

Stern School of Business

Structured Finance

Dr. Ian Giddy

New York University

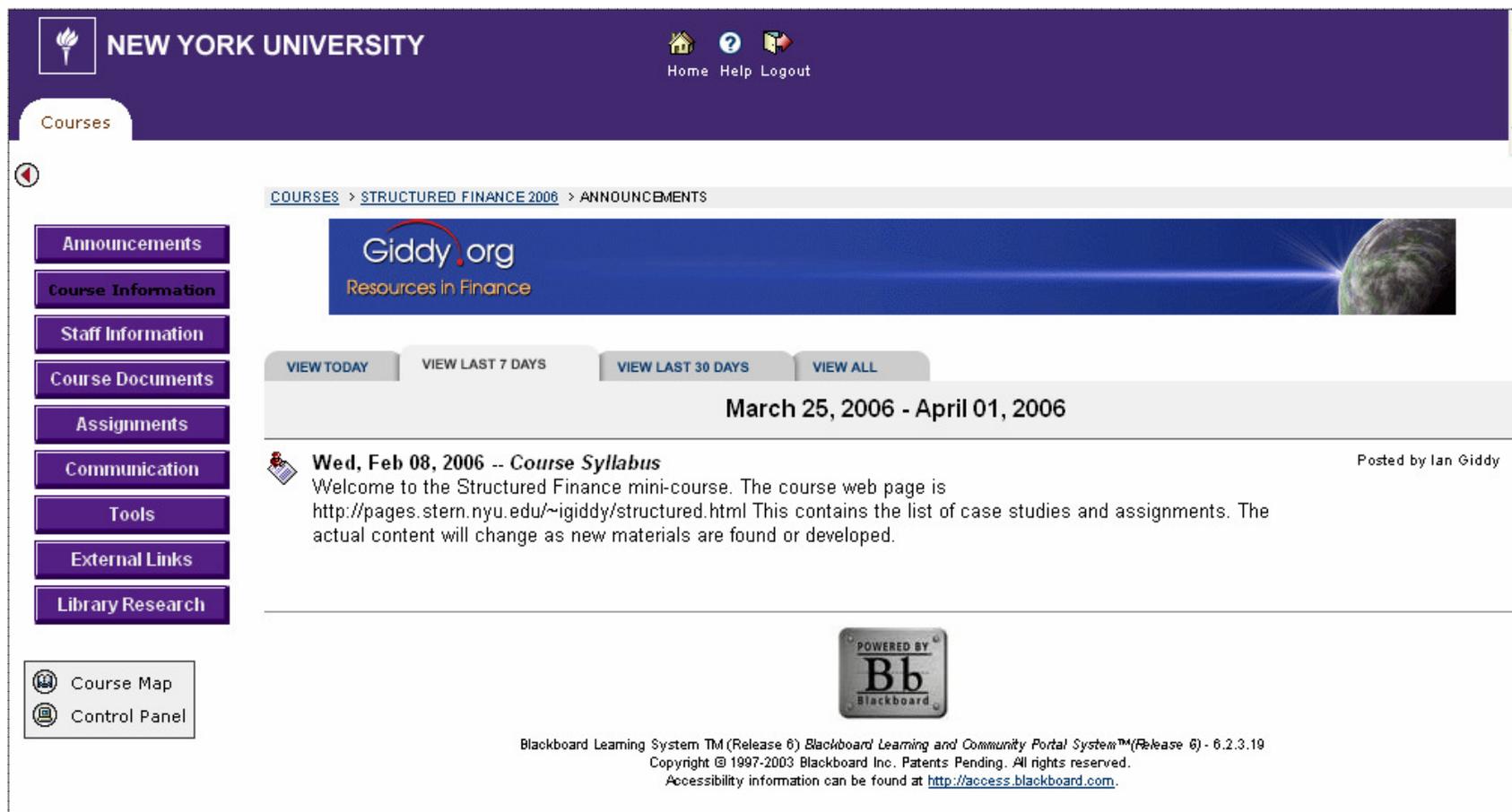
Structured Finance

- ❑ What is Structured Finance?
- ❑ Financing with Equity-Linked Securities and Structured Notes
- ❑ Financing with Asset-Backed Securities
- ❑ Credit-Linked Structured Finance
- ❑ Commercial MBS and Project Finance
- ❑ Leveraged Finance
- ❑ Mezzanine Finance

On the Web: giddy.org

March 28	1	Introduction to structured finance.	Market update Hybrid Instruments	In-class work on "A Day in the Life" Bavaria Bank MTN	sf-intro
March 29	2	Structured investment products	ISF Ch 10 Structured Notes	Endesa; DBS Pens; Warrant Bonds; Lyons; Equity Index Note; Oil-Linked Notes (In-class assignments)	sf-equity
April 11	3	Design and pricing of convertible and hybrid debt	Convertibles Moody's on Hybrids	Sealed Air Convertible US Bancorp Hybrid Lottomatica	sf-hybrids
April 12	4	Securitization	ISF Ch 4 & 5	Ford Credit Auto Owner Trust Chase Credit Card ABS On-line quiz A	sf-abs1
April 25	5	ABS and CDOs: ratings and credit enhancement	ISF Ch 6 Rating European CLOs	Bear Stearns CMBS KKR's LBO CDO In-class: A CDO from Scratch	sf-abs2 sf-CDOs
April 26	6	Credit swaps, credit-linked notes, and related instruments	ISF Ch 3 & 9	CDS Sample Termsheet Bespoke Synthetic CLO Assignment: Magnolia Finance	sf-cds
May 16	7	Commercial real estate securitization	ISF Appendix B Fitch CMBS Criteria	Bear Stearns CMBS 2007 On-line quiz B	sf-cmbs
May 17	8	Project finance	ISF Ch 13	Latin American Nitrogen	sf-project
May 30	9	Structuring leveraged finance	Introduction to Leveraged Finance A Note on LBOs	Le Meridien Hotels Nukem Security Services LBO of ISS and ISS Financials On-line quiz C	sf-lbo
May 31	10	Mezzanine finance	Mezzanine Finance 1 & 2 Second Lien Loans	Second Lien and PIK Woodstream's Mezz and Termsheet	sf-mezz1
June 14	11	Emerging market mezzanine Review	TBA	Suriname Hydro (Group hand-in) On-line quiz D	sf-mezz2
June 14-18		Final Exam	Sample Final	On-line Final (due midnight June 18)	

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Courses

COURSES > STRUCTURED FINANCE 2006 > ANNOUNCEMENTS

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March 25, 2006 - April 01, 2006

Wed, Feb 08, 2006 -- Course Syllabus Posted by Ian Giddy

Welcome to the Structured Finance mini-course. The course web page is <http://pages.stern.nyu.edu/~igiddy/structured.html> This contains the list of case studies and assignments. The actual content will change as new materials are found or developed.

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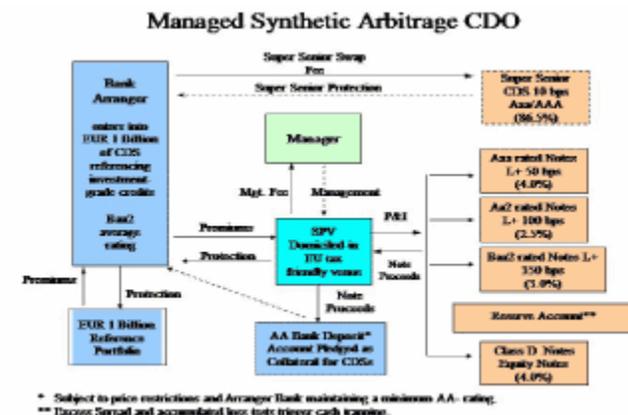
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Fabozzi et al., *Introduction to Structured Finance*

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What is Structured Finance?

- Financing techniques tailored to **special needs or constraints** of issuers or investors
- Solving problems that are **not easily solved by conventional** financing techniques
- Question: *Why and when should companies consider the use of structured financing techniques?*



Other Kinds of Structured Finance



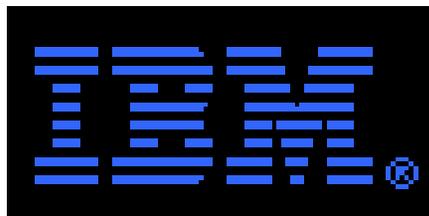
Sale for \$12 million



Purchase for \$12 million +

Mostly, Debt and Equity Suffice

Balance Sheet			
Assets	\$Mil	Liabilities and Equity	\$Mil
Cash	10,570.0	Current Liabilities	39,798.0
Other Current Assets	36,400.0	Long-Term Liabilities	39,638.0
Long-Term Assets	62,213.0	Shareholders' Equity	29,747.0
Total	109,183.0	Total	109,183.0

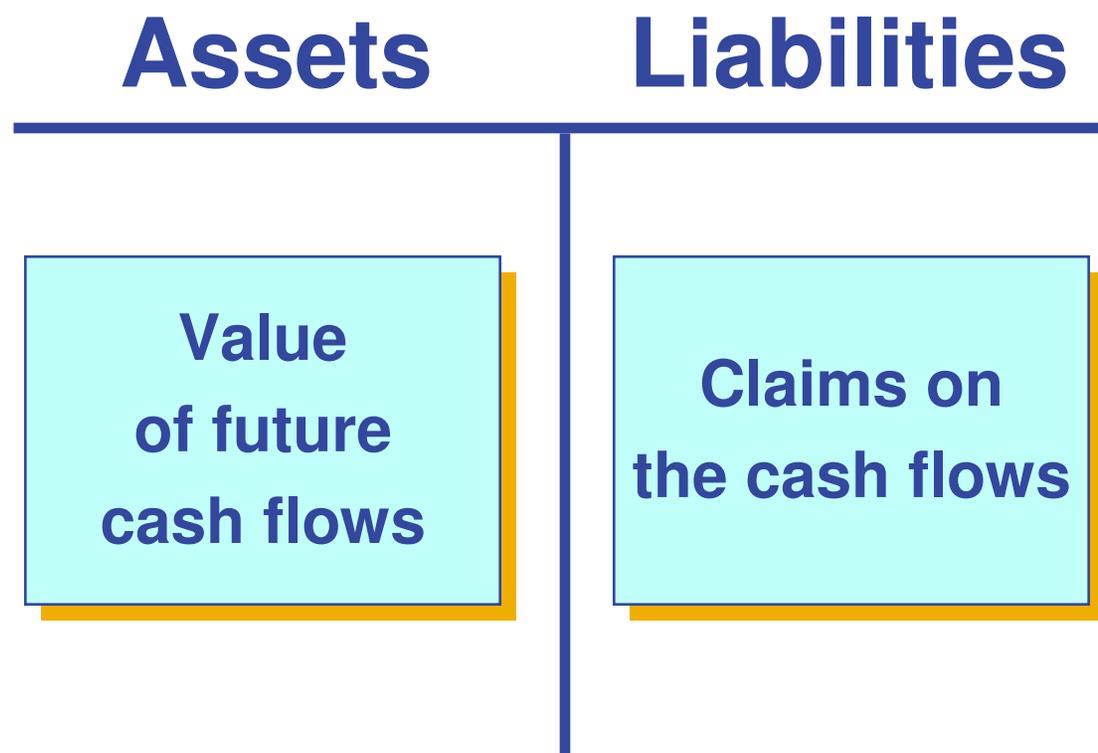


(Dollars in millions)

	Maturities	2004	2003
U.S. Dollars:			
Debtures:			
5.875%	2032	\$ 600	\$ 600
6.22%	2027	469	500
6.5%	2028	313	319
7.0%	2025	600	600
7.0%	2045	150	150
7.125%	2096	850	850
7.5%	2013	532	550
8.375%	2019	750	750
3.43% convertible notes*	2007	278	309
Notes: 5.9% average	2006–2013	2,724	3,034
Medium-term note program: 4.5% average	2005–2018	3,627	4,690
Other: 3.0% average**	2005–2010	1,555	508
		12,448	12,860
Other currencies (average interest rate at December 31, 2004, in parentheses):			
Euros (5.0%)	2005–2009	1,095	1,174
Japanese yen (1.2%)	2005–2015	3,435	4,363
Canadian dollars (7.8%)	2005–2011	9	201
Swiss francs (1.5%)	2008	220	—
Other (5.5%)	2005–2014	513	770
		17,720	19,368
Less: Net unamortized discount		49	15
Add: SFAS No. 133 fair value adjustment†		765	806
		18,436	20,159
Less: Current maturities		3,608	3,173
Total		\$14,828	\$16,986

* On October 1, 2002, as part of the purchase price consideration for the PwCC acquisition, as addressed in note c, "Acquisitions/Divestitures," the company issued convertible notes bearing interest at a stated rate of 3.43 percent with a face value of approximately \$328 million to certain of the acquired PwCC partners. The notes are convertible into 4,764,543 shares of IBM common stock.

When Debt and Equity are Not Enough



Debt, Equity and More



Gartnaneane Wind Farm



Financing Detail:

75% non-recourse senior debt: Barclays Bank

5% non-recourse junior debt: Dolmen Butler Briscoe

20% equity

When Debt and Equity are Not Enough

Assets

**Value
of future
cash flows**

Liabilities

Debt

**Contractual int. & principal
No upside
Senior claims
Control via restrictions**

Equity

**Residual payments
Upside and downside
Residual claims
Voting control rights**

When Debt and Equity are Not Enough

Assets

Value
of future
cash flows

Liabilities

Debt

Contractual int. & principal
No upside
Senior claims
Control via restrictions

Equity

Residual payments
Upside and downside
Residual claims
Voting control rights

What if...

Claims
are inadequate?

Returns
are inadequate?

Claims are Inadequate

Su Casita Is the Little House That Sets the Stage

Standard & Poor's recently assigned its preliminary 'mxAAA' Mexican national scale rating to the fixed-rate senior certificates of the RMBS securitization Su Casita-GMAC, for a total amount of UDI 177.79 million (equivalent to roughly US\$53.4 million). Su Casita-GMAC is the first RMBS transaction in Mexico. The trust's underlying assets consist of a pool of geographically well-diversified residential mortgages originated by two SOFOLES (sociedades financieras de object limitado/mortgage non-bank banks): Hipotecaria Su Casita S.A. de C.V. (Su Casita), the second largest SOFOL in Mexico, and GMAC Hipotecaria S.A. de C.V. (GMAC).

Su Casita and GMAC, the originators and sellers of the underlying mortgage portfolios, will create a bankruptcy-remote Mexican on-shore trust whose only purpose will be to acquire residential mortgages originated by both entities in Mexico. The issuer (Banco JP Morgan S.A. as trustee) will issue two classes of certificates, a fixed-rate senior certificate, and a residual certificate for a total amount of UDI 183,285,111 million. The UDI is an inflation-linked currency that keeps the value of the securities in real terms. The final legal maturity of the senior certificates will be 16 years after the closing date. The originators will hold the residual certificates, which are not rated by Standard & Poor's. The senior certificates will benefit from a 3% credit enhancement in the form of subordination of the residual certificates and a liquidity facility provided by the Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V. (FMO) that will cover the timely payment of interest and the minimum target principal payment up to an amount equal to 9% of the outstanding principal.



CMBS

- ❑ What's special about commercial real estate securitization?
- ❑ How is a deal structured?



