	40%	167%
BB Lev Loan	20%	35%	75%
Equities	15%	20%	33%

The above example, courtesy of Citi, is out of date, shown solely for educational and illustrational purposes, and is not to be relied upon.

Source: UBS Financial Services, Inc.



Credit Crisis and Illiquidity

Challenge

- True market valuations
 - often unavailable
 - potentially biased
 - unreliable
- Intrinsic/hold-to-maturity “self-marks”
 - subject to manipulation
 - not truly independent
 - inconsistent with accounting standards

PF2 Market Focus and Research



PF2 Market Focus and Research

Overview

- Corporate-backed CDOs (including CLOs & CBOs)
- Trust Preferred Securities CDOs (TruPS CDOs)
- Summary of Certain Prior Engagements



PF2 Market Focus and Research

Corporate-backed CDO Research and Presentations

- Published Research
 - CLO CCC Haircuts (Aug. 2009)
 - CLO Managers and Takeover Opportunities (May 2009)
 - The Corporate Loan and CLO Conundrum (Feb 2009)
- Presentations
 - Podcast: Impact of Loan Amendments on CLOs (July 2009)
 - Federal Reserve: Informational Asymmetries in the CDO Market (Mar. 2009)
 - NYSSA: CDOs Risk and Regulation Review (Sept. 2008)

PF2 Market Focus and Research

TruPS CDO Research and Presentations

- Published Research
 - The Tripping Point – Deferral Rates (Dec. 2009)
 - TruPS CDOs – A Draconian H1 2009 (Jul. 2009)
 - 2008 – A Troubling Year for TruPS CDOs (Jan. 2009)

- Presentations
 - Federal Financial Institutions Examination Council (FFIEC):
scheduled May 2010

PF2 Market Focus and Research

Summary of Recent Engagements

RECENT PF2 EVALUATION ENGAGEMENTS

Client Type	Periodicity	End Client	Deal Type	# Deals	Dates	Evaluation Type	Notes
1 Consultant/Advisor	Once-off	Pension Fund	Corp. CDOs	3	7/8/08	Valuations	
2 Regional Bank	Once-off		TruPS CDOs	2	9/23/08	Valuations	
3 Regional Bank	Periodic		TruPS CDOs	13	9/30/08 - 7/29/09	Vals., Cashflows	Bank seized by FDIC
4 Large Money Center Bank	Periodic		CLOs and CBOs	31	10/7/08 - Present	Risk, Vals., Cashflows	
5 Small Asset Manager	Periodic		CLOs	3	10/14/08 - 11/25/08	Vals., Legal Support	Client now obtaining free quotes from B/D
6 Large Asset Manager	Periodic		CLOs	2	11/3/08 - Present	Cashflows	
7 Large Asset Manager	Once-off		CLOs	2	11/19/08	Risk, Vals., Cashflows	
8 Consultant/Advisor	Periodic		CLOs	25	1/29/09 - Present	Valuations	
9 Consultant/Advisor	Periodic	6 Institutions	TruPS CDOs and CLOs	9	5/6/09 - Present	Risk, Vals., Cashflows	Multiple engagements for different clients
10 Regional Bank	Periodic		TruPS CDOs	2	5/29/09 - Present	Risk, Vals., Cashflows	
11 Regional Bank	Periodic		TruPS CDOs	2	9/29/09 - Present	Risk, Vals., Cashflows	
12 Regional Bank	Periodic		TruPS CDOs	1	10/13/09 - Present	Risk, Vals., Cashflows	
13 Regional Bank	Periodic		TruPS CDOs	1	10/14/09 - Present	Risk, Vals., Cashflows	
14 Consultant/Advisor	Periodic	3 Institutions	TruPS CDOs	14	10/19/09 - Present	Risk, Vals., Cashflows	Multiple engagements for different clients



PF2's Valuation Methodology



PF2's Valuation Methodology

Overview

- Qualitative Analysis
 - A. Review Available Documents
 - B. Evaluate Manager
- Quantitative Analysis
 - A. Model CDO Waterfall (and other structural features)
 - B. Evaluate CDO and Collateral Pool
 - C. Design Scenarios and Stress Tests Tailored to Pool
 - D. Test CDO Tranche under Scenarios and Stress Tests

PF2's Valuation Methodology

Qualitative Analysis



PF2's Valuation Methodology

A. Review Available Documents

- PF2 reviews CDO indenture both for quantitative and qualitative terms
- PF2 will also try to review other deal documents, as available,
 - offering document (if any)
 - collateral management agreement
 - legal opinions
 - hedge documents

PF2's Valuation Methodology

A. Review Available Documents

- Critical “qualitative” terms vary from deal to deal
- Examples
 - par build-up (deep discounts, purchase/redemption of CDO's notes)
 - par haircuts (credit deterioration)
 - principal to interest (IOs, combination securities, trading gains)
 - interest to principal (reinvestment OC test)
 - reinvestment (criteria, after reinvestment period end)
 - “Event of Default” (definition/process)
 - “Defaulted Securities” (definition/carrying value)
 - “Market Value” (definition)
 - “key man” provision, if any

PF2's Valuation Methodology

B. Evaluate Manager

- PF2 does not conduct an operations review of each CDO manager
- PF2 will assess publicly available information about CDO managers and may contact managers with specific questions about:
 - experience
 - credit selection
 - staffing
 - resources

PF2's Valuation Methodology

Quantitative Analysis



PF2's Valuation Methodology

A. Model CDO Waterfall

- PF2's proprietary model, *ProForma2*TM, produces a discounted cashflow analysis of CDOs
- *ProForma2*TM is an object-oriented, VBA-encoded model with flexibility to run multiple scenarios
 - the model requires user-specified assumptions as inputs
 - i. portfolio-wide (e.g. default timing profiles, EOD scenarios)
 - ii. collateral-bucket specific (e.g. default, recovery, prepayment)
 - it then passes the proceeds generated under these assumptions through the CDO's waterfall

PF2's Valuation Methodology

A. Model CDO Waterfall

- For each scenario, *ProForma2*TM generates a vector of cashflows received by each CDO tranche
 - PF2 discounts these cashflows by a discount margin to obtain their present value
 - PF2 determines the appropriate discount margin for each CDO tranche based upon its policies and procedures, which incorporate qualitative assessments

PF2's Valuation Methodology

A. Model CDO Waterfall

- *ProForma2*TM
 - captures rating migration for ratings-based OC haircuts
 - models Event of Default waterfall
 - allows modeling of n different default-timing profiles and captures the inverse relationship between the economic default environment and recovery rate*
 - takes as inputs historical cashflows to each tranche, enabling the calculation of equity IRR and with it the evaluation of the equity tranche

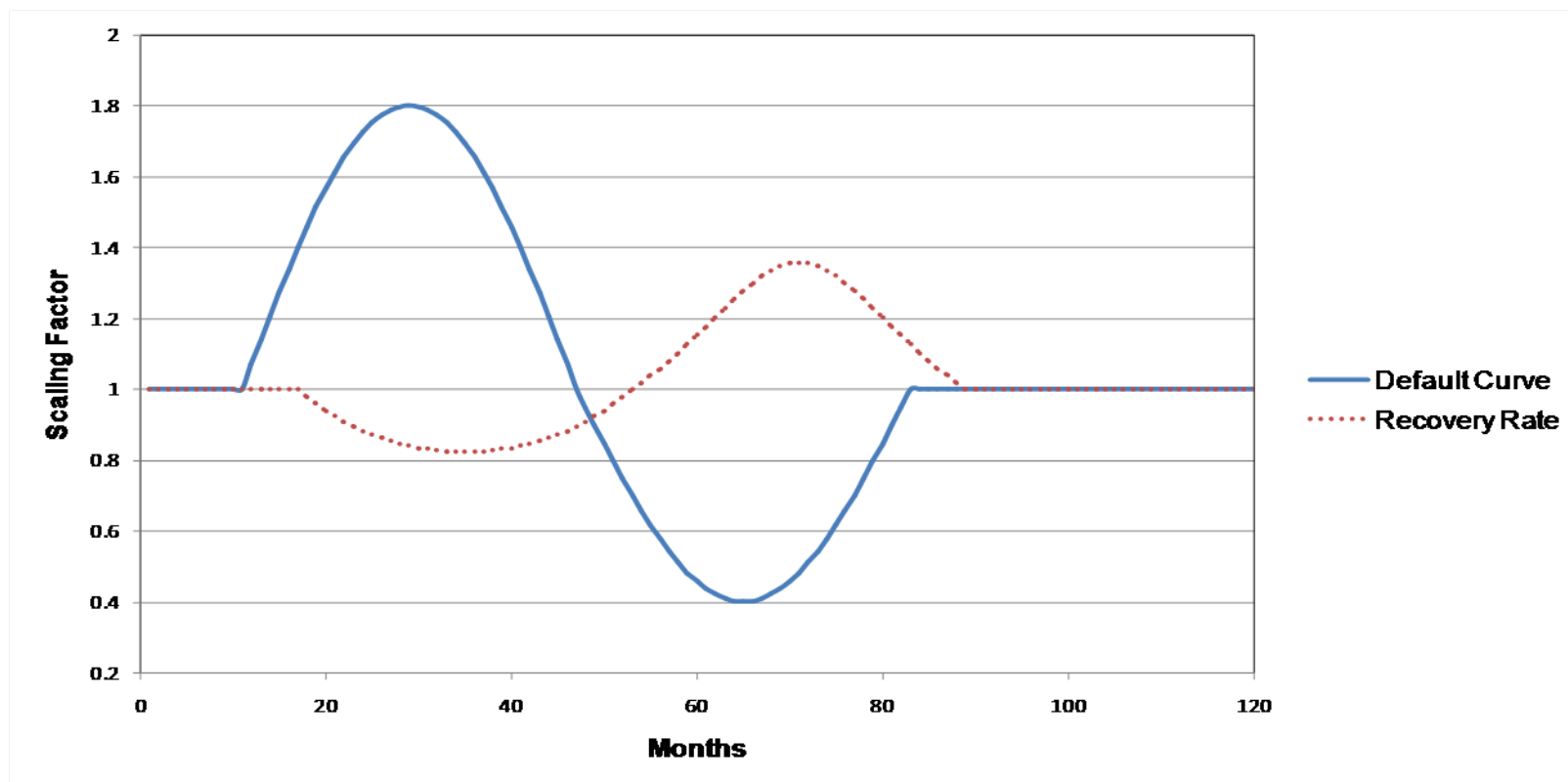
* See supporting graphs over the page for demonstration.