FitchRatings
KNOW YOUR RISK

Structured Finance

Commercial Mortgage
Presale Report

Bear Stearns Commercial Mortgage Securities Trust 2007-PWR18

\$2,502,224,530 Commercial Mortgage Pass-Through Certificates

	Class	Ratings	Subor- dination (%)
\$74,891,059	A-1	AAA	30.030
\$291,900,000	A-2	AAA	30.030
\$269,700,000	A-3	AAA	30.030
\$131,900,000	A-AB	AAA	30.030
\$709,998,000	A-4	AAA	30.030
\$272,415,000	A-1A	AAA	30.030
\$211,557,000	A-M	AAA	20.020
\$38,916,000	AM-A	AAA	20.020
\$182,468,000	A-J	AAA	11.386
\$33,566,000	AJ-A	AAA	11.386
\$2,502,224,530	X-1*†	AAA	—
\$2,442,815,000	X-2*†	AAA	—
\$25,047,000	B†	AA+	10.385
\$25,047,000	C†	AA	9.384
\$18,786,000	D†	AA-	8.634
\$25,047,000	E†	A+	7.633
\$18,786,000	F†	A	6.882
\$25,047,000	G†	A-	5.881
\$21,916,000	H†	BBB+	5.005
\$18,786,000	J†	BBB	4.254
\$25,047,000	K†	BBB-	3.253
\$9,393,000	L†	BB+	2.878
\$9,393,000	M†	BB	2.503
\$9,392,000	N†	BB-	2.127
\$6,262,000	O†	B+	1.877
\$3,131,000	P†	B	1.752
\$3,131,000	Q†	B-	1.627

Presale Report

The preliminary ratings listed at left reflect the credit enhancement provided to each class by subordination of classes junior to it, the positive and negative features of the underlying collateral, and the integrity of the legal and financial structures, including advancing for liquidity by the master servicer and the trustee. The preliminary ratings do not address the likelihood or frequency of principal prepayments or the receipt of prepayment premiums, default interest, additional interest, excess interest, or penalties. The preliminary ratings on the interest-only certificates address only the likelihood of receiving interest payments while principal on the related certificates remains outstanding and does not address the possibility that a securityholder may fail to recover its initial investment due to a rapid rate of principal payments (including both voluntary and involuntary prepayments) or realized losses. All figures and percentages presented in this report are, in the case of loans that have been split into an A/B note structure, based on the balances of the A notes contributed to the pool and may not be reflective of the whole loan amounts (the combined A and B note balances).

Transaction Highlights

When Debt and Equity are Not Enough

Assets

Value
of future
cash flows

Liabilities

Debt

Contractual int. & principal
No upside
Senior claims
Control via restrictions

Equity

Residual payments
Upside and downside
Residual claims
Voting control rights

Alternatives

- ❖ Collateralized
- ❖ Asset-securitized
- ❖ Project financing

- ❖ Preferred
- ❖ Warrants
- ❖ Convertible

Returns are Inadequate

- ❑ La Caixa Exchangeable Bond
- ❑ EUR 847.6 million 0.25% 3-year bonds guaranteed by La Caixa, the biggest Spanish savings bank
- ❑ Exchangeable into Endesa shares.

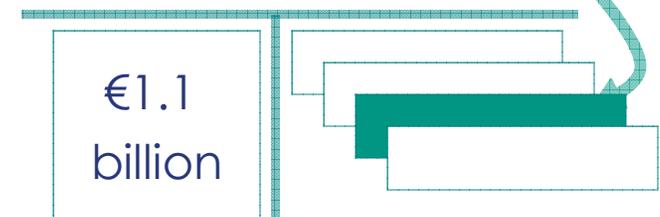
On June 3, 2003, Caja de Ahorros y Pensiones de Barcelona, "La Caixa," notified the Spanish National Securities Market Commission that, through Caixa Finance, B.V., it had issued bonds exchangeable for shares of ENDESA, S.A., with the guarantee of "La Caixa" and for placement on the European Institutional Market, except in Spain. The underlying securities in the issue are 52,975,235 shares of ENDESA, S.A. The bonds mature at three years, and holders can exercise the exchange option on or after August 11, 2003 and up to 9 days before maturity. The exchange price is €16 per share, with the issuer reserving the option to deliver an equivalent cash amount instead of shares of ENDESA, S.A.



Structuring LBOs

- July, 2005 **Apax Partners' Funds and Texas Pacific group to acquire control of Tim Hellas Telecommunications S.A. in a 1.1 billion Euro transaction**
- The purchase price for TIM's shareholding in TIM Hellas is €1,114.1 million, equivalent to approximately €16.43 per share, representing a premium of 17.6% to TIM Hellas' six month average ADR price based on the current exchange rate.
- Following completion of the acquisition of TIM's shareholding, it is intended that the remaining shares of TIM Hellas will be acquired at the same price of approximately €16.43 per share, through a cash merger under Greek law.
- The management team was led by Mr. Kominakis in establishing TIM Hellas as a standalone Greek company. JPMorgan, Citigroup and Deutsche Bank are acting as financial advisors to Apax Partners and Texas Pacific Group. Debt financing was provided by JPMorgan and Deutsche Bank.

The EURO1.4 billion deal, expected to come after the August hiatus, will finance the purchase of a controlling stake in the Greek mobile-phone services provider by a pair of private equity firms, is being structured not as a bank deal-as one might expect in a European leveraged buyout-but as an all-bond transaction, according to market sources. The only precedent in Europe was a groundbreaking transaction this March, when Cablecom GmbH-another LBO situation-refinanced all of its bank debt with senior secured high-yield notes. Deutsche Bank and JPMorgan Securities are leading the TIM Hellas deal, which will include senior secured, senior subordinated and payment-in-kind notes.



Mezzanine for Emerging Markets

- ❑ Goal: achieve higher return without burdening the company or infringing on owner's/sponsor's control
- ❑ Methods: lower interest rate plus participation in the company's equity or performance
 - ❑ Warrants
 - ❑ Payment linked to turnover
 - ❑ Payment linked to EBIT
 - ❑ Payment linked to after-tax profit
 - ❑ May have a floor or a cap



Project Finance

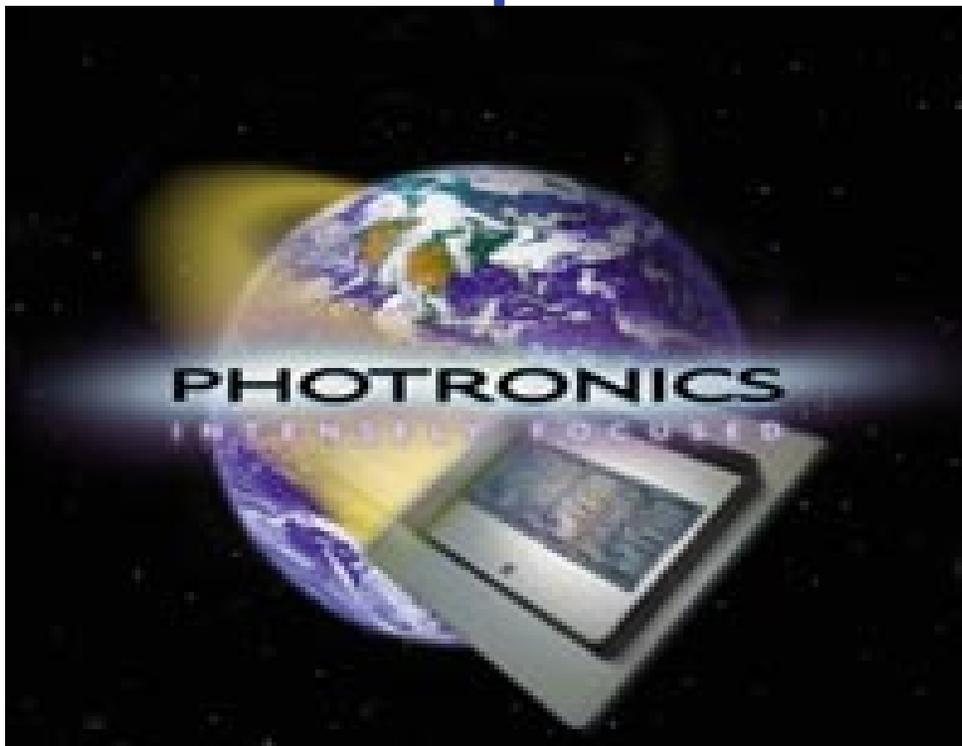


- Understanding stand-alone, non-recourse, project-payment debt servicing
- Application in Latin America

What Suits Photronics?

Assets

Liabilities

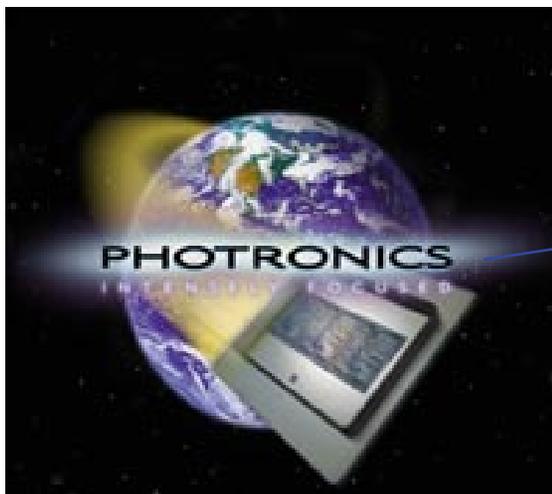


- ❖ Collateralized
- ❖ Asset-securitized
- ❖ Project financing

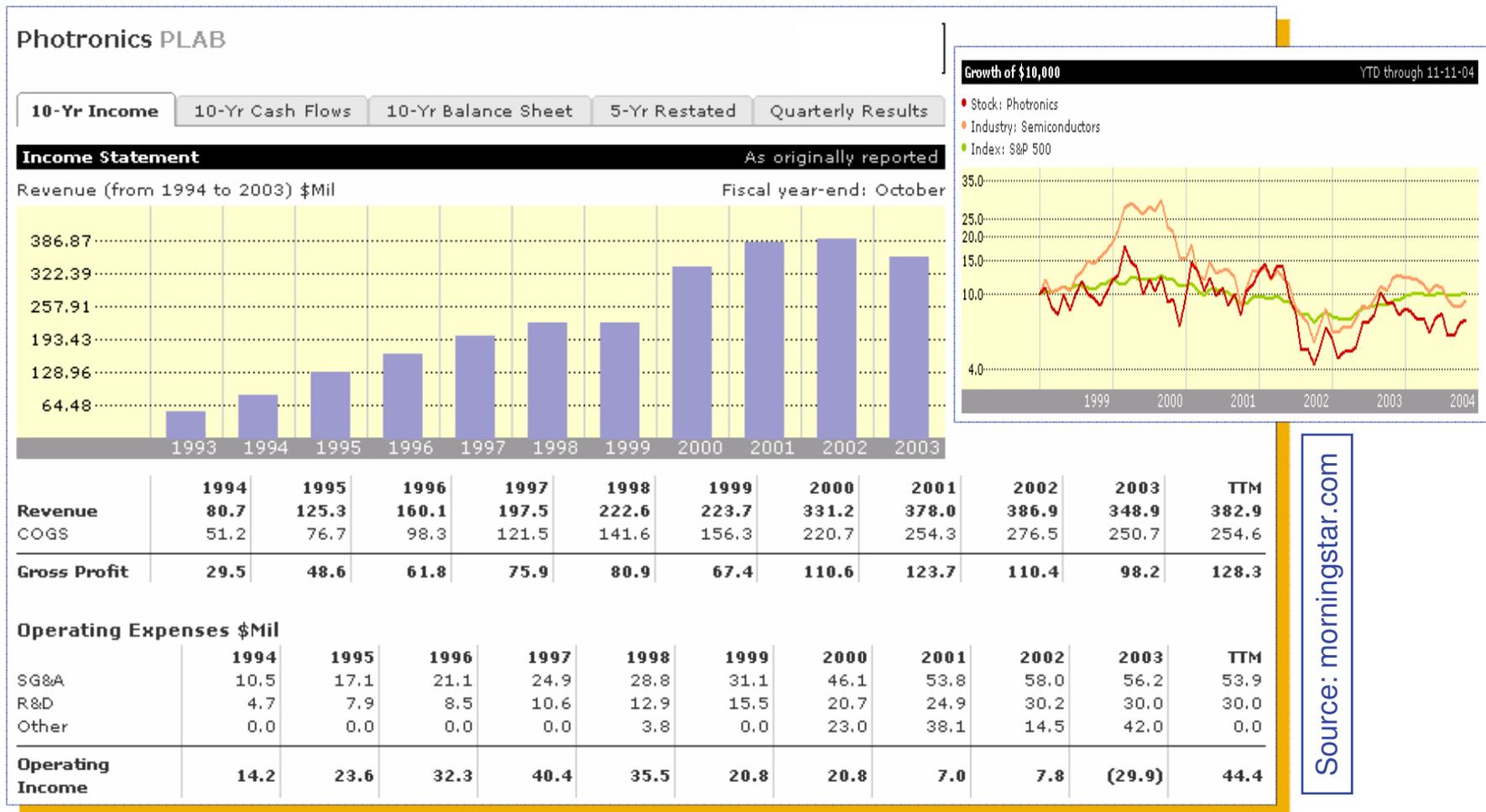
- ❖ Preferred
- ❖ Warrants
- ❖ Convertible

What Kind of Financing for Photronics?

- ❑ Investing \$100-150m in Singapore
- ❑ Stock price weak
- ❑ Debt costly



What Suits Photronics?



Photronics Debt (From SEC Filing)

NOTE 4 - LONG-TERM DEBT

On April 15, 2003, the Company sold \$150.0 million, 2.25% convertible subordinated notes due 2008 in a private offering pursuant to SEC Rule 144A. Those notes are convertible into the Company's common stock at a conversion price of \$15.89 per share. Net proceeds from the issuance amounted to approximately \$145.2 million. On June 2, 2003, a portion of the net proceeds was used to redeem the \$62.1 million of the Company's outstanding 6% convertible subordinated notes due 2004. Pursuant to the terms of the related indenture, the 6% convertible subordinated notes were redeemed at 100.8571% of the principal amount plus accrued interest of \$1.9 million for an aggregate redemption price of \$64.5 million, including a premium of \$0.5 million. An early extinguishment charge of \$0.9 million was incurred on the redemption of the 6% convertible subordinated notes. This charge included the aforementioned \$0.5 million premium and \$0.4 million of unamortized deferred financing costs which were expensed at the time of redemption.

The Company's \$100 million revolving credit facility, which expires in July 2005, was amended April 9, 2003 to relax certain financial covenants and definitions as a result of the Company's March 2003 consolidation plan and April 2003 issuance of \$150.0 million convertible subordinated notes.

Source: photronics.com

PROSPECTUS

Subject to Completion Dated January 26, 2004

\$150,000,000

Photronics, Inc.

**2¹/₄% Convertible Subordinated Notes due 2008
and
Common Stock Issuable Upon Conversion of the Notes**

We issued the notes in a private placement on April 15, 2003. This prospectus will be used by selling security holders to resell their notes and the common stock issuable upon conversion of their notes.

The notes bear interest at an annual rate of 2¹/₄% from April 15, 2003. We will pay interest on April 15 and October 15 of each year, beginning October 15, 2003, to record holders at the close of business of the preceding April 1 and October 1, as the case may be.

We may not redeem the notes prior to maturity.

The notes are subordinated to all of our existing and future senior indebtedness and are effectively subordinated to all debt and other liabilities of our subsidiaries. As of August 3, 2003, we had \$12.9 million principal amount of senior indebtedness outstanding and, as of that date, we estimate that our subsidiaries had approximately \$118.2 million of liabilities outstanding, excluding liabilities owed to us, and there were \$51.5 million of minority interests held by third parties in the equity of our two non-wholly owned subsidiaries.

The registration statement of which this prospectus forms a part covers resales of up to 9,440,640 shares of our common stock, which is the total number of shares issuable upon conversion of \$150,000,000 aggregate principal amount of the notes based on the initial conversion rate of 62.9376 shares per \$1,000 principal amount of the notes. The initial conversion rate is subject to adjustment in connection with stock splits and other corporate events and transactions under the anti-dilution provisions described in this prospectus. Holders may convert the notes until April 15, 2008, subject to prior redemption of the notes upon a fundamental change.