PF2's Valuation Methodology

A. Model CDO Waterfall

Inverse Corporate Bond Relationship: Default and Recovery Rate



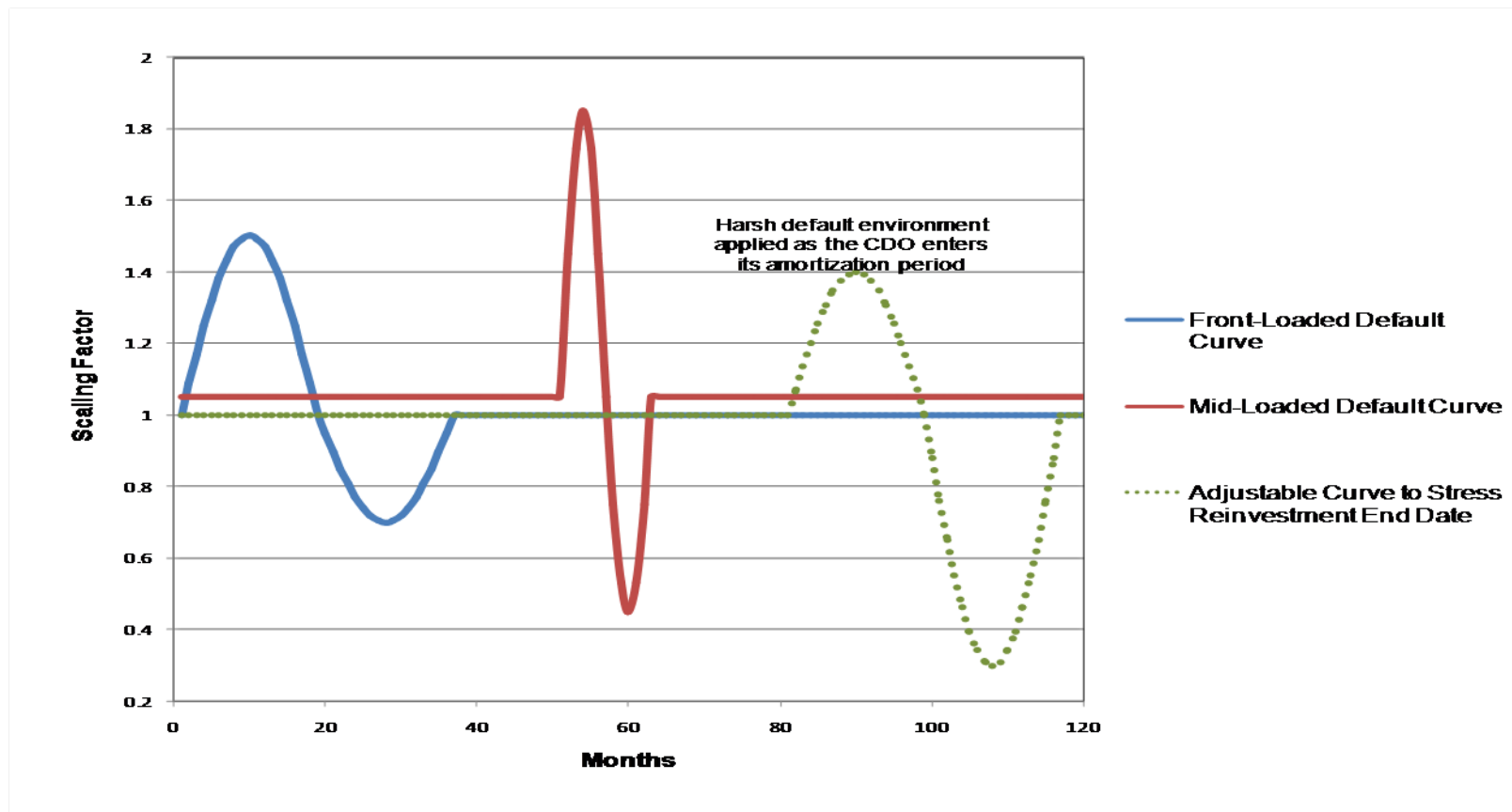
See, Longstaff and Schwartz, "A Simple Approach to Valuing Risky Fixed and Floating Rate Debt," *The Journal of Finance*, July 1995.



PF2's Valuation Methodology

A. Model CDO Waterfall

Corporate Default Timing Profiles



PF2's Valuation Methodology

B. Evaluate CDO and Collateral Pool

- **Test Compliance***
 - coverage tests
 - i. collateral coverage (OC)
 - ii. interest coverage (IC)
 - collateral quality tests
 - i. default probability
 - ii. spread/coupon
 - iii. correlation
 - iv. recovery rate

* The actual metrics examined will vary from deal to deal.



PF2's Valuation Methodology

B. Evaluate CDO and Collateral Pool

- **Collateral Pool: Trends and Concentrations**
 - defaults
 - rating migration
 - barbell/low-rated asset concentration
 - issuer/industry/servicer concentrations
 - esoteric-assets (emerging market debt/CDOs)
- **Other Considerations**
 - excess spread (leaking/reinvested)
 - credit enhancement/subordination (increasing/decreasing)
 - historical prepayment speeds, as applicable

PF2's Valuation Methodology

B. Evaluate CDO and Collateral Pool

Example of Report (Test Compliance)

HYPOTHETICAL DEAL EXAMPLE			
<u>Deal Performance Tests</u>	<u>Current Value</u>	<u>Trigger</u>	<u>Test Result</u>
Par and Interest Coverage Tests			
Class A Overcollateralization	128.49%	110.50%	Pass
Class A Interest Coverage	195.15%	110.00%	Pass
Class B Overcollateralization	98.11%	106.40%	Fail
Class C Overcollateralization	58.75%	105.91%	Fail
Class D Overcollateralization	55.35%	101.62%	Fail
Interest Diversion	137.30%	101.40%	Pass
Collateral Quality Tests			
Weighted Average Rating Factor	3,031	450	Fail
Weighted Average Spread (%)	2.13	1.60	Pass
Diversity Score	15	20	Fail
Weighted Average Recovery Rate (%)	46.30	35.00	Pass
Weighted Average Life (years)	2.19	7.80	Pass

PF2's Valuation Methodology

B. Evaluate CDO and Collateral Pool

Example of Report (Issuer and Industry Concentration)

HYPOTHETICAL CDO		
Top 5 Issuer Exposures		
	Balance (mm)	% Total Deal
BCP Crystal	\$3.50	7.2%
Masonite	\$2.88	5.9%
Ford Motor Credit	\$2.37	4.9%
Penn National Gaming	\$1.95	4.0%
Las Vegas Sands	\$1.80	3.7%
Total	\$12.50	25.6%
Top 5 Industry Exposures		
	Balance (mm)	% Total Deal
Consumer Goods and Services	\$9.33	19.1%
Healthcare	\$5.80	11.9%
Entertainment	\$4.54	9.3%
Financial and Insurance	\$4.29	8.8%
Technology	\$4.05	8.3%
Total	\$28.00	57.5%

PF2's Valuation Methodology

B. Evaluate CDO and Collateral Pool

Example of Report (Concentration Limitations)