Our common stock is quoted on the Nasdaq National Market under the symbol "PLAB." On January 23, 2004, the last reported sale price of the common stock on the Nasdaq National Market was \$21.26 per share. The notes are not listed on any national securities exchange or quoted on any automated quotation system.

Source: photronics.com

The Offering

Securities Offered	\$150,000,000 principal amount of 2 ¹ / ₄ % Convertible Subordinated Notes due 2008.
Maturity Date	April 15, 2008.
Interest	2 ¹ / ₄ % per annum on the principal amount from April 15, 2003, payable semi-annually in arrears in cash on April 15 and October 15 of each year, beginning October 15, 2003.
Conversion	You may convert the notes into shares of our common stock at a conversion rate of 62.9376 shares per \$1,000 principal amount of notes, subject to adjustment, prior to the final maturity date.
Subordination	<p>The notes are subordinated to all of our existing and future senior indebtedness and are effectively subordinated to all debt and other liabilities of our subsidiaries. As of August 3, 2003, we had \$12.9 million principal amount of senior indebtedness outstanding and, as of that date, we estimate that our subsidiaries had approximately \$118.2 million of liabilities outstanding, excluding liabilities owed to us, and there were \$51.5 million of minority interests held by third parties in the equity of our two non-wholly owned subsidiaries. The foregoing amount of subsidiary liabilities excludes \$11.0 million of bank revolving credit debt borrowed by one of our subsidiaries, which is guaranteed by us and included in our outstanding senior indebtedness. In the event of the liquidation of one of our subsidiaries, the creditors of that subsidiary would have claims against the subsidiary's assets that ranked ahead of the claims of the subsidiary's equity holders, including us and any minority shareholders. In the event of the liquidation of one of our non-wholly owned subsidiaries, we and the minority shareholders would be entitled to share, pro rata based on our respective equity interests, in the net assets of the subsidiary remaining after payment of all of the subsidiary's liabilities. The holders of the notes have no direct claim on the assets of any of our subsidiaries.</p> <p>The notes rank equally with our existing 4 ³/₄% convertible subordinated notes due 2006. As of May 4, 2003, we had \$62.1 million of 6% convertible subordinated notes due 2004 outstanding and \$200.0 million of 4 ³/₄% convertible subordinated notes outstanding. On June 2, 2003, we redeemed our 6% convertible subordinated notes. Neither we nor any of our subsidiaries are prohibited from incurring debt, including senior indebtedness, under the indentures governing the notes and our other convertible</p>

Source: photronics.com

Costs of Issuance

ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION

The following table sets forth the costs and expenses, payable by us in connection with the distribution of the securities being registered. All of the amounts shown are estimates, except the Securities and Exchange Commission registration fee.

Securities and Exchange Commission registration fee	\$12,135
Printing and engraving fees	70,000
Accountants' fees and expenses	95,000
Legal fees and expenses	300,000
Trustee fees and expenses	10,000
Miscellaneous expenses	12,865
	<hr/>
Total	500,000
	<hr style="border-top: 3px double black;"/>

Source: photronics.com

Effective Cost Analysis

- ❑ Debt
- ❑ Equity
- ❑ Mezzanine and hybrids
- ❑ Structured notes fully hedged cost
- ❑ Cost of securitized debt
- ❑ Cost of capital leases

The Cost of Capital

Choice

1. Equity
 - Retained earnings
 - New stock issues
 - Warrants

Cost

- Cost of equity
- depends upon riskiness of the stock
 - will be affected by level of interest rates

Cost of equity = riskless rate + beta * risk premium

2. Debt

- Bank borrowing
- Bond issues

- Cost of debt
- depends upon default risk of the firm
 - will be affected by level of interest rates
 - provides a tax advantage because interest is tax-deductible

Cost of debt = Borrowing rate (1 - tax rate)

Debt + equity =
Capital

Cost of capital = Weighted average of cost of equity and
cost of debt; weights based upon market value.

Cost of capital = $k_d [D/(D+E)] + k_e [E/(D+E)]$

Estimating the Cost of Debt

- ❑ If the firm has bonds outstanding, and the bonds are traded, the yield to maturity on a long-term, straight (no special features) bond can be used as the interest rate.
- ❑ If the firm is rated, use the rating and a typical default spread on bonds with that rating to estimate the cost of debt.
- ❑ If the firm is not rated,
 - ❑ and it has recently borrowed long term from a bank, use the interest rate on the borrowing or
 - ❑ estimate a synthetic rating for the company, and use the synthetic rating to arrive at a default spread and a cost of debt
- ❑ The cost of debt has to be estimated in the same currency as the cost of equity and the cash flows in the valuation.

Ratings and Spreads

Reuters Corporate Spreads for Industrials

Spreads compiled using : Reuters Evaluators [Download spread file](#)

Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr
<i>Aaa/AAA</i>	5	10	15	20	25	30	53
<i>Aa1/AA+</i>	10	15	20	30	35	39	58
<i>Aa2/AA</i>	15	25	30	35	44	49	63
<i>Aa3/AA-</i>	20	30	35	45	52	54	67
<i>A1/A+</i>	25	35	40	50	55	60	73
<i>A2/A</i>	35	44	55	60	65	68	78
<i>A3/A-</i>	45	59	68	75	80	82	96
<i>Baa1/BBB+</i>	55	65	80	90	94	97	108
<i>Baa2/BBB</i>	60	75	100	105	112	115	128
<i>Baa3/BBB-</i>	75	90	110	115	124	128	153
<i>Ba1/BB+</i>	115	125	140	170	180	180	200
<i>Ba2/BB</i>	140	180	210	205	210	220	260
<i>Ba3/BB-</i>	165	200	230	235	235	240	300
<i>B1/B+</i>	190	215	250	250	275	290	325
<i>B2/B</i>	215	220	260	300	315	295	475
<i>B3/B-</i>	265	310	350	400	435	475	550
<i>Caa/CCC</i>	1125	1225	1250	1200	1200	1275	1400

Source: bondsonline.com

Spreads Over Time



Source: bondmarkets.com, Research Quarterly

Cost of Debt, Based on Bond Yield and Tax Rate

Calculators: General Bond Calculator

Security/Trade Information

M MOTOROLA INC 620076AM1

Security Type

Calculated based on:

Yield

Trade Date

Settlement Date

Maturity Date

Coupon Rate

Coupon Frequency

annual

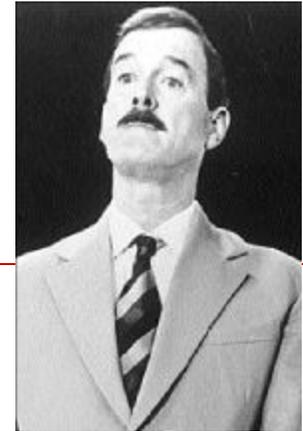
semiannual

Gross Profit Margin	35.6
Gross Profit Margin - 5YEAR AVRG.	36.4
EBITDA Margin - LTM	12.4
EBIT Margin - LTM	11.0
Pre-Tax Profit Margin	10.4
Pre-Tax Profit Margin - 5YEAR AVRG.	-1.4
Effective Tax Rate	32.6
Effective Tax Rate - 5YEAR AVRG.	32.2

Source: advfn.com

Source: investinginbonds.com

The expert:
John Cleese in "Fierce Creatures"



The Cost of Equity

- **Standard approach to estimating cost of equity:**

$$\text{Cost of Equity} = R_f + \text{Equity Beta} * (E(R_m) - R_f)$$

where,

R_f = Riskfree rate

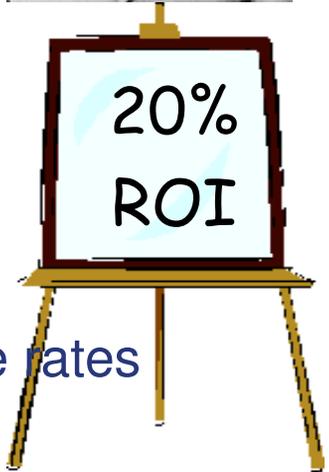
$E(R_m)$ = Expected Return on the Market Index (Diversified Portfolio)

- **In practice,**

- Long term government bond rates are used as risk free rates
- Historical risk premiums are used for the risk premium
- Betas are estimated by regressing stock returns against market returns

- **There are additional discounts for:**

- Private companies
- Minority investors
- Sovereign risks



Estimating Expected Return on Equity: An Example

- IBM's Beta = 1.63
- Riskfree Rate = 4.50%
(Long term Government Bond rate)
- Risk Premium = 5.80%
(Approximate historical premium)

$$\begin{aligned} \text{Expected Return on Equity} &= 4.50\% + 1.63(5.80\%) \\ &= 13.95\% \end{aligned}$$

TRADING INFORMATION	
IBM	
Stock Price History	
Beta:	1.63
52-Week Change:	-3.22%
52-Week Change (relative to S&P500):	-8.74%
52-Week High (3-Jan-05):	99.10
52-Week Low (12-Aug-04):	81.90
50-Day Moving Average:	93.33
200-Day Moving Average:	90.12

Source: biz.yahoo.com

	Arithmetic Average returns			Risk Premium	
	Stocks	T.Bills	T.Bonds	Stocks - T.Bills	Stocks - T.Bonds
1928-2004	11.81%	3.88%	5.27%	7.92%	6.53%
1964-2004	11.81%	5.99%	7.47%	5.82%	4.34%
1994-2004	12.70%	4.10%	6.88%	8.60%	5.82%

Source: damodaran.com

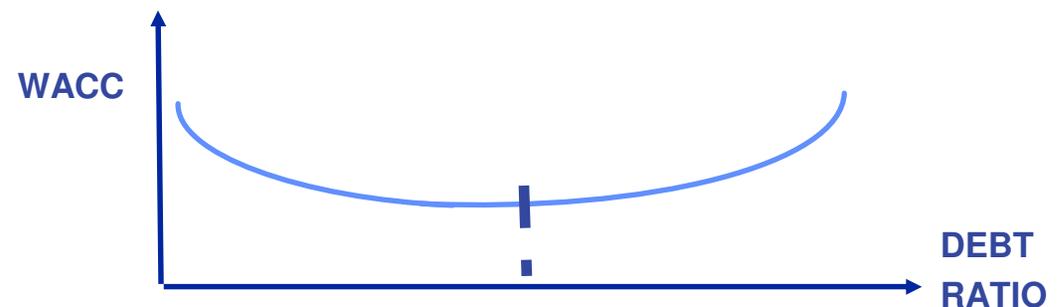
Motorola WACC

MOTOROLA				
Assumptions				
Bond rating			A	
Risk free govt bond		4.10%		
Spread		1.12%		
Tax rate		35%		
MOT beta		1.6		
SP 500 long run return		12%		
<hr/>				
Cost of debt		3.39%	Actual 12%	Alternative 25%
Amount	\$	5.30 billion		
Cost of equity		16.7%	88%	75%
Amount		38.6 billion		
Total D+E	\$	43.90		
Cost of Capital			15.13%	13.40%
<hr/>				
Note:				
"Value" of MOT as perp			20.82 \$	23.50
Diff			\$	2.68
"Value" of growth potential			17.78	

Source: Motorola_WACC.xls

Minimize the Cost of Capital by Changing the Debt Ratio?

- ❑ The first step in reducing the cost of capital is to change the mix of debt and equity used to finance the firm.
- ❑ Debt is always cheaper than equity, partly because lenders bear less risk and partly because of the tax advantage associated with debt.
- ❑ But taking on debt increases the risk (and the cost) of both debt (by increasing the probability of bankruptcy) and equity (by making earnings to equity investors more volatile).
- ❑ The net effect will determine whether the cost of capital will increase or decrease if the firm takes on more or less debt.