HYPOTHETICAL CDO			
<u>Collateral Concentration Limits</u>	<u>Current Value</u>	<u>Trigger</u>	<u>Test Result</u>
Single Issuer Concentration	7.18%	3.5%	Fail
Highest Industry Concentration	19.13%	15.0%	Fail
Second Highest Industry	11.9%	12.5%	Pass
Emerging Market Exposure	0.14%	2.5%	Pass
Securities organized outside US, UK or Germany	7.25%	5.0%	Fail
Floating rate Underlying Assets	58.72%	75.0%	Fail
Interest Only Securities	0.0%	5.0%	Pass
Moody's Rating below Ba2	3.62%	0.0%	Fail
Moody's Rating below Baa3	44.8%	10.0%	Fail
Synthetic Securities	0.0%	10.0%	Pass
CBO, CLO and PIK Obligations	15.6%	25.0%	Pass
Convertible Securities	0.0%	5.0%	Pass
Step-Up/Down Obligations and Zero Coupon Bonds	1.58%	3.0%	Pass
Securities maturing after 3/5/2031	7.62%	5.0%	Fail



PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

- PF2 designs
 - reasonable scenarios and
 - stress tests (default, default timing, recovery, prepayment)
- PF2 applies these to “stratifications”:
 - for CLOs, scenarios and stress tests applied directly to stratifications within a CDO’s collateral pool

PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

- **Pool-Level Stratifications (CLOs/other corporate CDOs)**
 - industry*
 - rating
 - vintage
 - fixed/floating/adjustable rate collateral

* PF2 pays attention to inter and extra-industry relationships between financial, banking, insurance and reinsurance exposures within each specific CDO, if large. These correlations are arguably larger than among assets from other industries, considering the symbiotic relationships among banks and similarities between their business models and processes. For further detail, see Chan, Getmansky, Haas and Lo's *Systemic Risk and Hedge Funds*, draft dated November 16, 2005.



PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

- Credit indices serve as *indicators* of market's perception of loss rates

▪ LCDX, for CLOs

- useful though imperfect guide (cancellability feature; obligation category is borrowed money)
- reasonable sample size of 100 reference securities per index
- *similar* industry concentrations (autos; healthcare; entertainment) and rating distribution (single B-heavy) vs. typical CLOs*
- relatively high correlation to other credit indices†

▪ ABX, for ABS CDOs

- less useful but not irrelevant guide
- small sample size of 20 reference securities per index
- heavily traded (thus, more liquid)
- highly responsive to "headline" news
 - recent heightened correlation to financial stocks
 - modest to high index volatility levels (versus SPX stock index)

* As compared to a sample set of 35 CLOs, issued between 2004 and May 2007. See supporting graphs over the page.