NEW INTERNATIONAL BOND ISSUES

Borrower	Amount m.	Maturity	Coupon %	Price	Yield %	Launch spread bp	Moodys/S&P Ratings	Book-runner	Borrower	Amount m.	Maturity	Coupon %	Price	Yield %	Launch spread bp	Moodys/S&P Ratings	Book-runner		
US DOLLARS									STERLING										
European Investment Bank	1bn	May 2014	4.625#(f)	99.919R	4.635	+22(4#Feb14)	Aaa/AAA	JPM/M Stanley/UBS	Republic of Hungary	500	May 2014	5.50	99.306R	5.502	+53(5#Sep14)	A1/A-	HSBC/Lehman Brothers		
ASIF Global Finance(g)†	1.25bn	May 2007	(g)†	100.00	-	-	Aaa/AAA	Deutsche/JP Morgan	European Investment Bank(b)	150	Oct 2008	4.90	97.729	5.070	-	Aaa/AAA	ABN Amro		
Province of Quebec	1bn	May 2014	4.875#	99.243	4.792	+53(4#Feb14)	A1/A+	Citi/D'che/MU/Nat. Bk	Yorkshire Bldg Society(d,S)	25	May 2019	6.00(f)	99.205	6.109	+103(5#Sep14)	A3/A-	Royal Bank of Scotland		
Inst de Credito Oficial(h)	1bn	Jul 2009	3.875(j)	99.84R	3.906	+36(3#Apr09)	Aaa/AA+	ABN Amro/BNPP/Citi	Alehouse Refin. A1(u)†	74.5	Nov 2026	(u)†	100.00	-	-	A2/-	Morgan Stanley		
Republic of Peru	500	May 2016	8.375#	99.813	8.386	+39(4#Feb14)	Baa3/BB-	Citi/group	Alehouse Refin. A2(u2)	100	Nov 2024	7.685(q)	114.00	-	-	A2/-	Morgan Stanley		
Rep of the Philippines(j)	200	Feb 2011	8.375#	100.964	8.184	-	Baa2/BB	Deutsche/M Stanley	Alehouse Refin. B(u3)†	67.5	Nov 2029	(u3)	100.00	-	-	Baa2/-	Morgan Stanley		
Rep of the Philippines(j2)	200	Jan 2014	8.25#	98.454	8.484	-	Baa2/BB	Deutsche/M Stanley	European Investment Bank(y)	150	Dec 2006	5.00	100.101	4.946	+18(7#Dec06)	Aaa/AAA	Barclays Capital		
Freddie Mac(z)	2bn	May 2009	4.25#	99.728#	4.311	+69.3(2#Apr09)	Aaa/AAA	CSFB/First Tenn/UBS	Banca Intesa(w)†	75	Apr 2009	(w)†	99.978	-	-	A1/A-	Citi/Deutsche/RBS		
DuPont(z1)	900	Apr 2010	4.125#	99.391	4.241	+52(6#Feb10)	Aa3/AA-	CSFB/Merrill Lynch	Merrill Lynch & Co Inc	250	Dec 2014	5.75(s)	99.27R	5.849	+77(5#Sep14)	Aa3/A+	Merrill Lynch Intl		
DuPont(z2)	500	Apr 2014	4.875#	99.126	4.987	+59(4#Feb14)	Aa3/AA-	CSFB/Merrill Lynch	BP Capital Markets plc(v)	250	Dec 2007	5.00(s)	99.472	5.173	+30(7#Dec07)	Aa1/AA+	BNP Paribas/HSBC		
Government of Jamaica(A)	125	Jun 2017	10.625#	100.50	10.55	-	B1/B	Bear Stearns	KFWF	100	Dec 2008	4.50	97.403	5.144	-	Aaa/AAA	UBS Investment Bank		
CitiGroup Inc	1.25bn	May 2014	5.125#	99.467	5.194	+73(4#Feb14)	Aa1/AA-	Citi/group	Natexis Banques Populaires†	350	May 2009	(P)	100.012R	-	-	Aa3/A+	Natexis BP		
SLM Corp	1bn	May 2014	5.375#(f)	99.776	5.404	+91#(4#Feb14)	A2/A	Citi/JPM/M Stanley	Dexia Municipal Agency(Q)	70	Dec 2008	4.875(s)	98.645	5.212	-	-	Aaa/AAA	UBS Investment Bank	
Helaba(L)	100	Apr 2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Aaa/AAA	RBC Capital Markets	
Mahindra & Mahindra Ltd(V)§	100	May 2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
EURS(e)									EURS(e)										
ASIF Ill(Jersey) Ltd(a)	150	Mar 2007	-	-	-	-	Aa2/AA	Deutsche Bank	UBS Investment Bank	150	Mar 2007	-	-	-	-	-	-	Aa1/AA-	UBS Investment Bank
Republic of Finland	5bn	Jul 2014	-	-	-	-	A1/A	Deutsche Bank	UBS Investment Bank	5bn	Jul 2014	-	-	-	-	-	-	-/AAA	Basler/HypovB
Bank of America Corp(k,S)	1bn	May 2011	-	-	-	-	Baa2/BBB	Deutsche Bank	CSFB	1bn	May 2011	-	-	-	-	-	-	Aaa/AAA	CSFB
Elia Systems Operator SA(W)	500	May 2011	-	-	-	-	Aa2/AA	Fortis/KBC Bank	CSFB	500	May 2011	-	-	-	-	-	-	Aaa/-	CSFB
Elia Systems Operator SA(W)	500	May 2011	-	-	-	-	A2/A	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Bayerische Landesbank	1bn	May 2011	-	-	-	-	Baa2/BBB	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
ANZ Banking Group Ltd‡	1bn	May 2007	-	-	-	-	Baa3/BBB-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Linde Finance B(Vin)§	500	May 2007	-	-	-	-	Ba2/BB+	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
F van Lanschot Bankiers NV‡	400	May 2007	-	-	-	-	A1/-	JP Morgan	-	-	-	-	-	-	-	-	-	-	
Vesteda Residential Fndg(r)†	400	Apr 2007	-	-	-	-	A1/A	JPM/Sampo/SG QIB	-	-	-	-	-	-	-	-	-	-	
AHBR(t)	250	Jun 2007	-	-	-	-	Aaa/AAA	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
SLM Corporation(B)	250	Mar 2011	-	-	-	-	-	Commerz/RBS/WestLB	-	-	-	-	-	-	-	-	-	-	
Colinago(C)	150	Mar 2011	-	-	-	-	A1/A	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
BMore 4, AD1(‡)	106.25	2014	-	-	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
BMore 4, BD2(‡)	10.5	2014	(U2)	100.00	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
BMore 4, CD3(‡)	11.5	2014	(D3)	100.00	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
BMore 4, DD4(‡)	8	2014	(D4)	100.00	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell St Fin. A ssnE1(‡)	30	Jan 2044	(E1)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. A(E2)†	30	Jan 2044	(E2)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. B(E3)†	26.4	Jan 2044	(E3)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. C(E4)†	25.6	Jan 2044	(E4)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. D(E5)†	10.4	Jan 2044	(E5)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. E(E6)†	7.5	Jan 2044	(E6)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Chiswell Street Fin. F(E7)†	5.6	Jan 2044	(E7)	100.00	-	-	-	Fortis/KBC Bank	-	-	-	-	-	-	-	-	-	-	
Finance for Danish Industry†	400	May 2006	(M)	100.01	-	-	-	JP Morgan	-	-	-	-	-	-	-	-	-	-	
Sampo Bank plc‡	300	May 2007	(N)	100.007	-	-	-	JPM/Sampo/SG QIB	-	-	-	-	-	-	-	-	-	-	
MEBA Series 2004-A6(W)†	850	Oct 2013	(W1)	100.00	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
Tui AG(K)	625	May 2011	6.625#	100.00	-	-	-	Commerz/RBS/WestLB	-	-	-	-	-	-	-	-	-	-	
Pfandbrief Bank Intl SA(p)†	500	May 2009	(Y)	99.90	-	-	-	Deutsche Bank	-	-	-	-	-	-	-	-	-	-	
Tele Columbus AG & Co(z)†	245	Apr 2010	(Z2,s)	100.00	-	-	-	Merrill Lynch	-	-	-	-	-	-	-	-	-	-	
Tele Columbus AG & Co(z3)	230	Apr 2012	9.375#(s)	100.00	9.375	+540(5#Jan12)	B3/B-	Merrill Lynch	-	-	-	-	-	-	-	-	-	-	
C de Financement Foncier(aa)	300	Oct 2021	5.75	110.99	4.801	+15.5(f)	Aaa/AAA	CAI-CL/CDC Ixis	-	-	-	-	-	-	-	-	-	-	
Reseau Ferre de France(ab)	250	Oct 2033	5.00	98.912	5.070	+8(swaps)	Aaa/AAA	CDC Ixis/HSBC	-	-	-	-	-	-	-	-	-	-	
AC-Ept	100.00	-	-	-	-	-	-	Dresdner KW	-	-	-	-	-	-	-	-	-	-	
AC-Ept	100.00	-	-	-	-	-	-	Dresdner KW	-	-	-	-	-	-	-	-	-	-	
AC-Ept	100.00	-	-	-	-	-	-	Dresdner KW	-	-	-	-	-	-	-	-	-	-	
AC-Ept	100.00	-	-	-	-	-	-	Dresdner KW	-	-	-	-	-	-	-	-	-	-	
AC-Ephesus I OSO B2(ac)s	25	Jun 2009	4.574	100.00	-	-	-	Dresdner KW	-	-	-	-	-	-	-	-	-	-	

Deal Analysis: The International Bond Market

Source: ft.com

Final terms, non-callable unless stated. Yield spread (over relevant government bond) at launch supplied by lead manager. §Convertible. ‡Floating-rate note. *Unlisted. #Semi-annual coupon and yield. R: fixed re-offer price. a) GIC-backed. Fungible with €650m. Plus 60 days accrued. b) Fungible with £1.75bn. Plus 183 days accrued. c) Fungible with SFr450m. Plus 47 days accrued. d) Callable on 7/5/14 at par. If not called, coupon steps to 5yr gilt +203bp. e) Spreads relate to German govt bonds unless stated. f) Spreads re French govt bonds. g) GIC-backed. g1) 3-mth Libor +4bp. h) G1or: Spain. i) Over interpolated yield. j) Fungible with: (j) \$1.3bn; (j2) \$1.5bn. Plus days accrued; (j) 68; (j2) 109. k) Callable on 6/5/14 at par. If not called, coupon steps to 3ME +146bp. l) Long 1st coupon. m) 3-mth Euribor -1bp. n) Conversion price: €56.482. Callable after 3 yrs subject to 120% hurdle. Clean-up call. Over-allotment: €50m. o) 3-mth Euribor +20bp. p) Covered by loans to public sector. q) Quarterly. r) Securitisation of Dutch multi-family properties. r1) 3-mth Euribor +18bp. s) Short 1st coupon. t) Mortgage pandbriefe. Fungible with €1.25bn. Plus 322 days accrued. u) Secured on tenanted pubs for InnsPired. Legal maturities: u1) 20/11/28; u2) 20/11/26; u3) 20/11/31. Av life yrs: u1) 7; u2) 17; u3) 7. Coupons step-up in 2011. u2) Exchanged for existing bonds. Coupons. 3-mth Libor +: u1) 85bp; u3) 185bp. v) Fungible with £2.55bn. Plus 155 days accrued. w) Fungible with £400m. Plus 24 days accrued. w1) 3-mth Libor +15bp. x) Fungible with C\$500m. Settles on coupon date. x1) 3-mth BA's +17bp. y) Callable on 4/5/05 at par. z) Makewhole calls at T: z1) 12.5bp; z2) 15bp. A) Fungible with \$300m. Plus 130 days accrued. B) Fungible with €1bn. Plus 63 days accrued. C) Fungible with €150m. Plus 46 days accrued. D) Secured on Portuguese auto loans and leases originated by BES. Average life yrs: D1) 4.3; D2) 6.4; D3) 6.5. Coupons. 3-mth Euribor +: D1) 20bp; D2) 35bp; D3) 55bp; D4) 94bp. E) CDO for RBC Financial Products. Underlying: bonds, ABS's and CDS's. Callable in Jul 2011. Coupons. 3-mth Euribor +: E1) 30bp; E2) 55bp; E3) 125bp; E4) 210bp; E5) 365bp; E6) 475bp; E7) 675bp. E8) €32m equity tranche and super senior CDS took total to €1.6bn. F) Fungible with SFr300m. Plus 165 days accrued. G) Fungible with SFr100m. Plus 52 days accrued. H) Lettres des gages publiques. Fungible with SFr300m. Plus 165 days accrued. J) Fungible with SFr300m. Plus 32 days accrued. K) 3-mth CIBor +14bp. L) Fungible with \$500m. Plus 20 days accrued. M) 3-mth Euribor +5bp. N) 3-mth Euribor +10bp. P) 3-mth Libor +12#bp. Q) Fungible with €300m. Plus 66 days accrued. S) Subordinated. T) Fungible with SFr500m. Plus 312 days accrued. U1)&U2) Backed by five toll roads and bridge in Hong Kong. U2) Average life: 3.4 yrs. Callable 7/5/11 at par. 3-mth Hibor +36bp to May 2011, then +72bp. V) Conversion price: R257.00; R3: 45.00; R4: 45.00; R5: 45.00; R6: 45.00; R7: 45.00; R8: 45.00; R9: 45.00; R10: 45.00; R11: 45.00; R12: 45.00; R13: 45.00; R14: 45.00; R15: 45.00; R16: 45.00; R17: 45.00; R18: 45.00; R19: 45.00; R20: 45.00; R21: 45.00; R22: 45.00; R23: 45.00; R24: 45.00; R25: 45.00; R26: 45.00; R27: 45.00; R28: 45.00; R29: 45.00; R30: 45.00; R31: 45.00; R32: 45.00; R33: 45.00; R34: 45.00; R35: 45.00; R36: 45.00; R37: 45.00; R38: 45.00; R39: 45.00; R40: 45.00; R41: 45.00; R42: 45.00; R43: 45.00; R44: 45.00; R45: 45.00; R46: 45.00; R47: 45.00; R48: 45.00; R49: 45.00; R50: 45.00; R51: 45.00; R52: 45.00; R53: 45.00; R54: 45.00; R55: 45.00; R56: 45.00; R57: 45.00; R58: 45.00; R59: 45.00; R60: 45.00; R61: 45.00; R62: 45.00; R63: 45.00; R64: 45.00; R65: 45.00; R66: 45.00; R67: 45.00; R68: 45.00; R69: 45.00; R70: 45.00; R71: 45.00; R72: 45.00; R73: 45.00; R74: 45.00; R75: 45.00; R76: 45.00; R77: 45.00; R78: 45.00; R79: 45.00; R80: 45.00; R81: 45.00; R82: 45.00; R83: 45.00; R84: 45.00; R85: 45.00; R86: 45.00; R87: 45.00; R88: 45.00; R89: 45.00; R90: 45.00; R91: 45.00; R92: 45.00; R93: 45.00; R94: 45.00; R95: 45.00; R96: 45.00; R97: 45.00; R98: 45.00; R99: 45.00; R100: 45.00; R101: 45.00; R102: 45.00; R103: 45.00; R104: 45.00; R105: 45.00; R106: 45.00; R107: 45.00; R108: 45.00; R109: 45.00; R110: 45.00; R111: 45.00; R112: 45.00; R113: 45.00; R114: 45.00; R115: 45.00; R116: 45.00; R117: 45.00; R118: 45.00; R119: 45.00; R120: 45.00; R121: 45.00; R122: 45.00; R123: 45.00; R124: 45.00; R125: 45.00; R126: 45.00; R127: 45.00; R128: 45.00; R129: 45.00; R130: 45.00; R131: 45.00; R132: 45.00; R133: 45.00; R134: 45.00; R135: 45.00; R136: 45.00; R137: 45.00; R138: 45.00; R139: 45.00; R140: 45.00; R141: 45.00; R142: 45.00; R143: 45.00; R144: 45.00; R145: 45.00; R146: 45.00; R147: 45.00; R148: 45.00; R149: 45.00; R150: 45.00; R151: 45.00; R152: 45.00; R153: 45.00; R154: 45.00; R155: 45.00; R156: 45.00; R157: 45.00; R158: 45.00; R159: 45.00; R160: 45.00; R161: 45.00; R162: 45.00; R163: 45.00; R164: 45.00; R165: 45.00; R166: 45.00; R167: 45.00; R168: 45.00; R169: 45.00; R170: 45.00; R171: 45.00; R172: 45.00; R173: 45.00; R174: 45.00; R175: 45.00; R176: 45.00; R177: 45.00; R178: 45.00; R179: 45.00; R180: 45.00; R181: 45.00; R182: 45.00; R183:

A Day in the Life of the Eurobond Market

- Examine the deals
 - Which were structured financing?
 - Why were each done in that particular form?
 - What determines the pricing?
- What is the effective cost of financing to the different companies?



A Day in the Life...

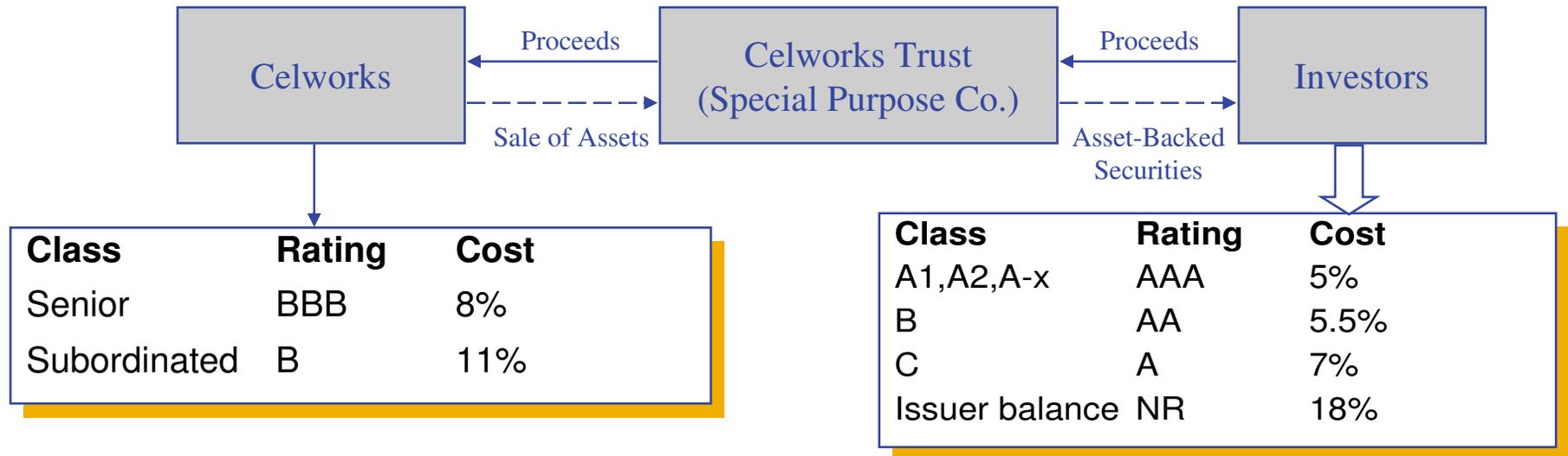
NEW INTERNATIONAL BOND ISSUES							
September 2001							
Borrower	Amount m.	Coupon %	Price	Maturity	Moodys/S&P Ratings	Fees	Bookrunner
Celworks Trust 2001-1 (a)	US\$250	4 3/8	99.80	Mar 2008	Aaa/AAA	0.30	Salomon
Marui Corp*	US\$200	3/8	100	Sep 2005	A3/A-	1.75	Nomura
Battle Mountaingold**	US\$100	5 1/2	100	Sep 2016	Ba2/BB-	2.125	Merrill Lynch
ING Groep NV (S)	€600	6 1/2	100	undated	A1/A	-	ING Barings-BBL
Holderbank	€150	6.125	100.125	Dec 2004	Aa3/AA-	0.22	CSFB
SNCF (b,c)	€750	4 1/2	98.55	Nov 2007	Aa1/AAA	0.07	CCF
Cofiroute	€300	5.875	99.11R	Oct 2016	-/AA-	0.40	BNP Paribas
Hansabank ***	EEK100	7.625	101 3/8	Sep 2004	Aa2/AA	0.35	Deutsche
C. Agricole Indosuez (d) ***	A\$15	0	100 3/4	Mar 2003	-/-	0.75	CAI, HSBC

Final terms. *With equity warrants. **Convertible. ***Private placement. (a) Callable at par after 5 years. If call not exercised, bond pays 50bp over Libor in last year. (b) Fungible with €2bn. (c) Long first coupon. (d) Redemption linked to hedge fund performance. Unlisted. (S) Subordinated.

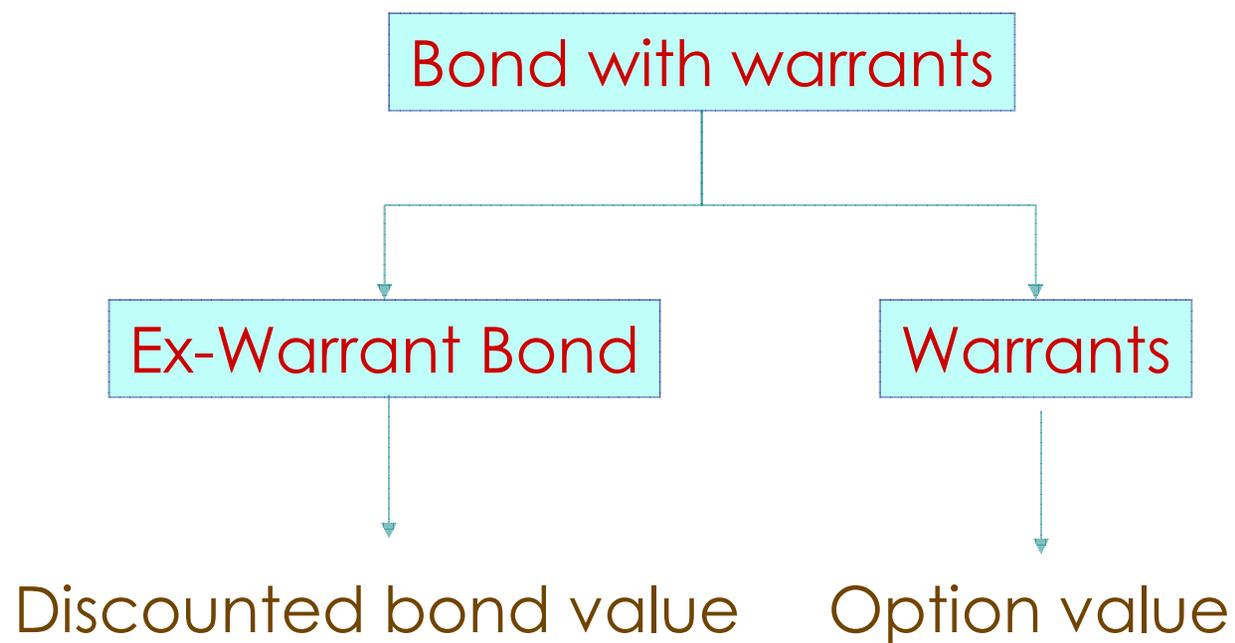
Effective Cost Analysis

- ❑ Asset-backed securities: off-balance sheet financing creates effective lower debt cost
- ❑ Bonds with warrants: option plus bond
 - ❑ Marui
- ❑ Convertible bonds: option embedded in bond
 - ❑ Battle Mountaingold
- ❑ Index-linked Eurobonds: derivative hedges the linkage
 - ❑ Credit Agricole Indosuez
- ❑ Swapped Eurobonds: nominal rate +/- swap cost

Example: Celworks



Bond with Warrants

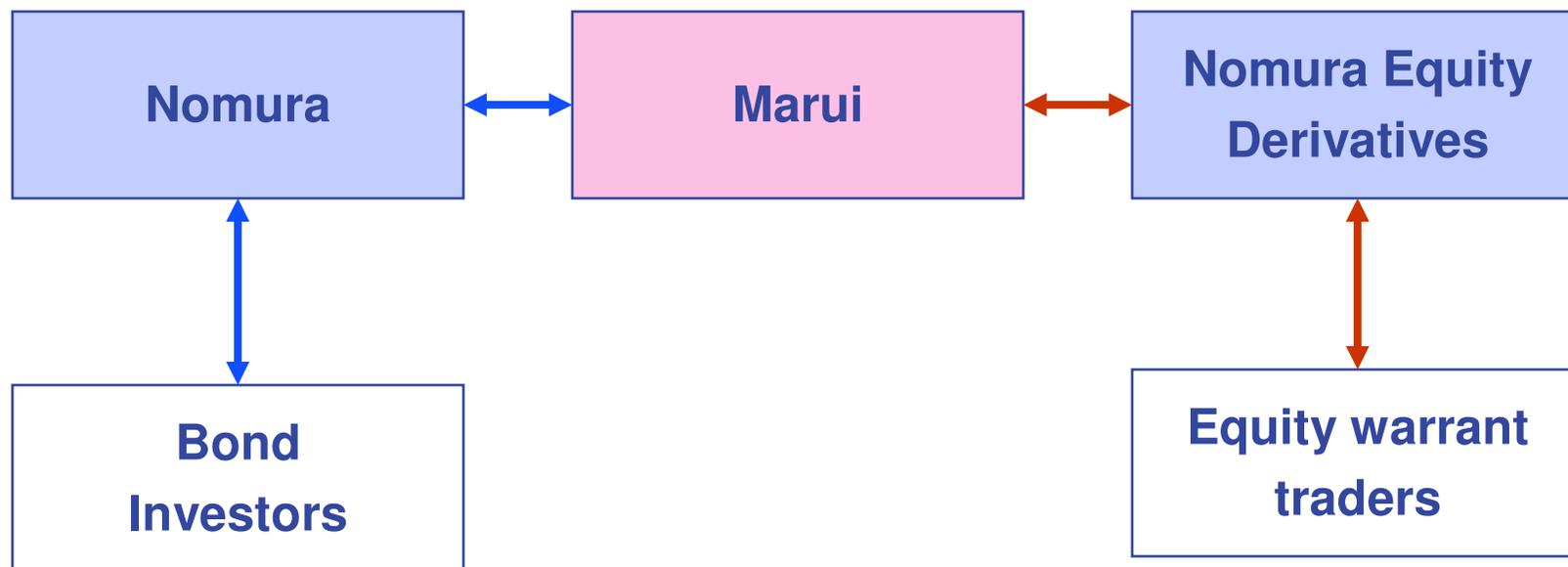


Bond Value

Bond with Warrants

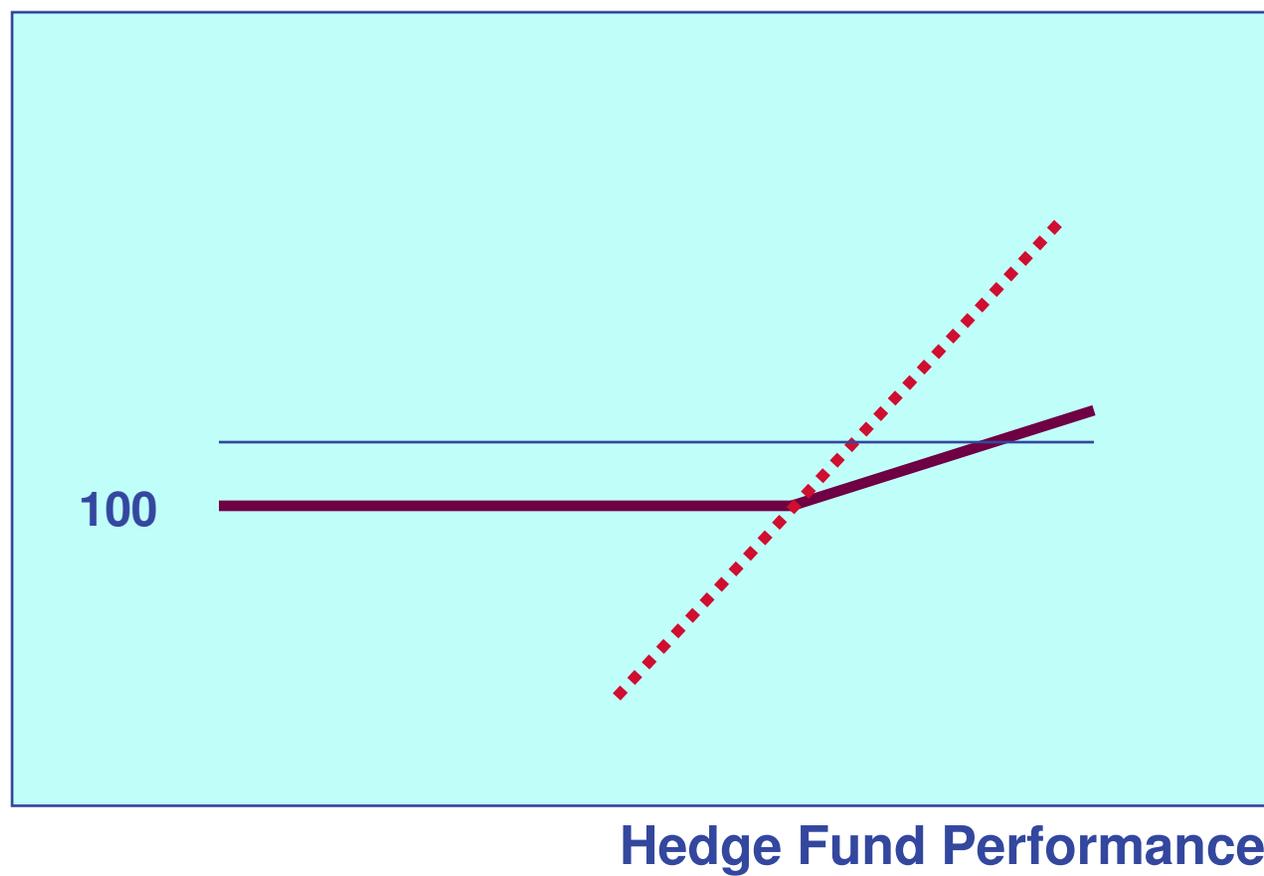
Price	100
Years	2
Coupon	2.125
FV	100
Yield	9.00%
PV of bond	\$87.91
Paid for option	\$12.09

Marui Warrant Bond



Hedge Fund Linked

Principal
Repayment



Structured Notes

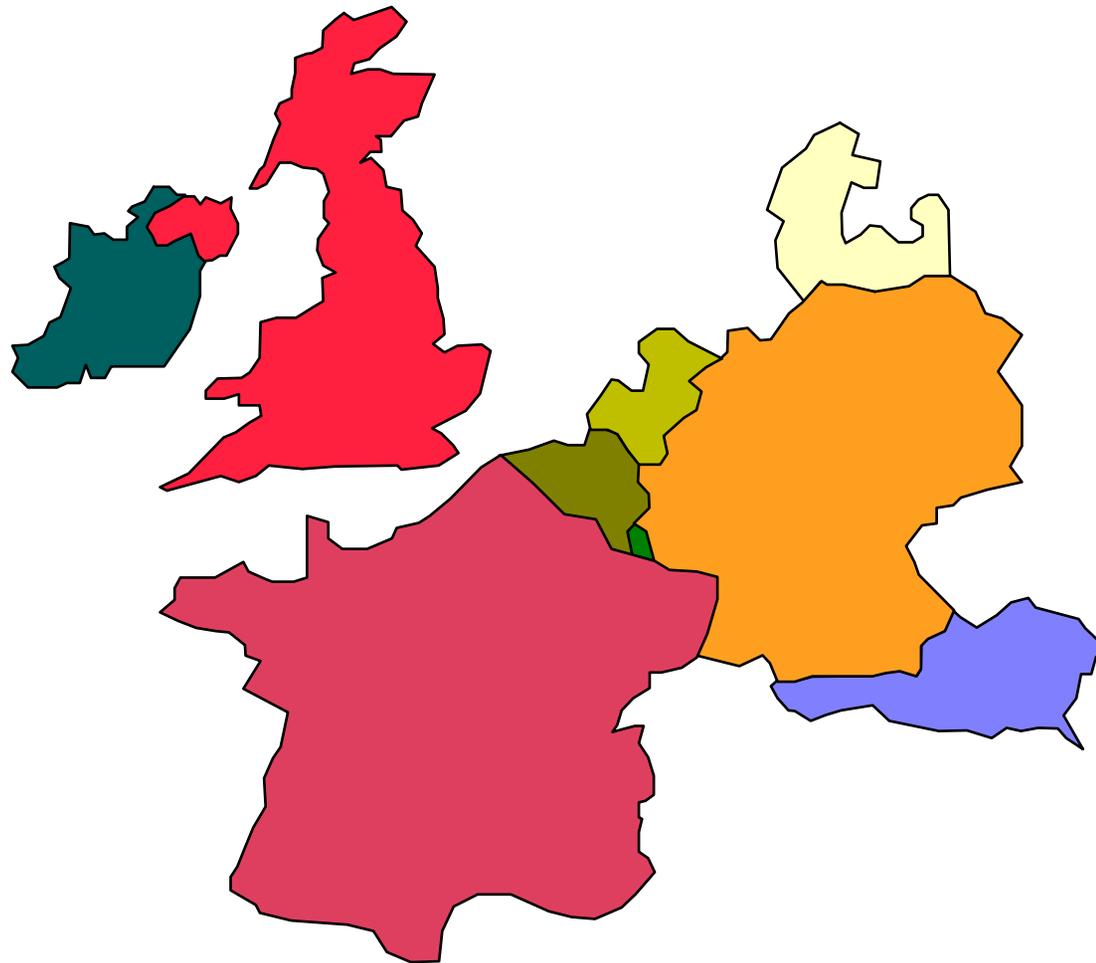
- ❑ Bundling and unbundling basic instruments
- ❑ Exploiting market imperfections (sometimes temporary)
- ❑ Creating value added for investor and issuer by tailoring securities to their particular needs

Key: For the innovation to work, it must provide **value added** to both issuer and investor.