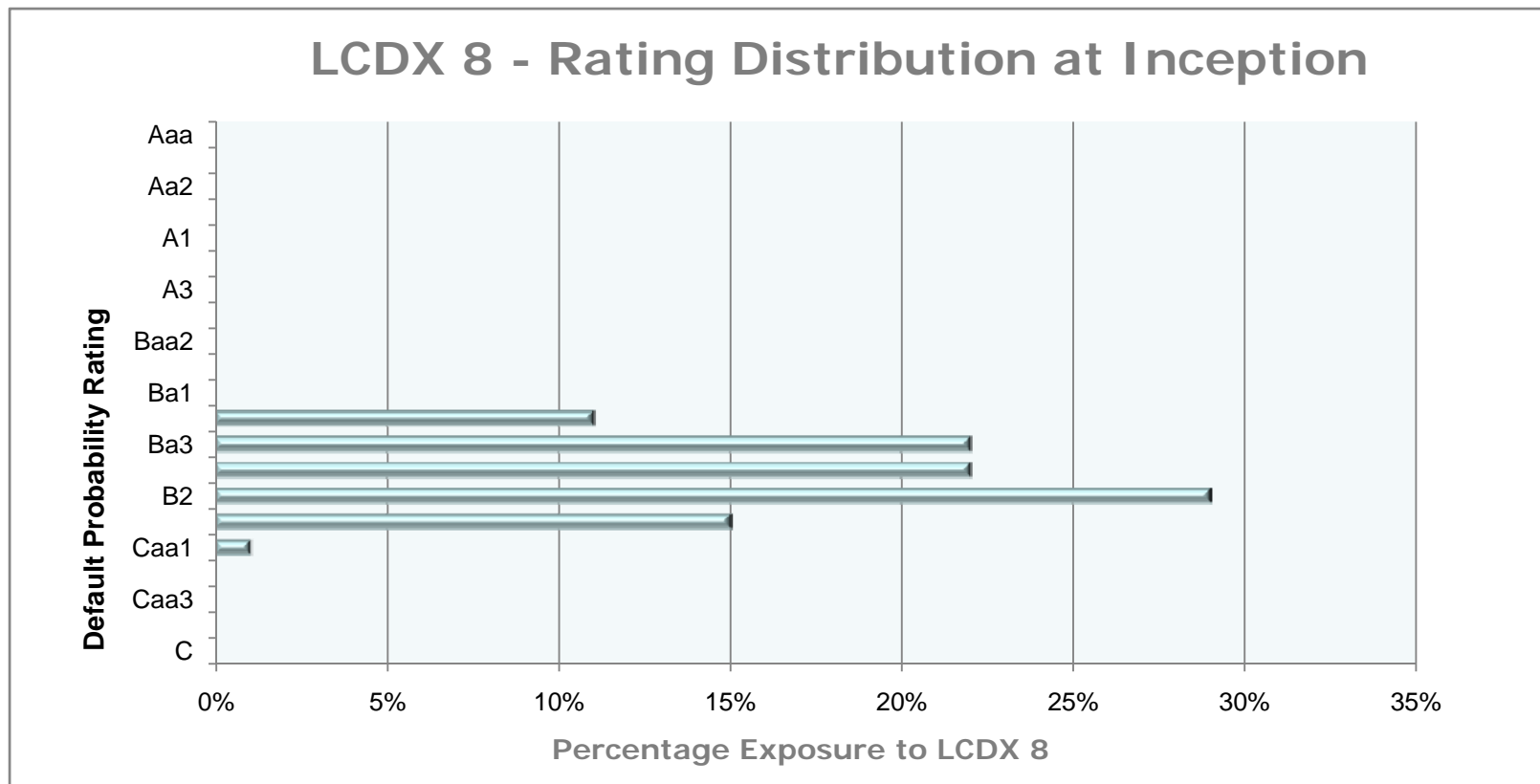
† Based on limited history.



PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

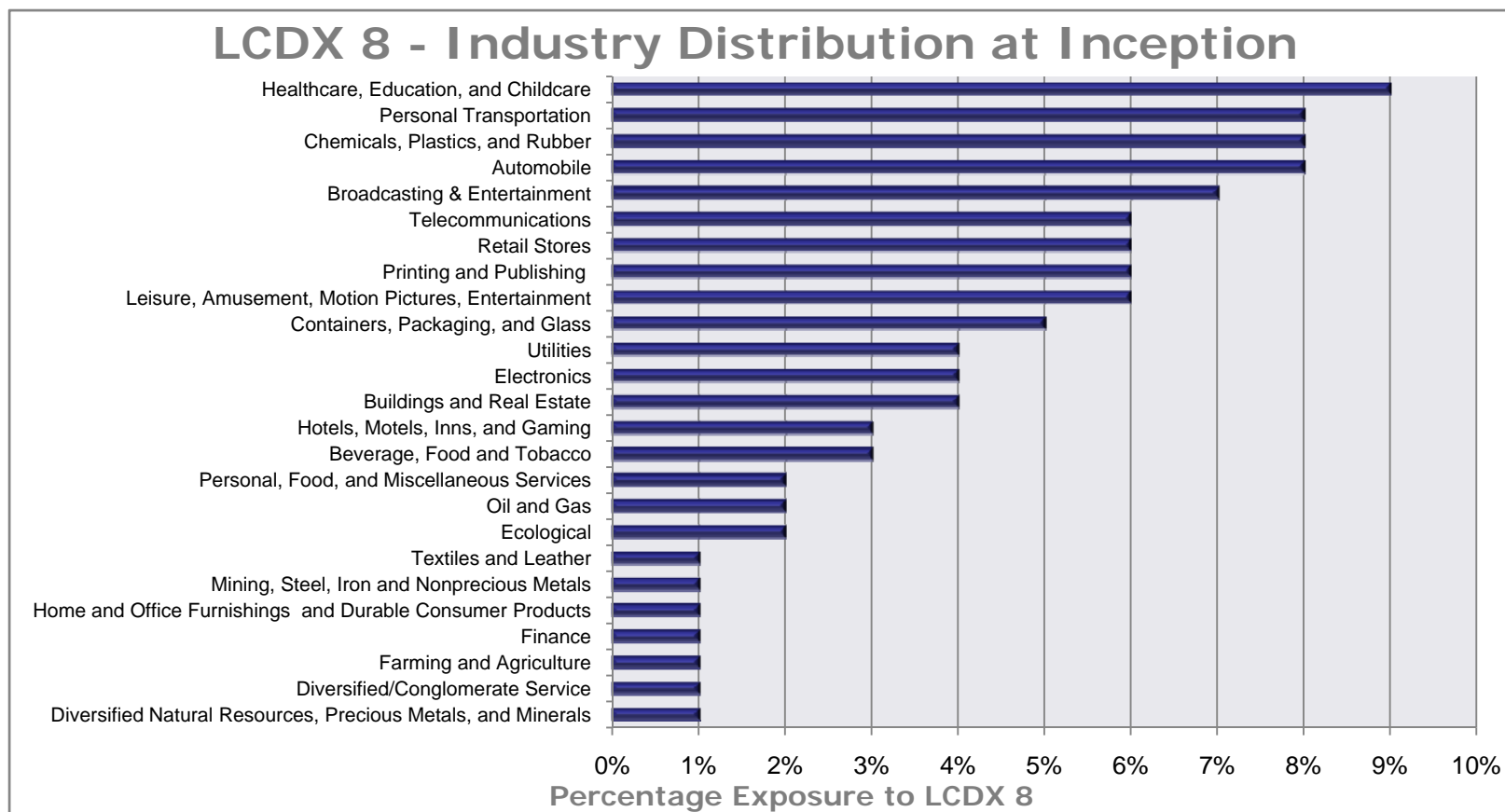
CLOs - LCDX



PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

CLOs - LCDX



PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

CLOs - LCDX

Correlations Among Credit Indices					
	HVOL	XO	HY HB	HY 100	LCDX
IG	49.9%	35.1%	31.6%	80.7%	82.4%
HY B	58.7%	71.9%	45.3%	83.1%	86.1%
HY BB	43.0%	74.3%	57.5%	86.2%	85.7%

PF2's Valuation Methodology

C. Design Scenarios and Stress Tests

Rating-based Corporate Default Rates

Historical Cumulative Issuer-Weighted Default Rates, by Rating Category (1983-2007)[†]

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	0.00%	0.00%	0.00%	0.04%	0.08%	0.13%	0.19%	0.19%	0.19%	0.19%
Aa1	0.00%	0.00%	0.00%	0.10%	0.15%	0.17%	0.17%	0.17%	0.17%	0.17%
Aa2	0.00%	0.01%	0.05%	0.11%	0.22%	0.26%	0.32%	0.38%	0.45%	0.52%
Aa3	0.02%	0.04%	0.07%	0.12%	0.18%	0.23%	0.27%	0.28%	0.29%	0.34%
A1	0.00%	0.08%	0.21%	0.30%	0.37%	0.44%	0.50%	0.54%	0.61%	0.70%
A2	0.02%	0.08%	0.21%	0.39%	0.56%	0.72%	0.90%	1.08%	1.24%	1.34%
A3	0.03%	0.15%	0.31%	0.42%	0.56%	0.74%	0.89%	1.06%	1.18%	1.23%
Baa1	0.15%	0.39%	0.66%	0.89%	1.13%	1.35%	1.63%	1.82%	1.96%	2.09%
Baa2	0.14%	0.42%	0.79%	1.39%	1.91%	2.42%	2.89%	3.34%	3.88%	4.59%
Baa3	0.31%	0.84%	1.47%	2.16%	2.97%	3.77%	4.44%	5.08%	5.56%	5.90%
Ba1	0.69%	1.81%	3.21%	4.62%	6.02%	7.43%	8.38%	9.08%	9.62%	10.27%
Ba2	0.79%	2.21%	4.03%	5.94%	7.58%	8.76%	9.97%	11.19%	12.40%	13.49%
Ba3	1.78%	5.01%	9.06%	13.14%	16.49%	19.66%	22.60%	25.28%	27.76%	30.26%
B1	2.56%	7.10%	11.95%	16.36%	20.86%	25.10%	29.39%	33.16%	36.19%	38.53%
B2	4.33%	9.86%	14.98%	19.34%	22.83%	25.86%	28.96%	31.26%	33.81%	35.95%
B3	8.50%	16.10%	23.25%	29.67%	35.50%	41.33%	45.45%	48.93%	51.27%	53.04%
Caa1	10.50%	20.88%	30.42%	38.37%	44.78%	48.97%	50.76%	51.12%	51.12%	51.12%
Caa2	18.43%	27.67%	34.84%	40.96%	44.79%	48.80%	52.20%	56.39%	62.91%	70.04%
Caa3	25.58%	37.59%	44.53%	49.58%	54.65%	54.99%	54.99%	54.99%	54.99%	54.99%
Ca-C	32.91%	43.08%	51.51%	56.86%	63.29%	66.17%	70.86%	75.52%	75.52%	75.52%

[†] Includes both bonds and loans

Source: Moody's Investors Service

Note that for TruPS, the short history of this asset class makes such an approach particularly challenging, requiring more severe stress testing.