Even IBM Does It

<u>Instrument</u>	<u>Rating</u>
<u>EUR8 bil Sr Unsecd med-term note prog</u> <u>03/09/1999: sr unsecd</u>	A+
<u>US\$1 bil Sr Unsecd med-term note prog</u> <u>06/28/2002: sr unsecd</u>	A+
<u>US\$20 bil shelf Sr Unsecd/Sub Debt filed under</u> <u>SEC rule 415 01/21/2003: sr unsecd (prelim)</u>	A+(prelim)
<u>US\$20 bil shelf Sr Unsecd/Sub Debt filed under</u> <u>SEC rule 415 01/21/2003: sub (prelim)</u>	A(prelim)
<u>US\$3 bil Sr Unsecd med-term note prog</u> <u>03/07/1997: sr unsecd</u>	A+

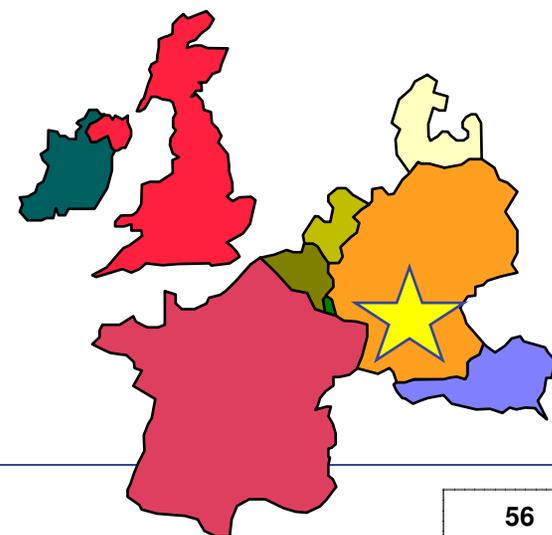
Medium-Term Notes: Anatomy of a Deal



Anatomy of a Deal

Issuer:

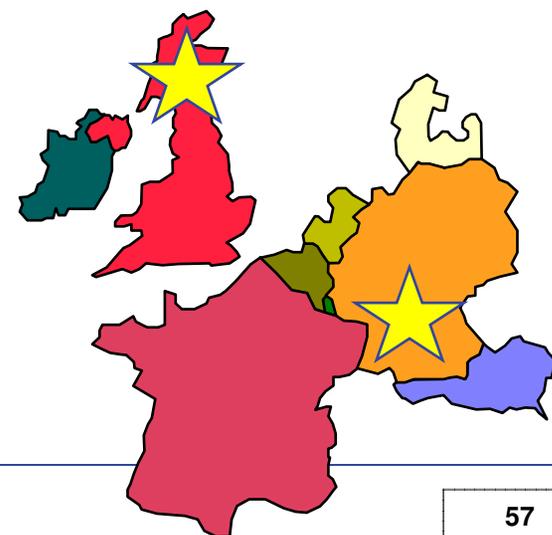
- ❑ Looking for large amounts of floating-rate USD and DEM funding for its loan portfolio.
- ❑ Wants low-cost funds: target CP-.10
- ❑ Is not too concerned about specific timing of issue, amount or maturity
- ❑ Is willing to consider hybrid structures.



Anatomy of a Deal

Investor:

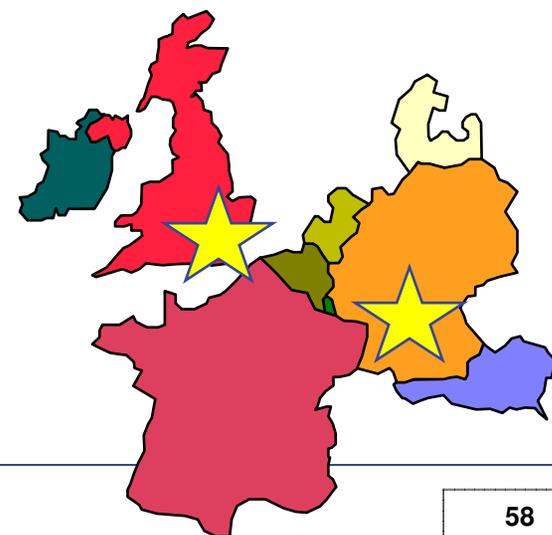
- ❑ Has distinctive preference for high grade investments
- ❑ Looking for investments that will improve portfolio returns relative to relevant indexes
- ❑ Invests in both floating rate and fixed rate sterling and dollar securities
- ❑ Can buy options to hedge portfolio but cannot sell options



Anatomy of a Deal

Intermediary:

- ❑ Has experience and technical and legal background in structure finance
- ❑ Has active swap and option trading and positioning capabilities
- ❑ Has clients looking for caps and other forms of interest rate protection.



The Deal

- 1 Initiate medium term note programme for the borrower, allowing for a variety of currencies, maturities and special structures
- 2 Structuring a MTN in such a way as to meet the investor's needs and constraints
- 3 Line up all potential counterparties and negotiate numbers acceptable to all sides
- 4 Upon issuer's and investor's approval, place the securities
- 5 For the issuer, swap and strip the issue into the form of funding that he requires
- 6 Offer a degree of liquidity to the issuer by standing willing to buy back the securities at a later date.

The Issue

- ❑ Issuer: Deutsche Bank AG
- ❑ Amount: US\$ 40 Million
- ❑ Coupon:
 - First three years: semi-annual
LIBOR + 3/8% p.a., paid semi-annually
 - Last 5 years: 8.35%
- ❑ Price: 100
- ❑ Maturity: February 10, 2000
- ❑ Call: Issuer may redeem the notes in full at par on February 10, 1995
- ❑ Fees: 30 bp
- ❑ Arranger: Credit Swiss First Boston

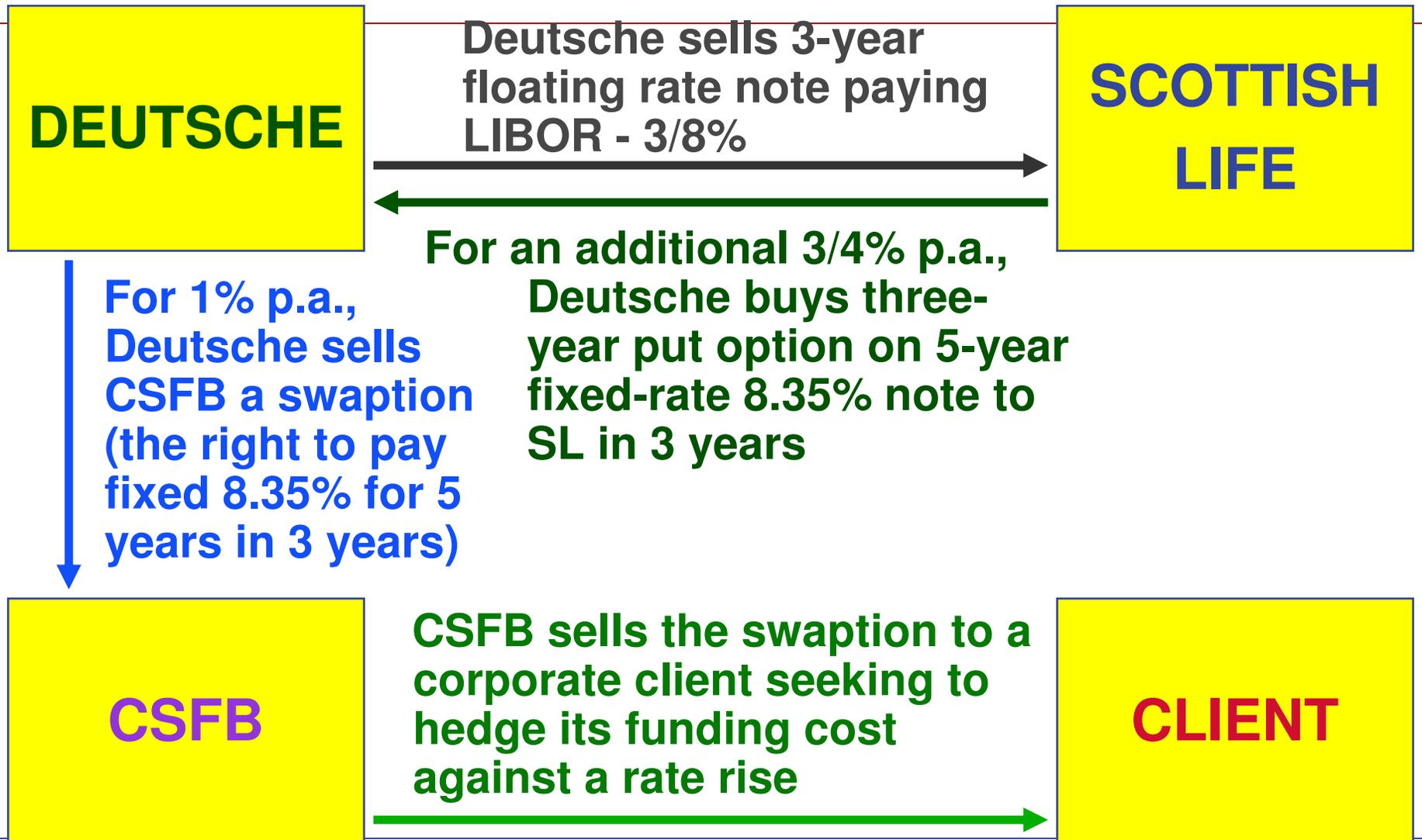
The Parties in the Deal

DEUTSCHE

**SCOTTISH
LIFE**

CSFB

The Deal in Detail



What's Really Going On?

Note:

- Issuer has agreed to pay an above-market rate on both the floating rate note and the fixed rate bond segment of the issue
 - FRN portion: .75 % above normal cost
 - Fixed portion: .50% above normal cost
- Issuer has in effect purchased the right to pay a fixed rate of 8.35% on a five-year bond to be issued in three years time.

Stern School of Business

Implications of the Credit Crunch

Dr. Ian Giddy

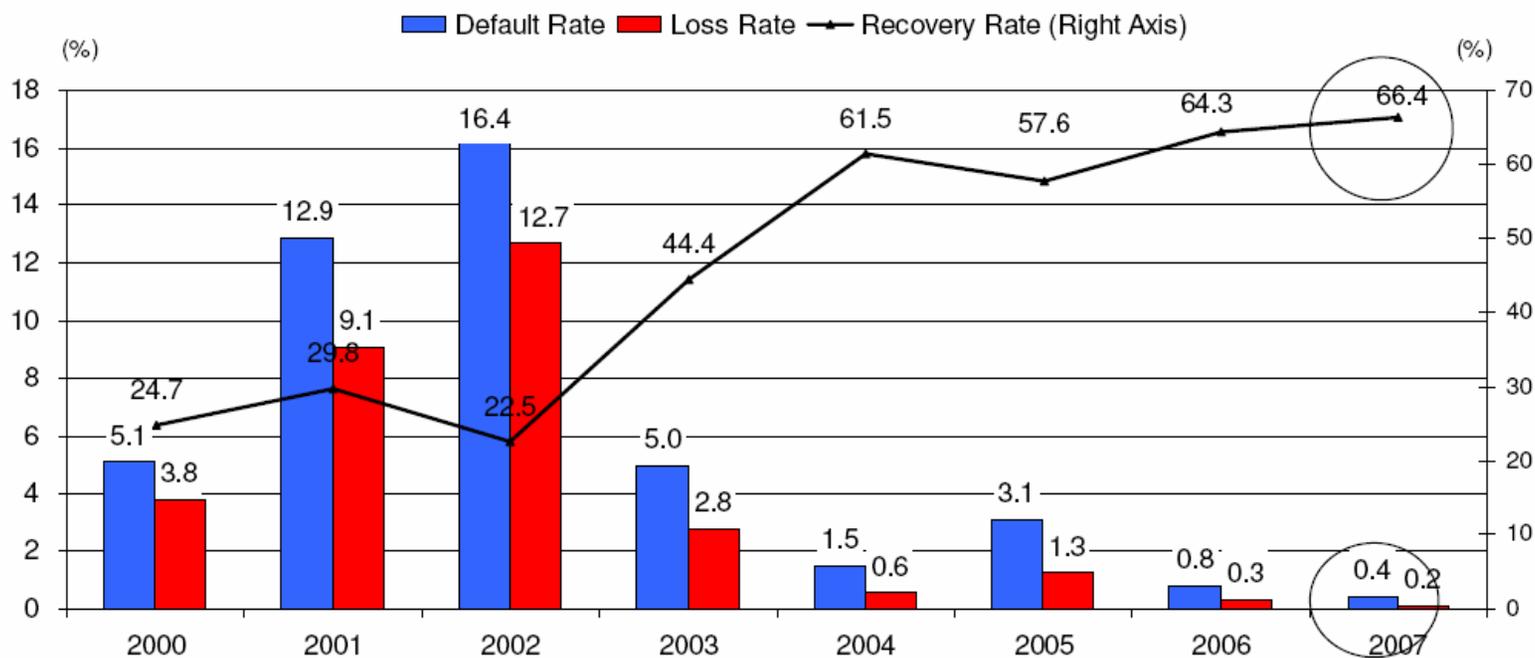
New York University

Anatomy of a Crunch

- ❑ Corporate Finance – *and Leveraged Buyouts*
- ❑ Mortgage Finance – *and Subprime Loans*
- ❑ Structured Finance – *and Credit Derivatives*

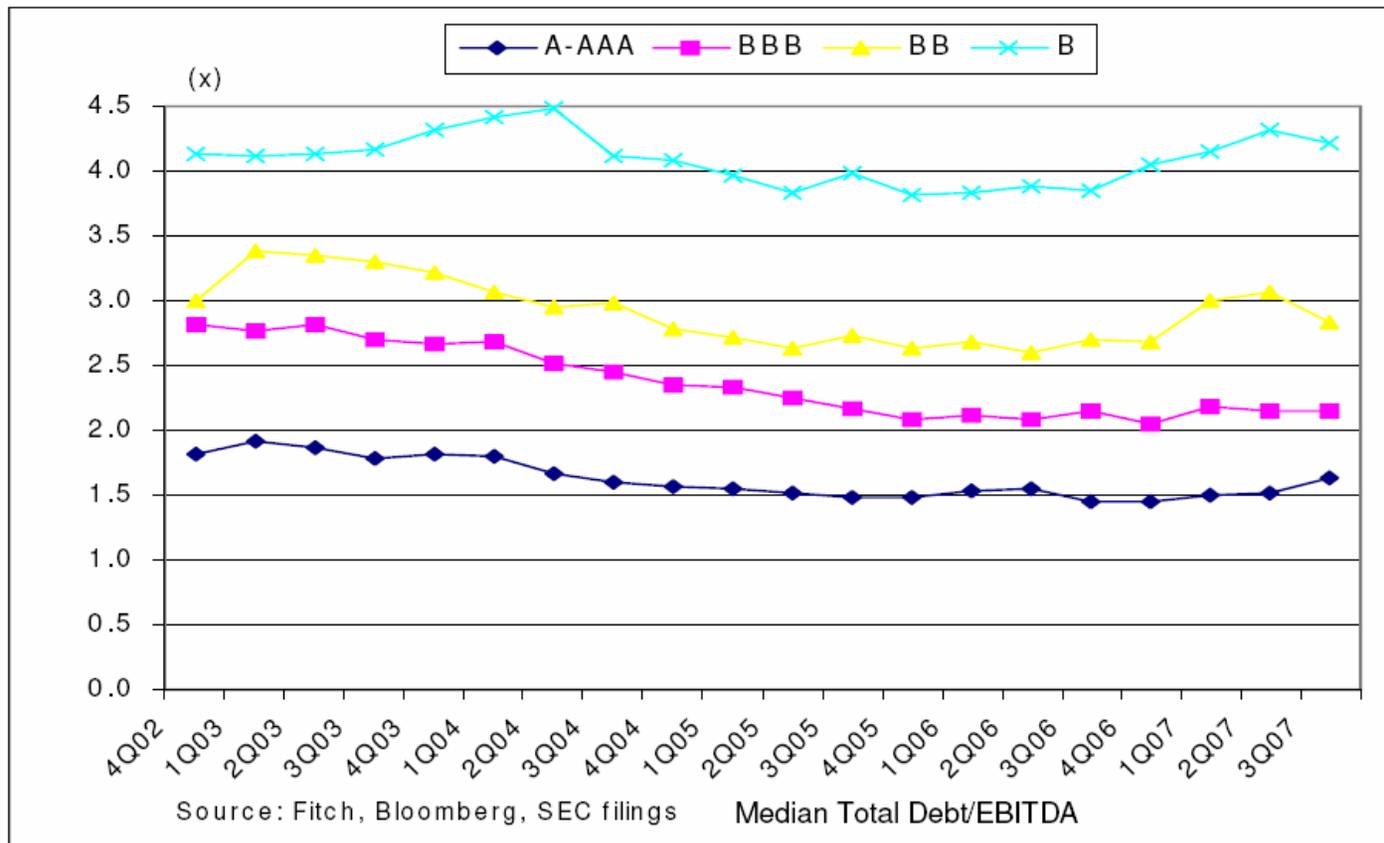


US Defaults on High Yield Bonds Have Been Low...

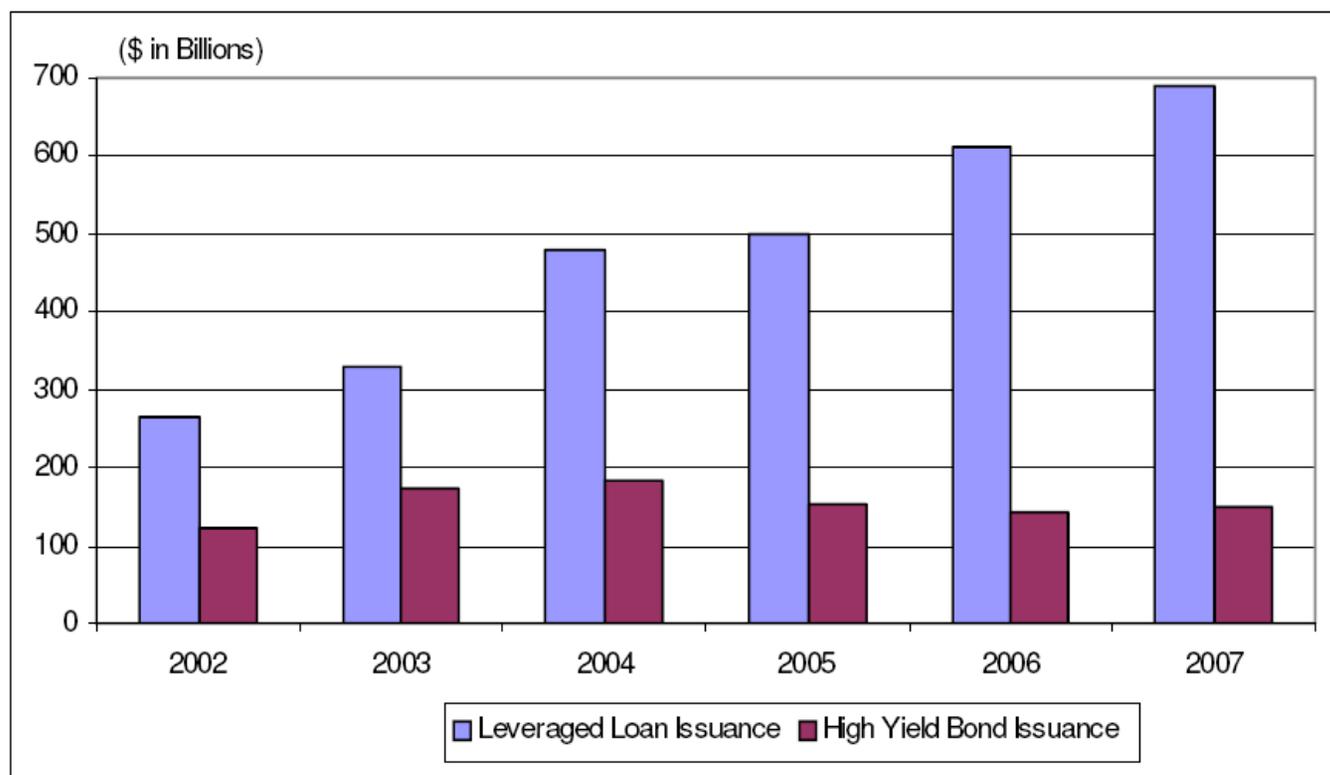


Source: Bloomberg and Fitch Ratings

...Leading to Increased Corporate Leverage...

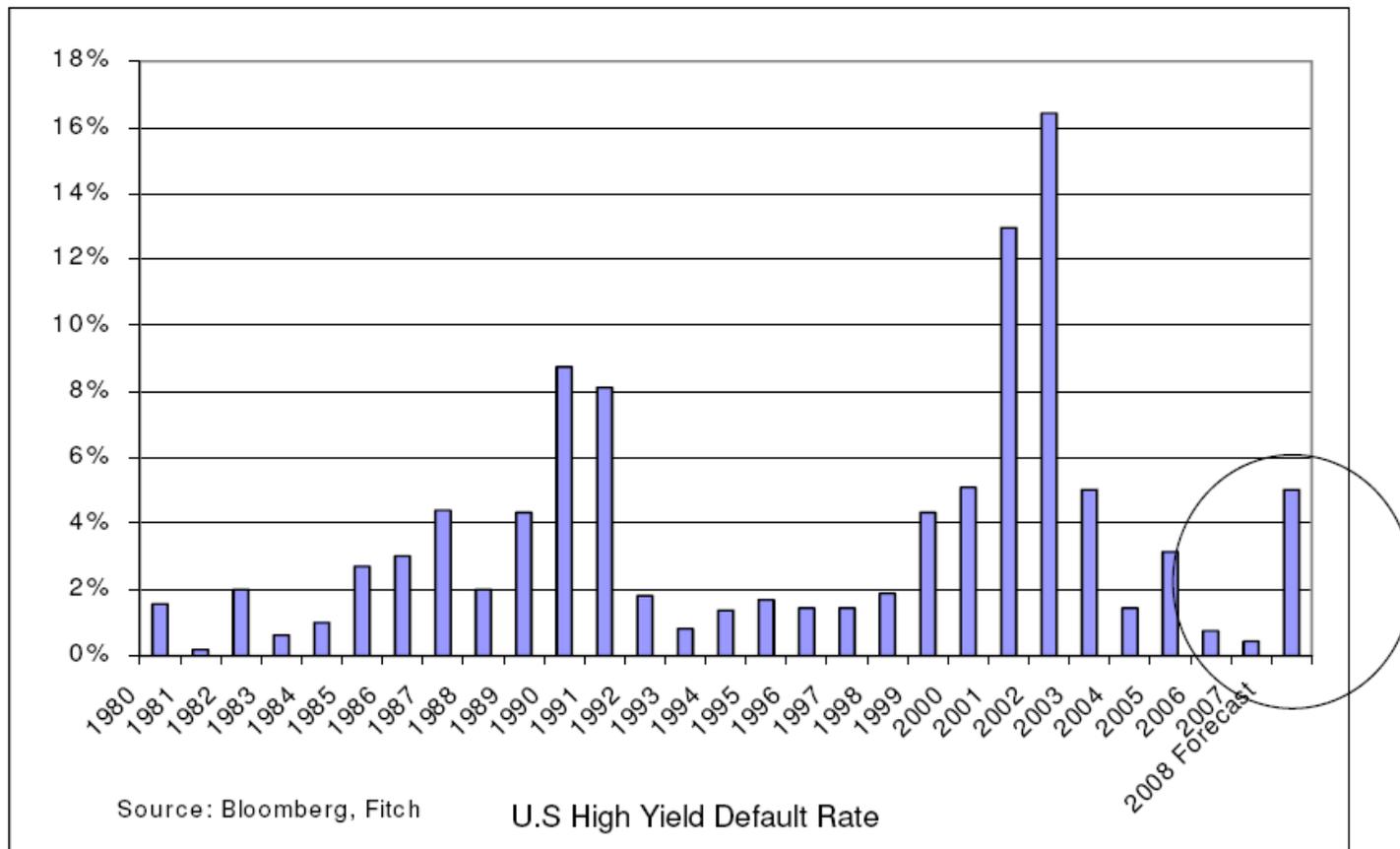


...Especially Leveraged Loans...

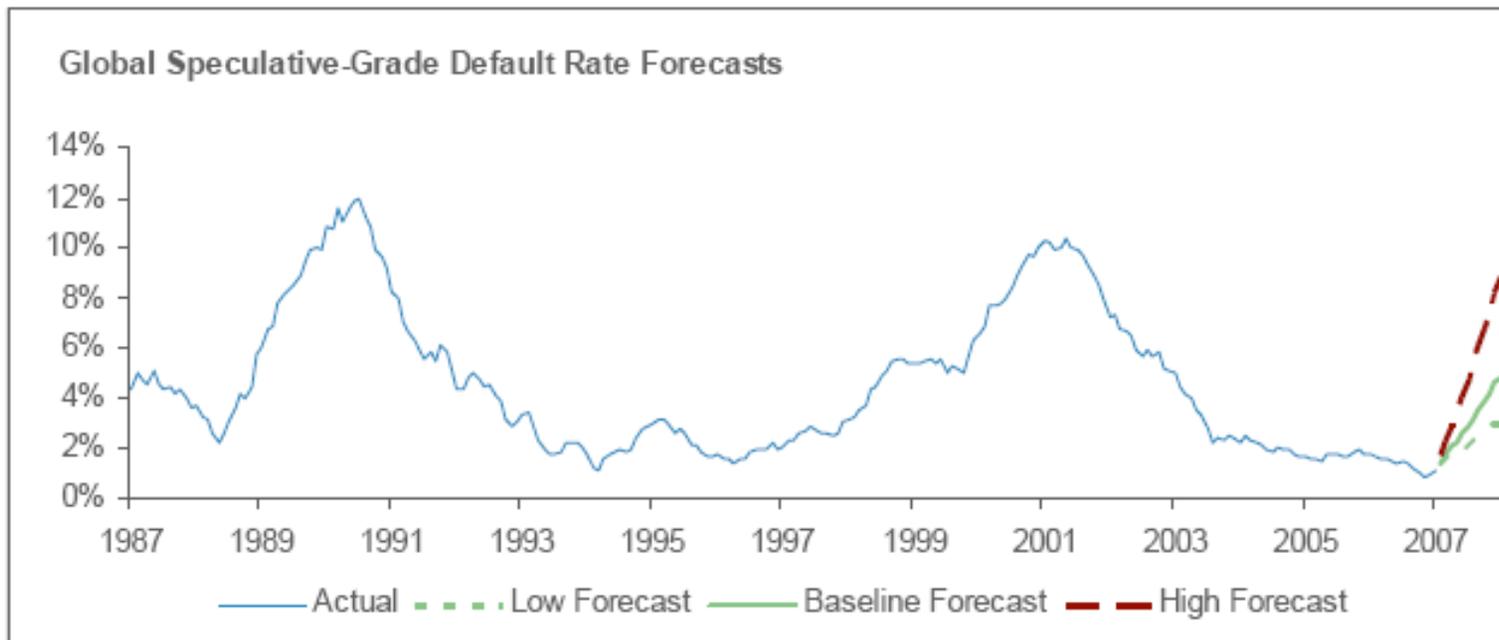


Source: LPC/Reuters, Bloomberg, and Fitch Ratings

...But Defaults are Rising...

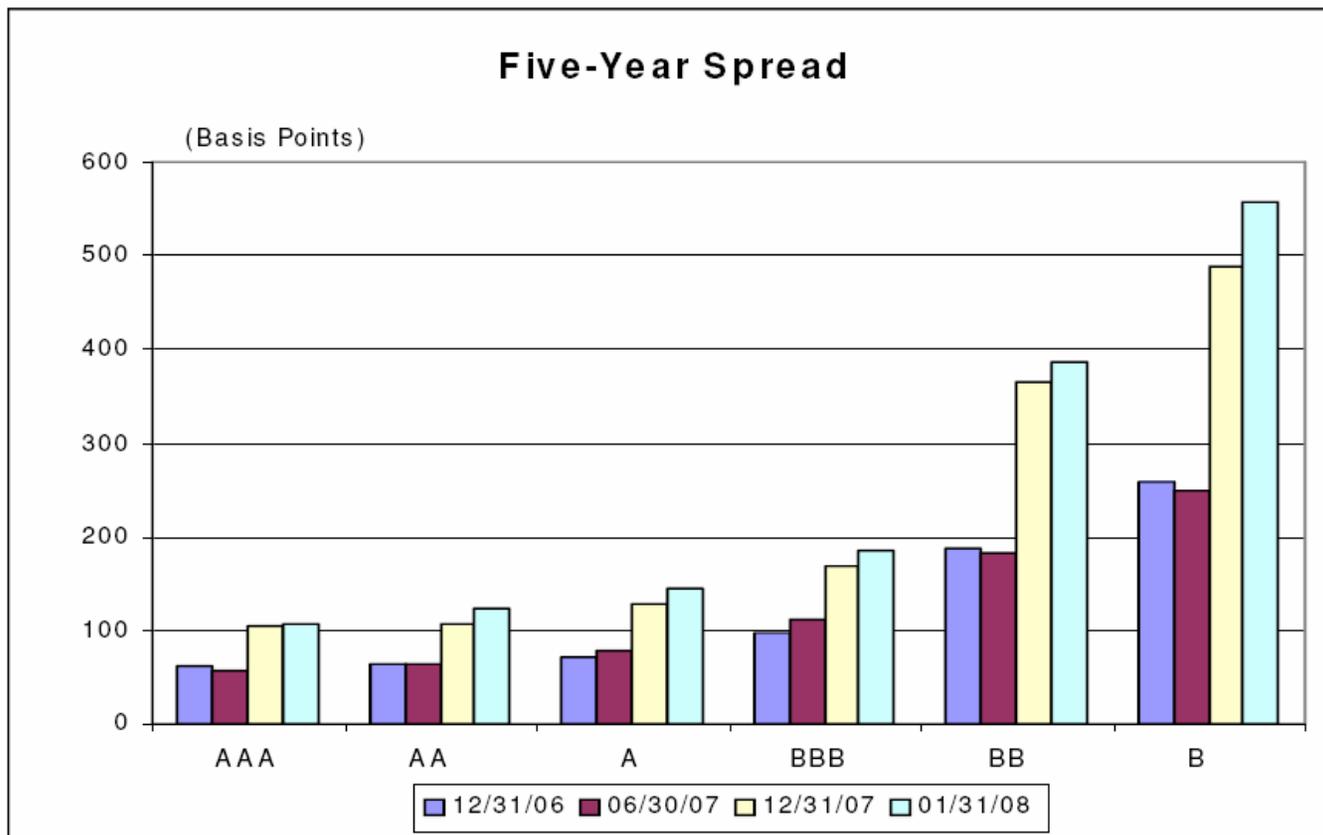


...and Moody's Forecasts Worse to Come...