PF2's Valuation Methodology

D. Test CDO Tranche under Scenarios and Stress Tests

- **Fair Value Analyses**
 - single scenario outputs and risk measures
 - multi-scenario outputs
- **Client-driven Analyses**
 - ability to specify assumptions, even per asset
 - customized solvers and other stress tests

PF2's Valuation Methodology

D. Test CDO Tranche under Scenarios and Stress Tests

Fair Value and Single Scenario Outputs and Risk Measures
(scenario used in sample: expected case, front-loaded DTP, base prepay curve)

Tranche	Fair Value	Price	Interest	Principal	WAL	Duration	Principal Window
A	95.78%	95.19%	Timely	0%	1.94	1.81	11/15/08 - 11/15/11
B1				***	Not Requested	***	
B2				***	Not Requested	***	
C				***	Not Requested	***	
Equity				***	Not Requested	***	

PF2's Valuation Methodology

D. Test CDO Tranche under Scenarios and Stress Tests

Example of Multi Scenario Outputs (prices, here)

Default Rate	Default Timing	Prepayment Vector		
		Slow	Base	Fast
Base Case				
	Front-Loaded	94.13%	94.94%	95.86%
	Mid-Loaded	94.11%	94.93%	95.85%
	Back-Loaded	94.14%	94.94%	95.86%
Expected Case				
	Front-Loaded	94.40%	95.19%	96.04%
	Mid-Loaded	94.26%	95.06%	95.92%
	Back-Loaded	94.39%	95.19%	96.04%
Stressed Case				
	Front-Loaded	95.33%	96.04%	96.87%
	Mid-Loaded	95.16%	95.86%	96.68%
	Back-Loaded	95.34%	96.06%	96.88%

PF2's Valuation Methodology

D. Test CDO Tranche under Scenarios and Stress Tests

Client-driven Analyses - Customized Solvers and Stress Tests

Default Rate	% of Curve at Which Tranche:			
	Defers Interest	Suffers 1st Principal Loss	Suffers 50% Principal Loss	Suffers 100% Principal Loss
Base Case	N/A	124%	133%	N/A
Expected Case	N/A	119%	123%	N/A
Stressed Case	N/A	105%	108%	N/A

PF2



PF2 Principals

Guillaume Fillebeen is a director at PF2. Prior to joining PF2, Guillaume was part of RBS Greenwich Capital's credit markets department, where his responsibilities included a wide range of underwriting activities relating to the issuance of corporate, CRE, and ABS CDOs. He began his structured finance career at Moody's Investors Service, where he was primarily responsible for the modeling of cash-flow, hybrid and synthetic credit derivatives. Guillaume holds a BA degree in mathematics from Washington University in St. Louis.

Mark Froeba is a director at PF2, with more than 12 years of experience in structured finance, most recently as senior vice president and CLO team leader with Moody's Derivatives Group. He is best known for his contributions to the development of CLO rating criteria. Mark started his career in structured finance at Skadden, Arps, Slate, Meager & Flom LLP as a tax attorney where he provided tax analysis for structured finance transactions, primarily credit card securitizations. Mark earned his BA, summa cum laude, from St. John's University in Minnesota, and his JD, cum laude, from Harvard University. Mark is a member of the New York and Illinois bars.

Gene Phillips is a director at PF2. Prior to joining PF2, Gene was on the buy-side with Citigroup Alternative Investments' Fixed Income Alternatives division. Gene began his structured finance career in the Derivatives group at Moody's Investors Service in New York. He has written extensively on research items ranging from trust preferred CDOs (TruPS CDOs) and corporate-backed CDOs to the topic of rating agency reform. Gene has a BSc degree in mathematics and applied mathematics, with distinction, and a BSc Hons degree in the Advanced Mathematics of Financial Derivatives, from the University of the Witwatersrand in South Africa.