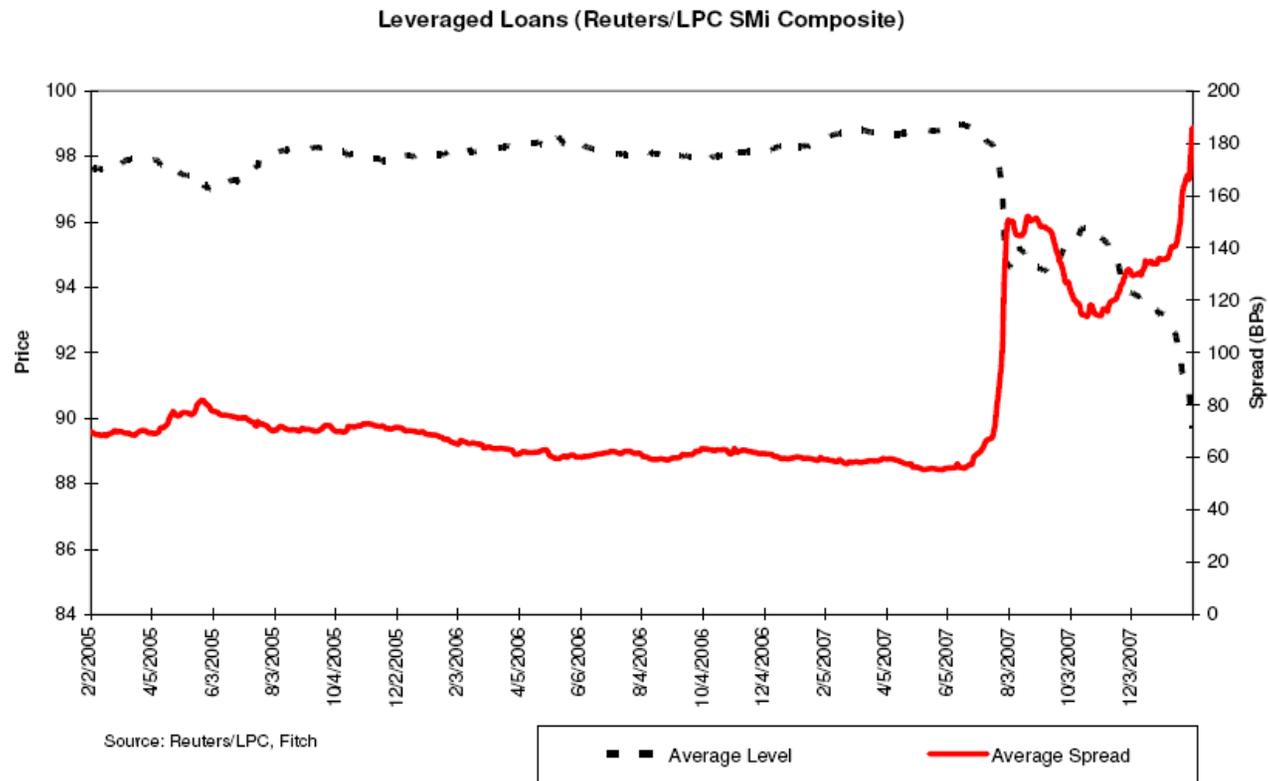
Source: moodys.com

...Based on Widening Corporate Bond Spreads ...

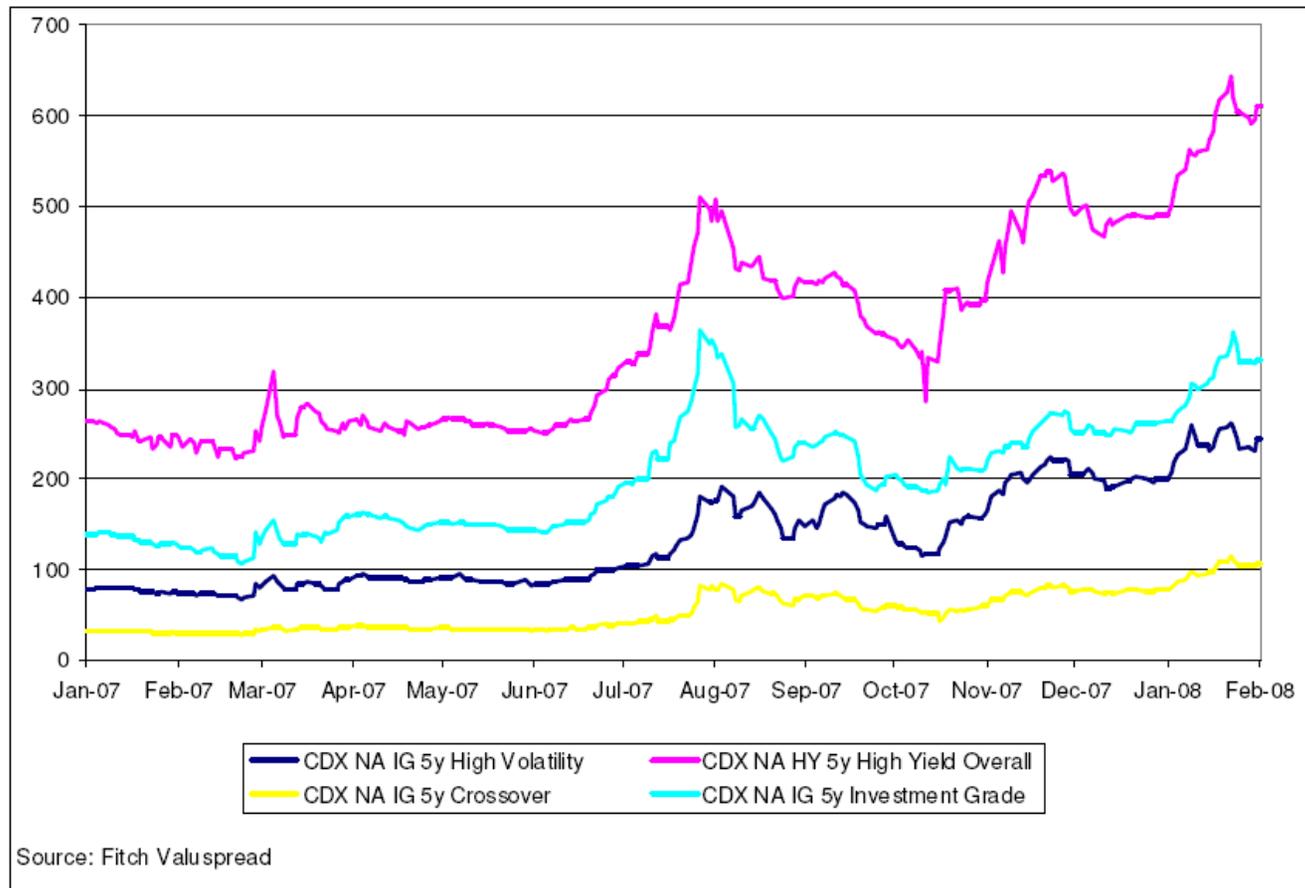


Source: Bloomberg and Fitch Ratings

...Along with Corporate Loan Spreads...

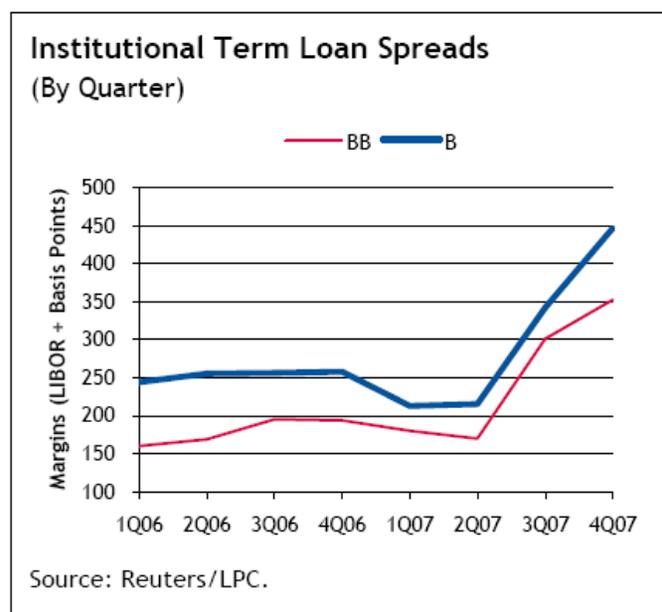
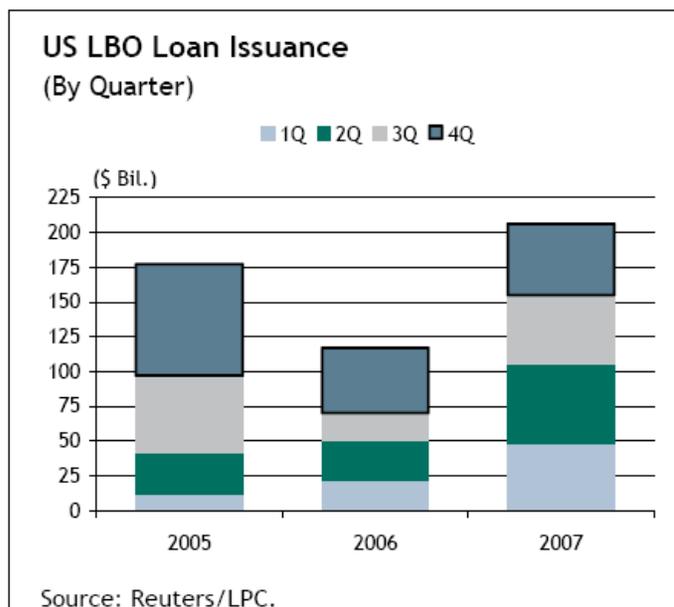


...and Credit Protection Spreads: Even More



Result: LBO Financing Down, Pricing Up

- US leveraged loan market continued to slump in the fourth quarter of 2007 amid growing economic concerns and an increasingly large leveraged loan supply overhang. Deal postponements, facility downsizing, the re-emergence of covenants, greater upward pricing pressure and higher OIDs.
- There was a noted absence of PIK toggle, delayed draw and covenant-lite and second-lien facilities.

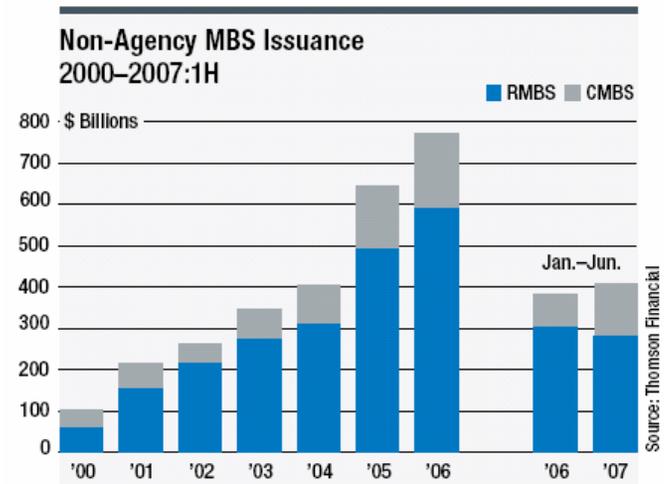
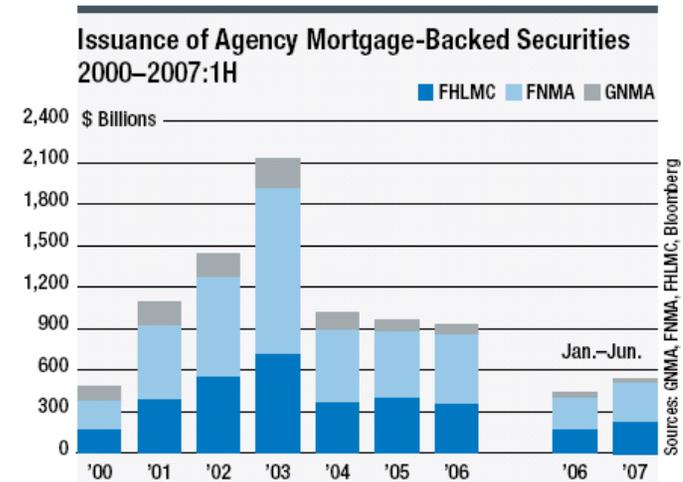
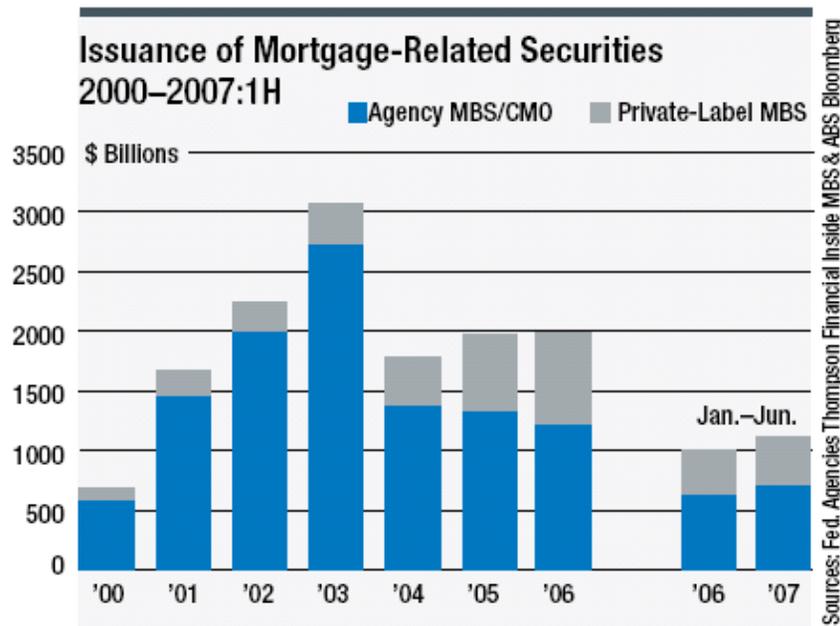


Let's Review Some Sectors

- ❑ Mortgage-Backed Securities
 - ❑ RMBS, including Subprime
- ❑ Asset-Backed Commercial Paper
- ❑ Structured Investment Vehicles
- ❑ When Triple-A goes Bad

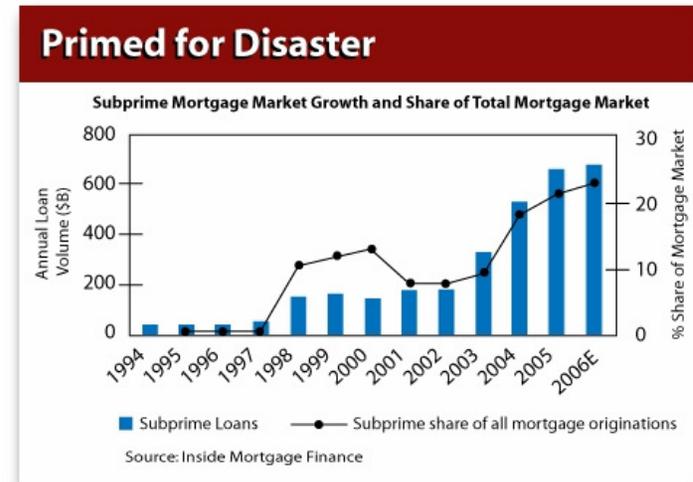
The US MBS Market

August 2007



What is a “Subprime” Mortgage?

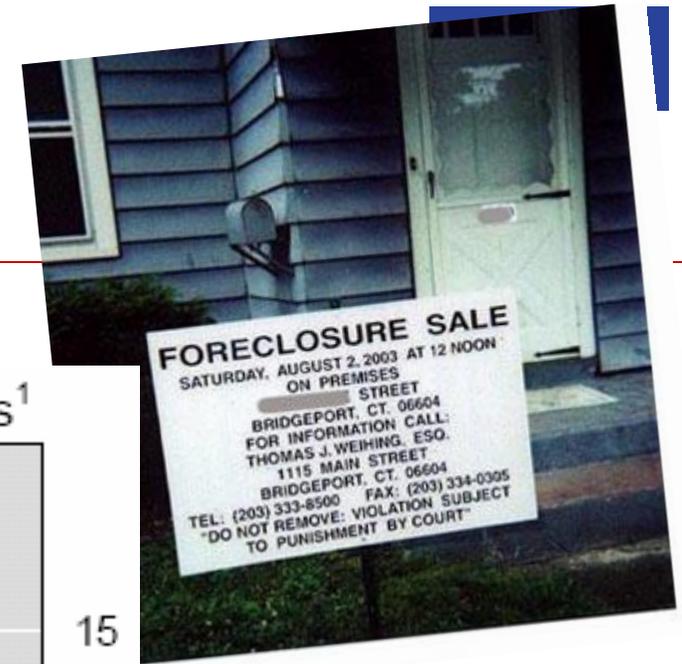
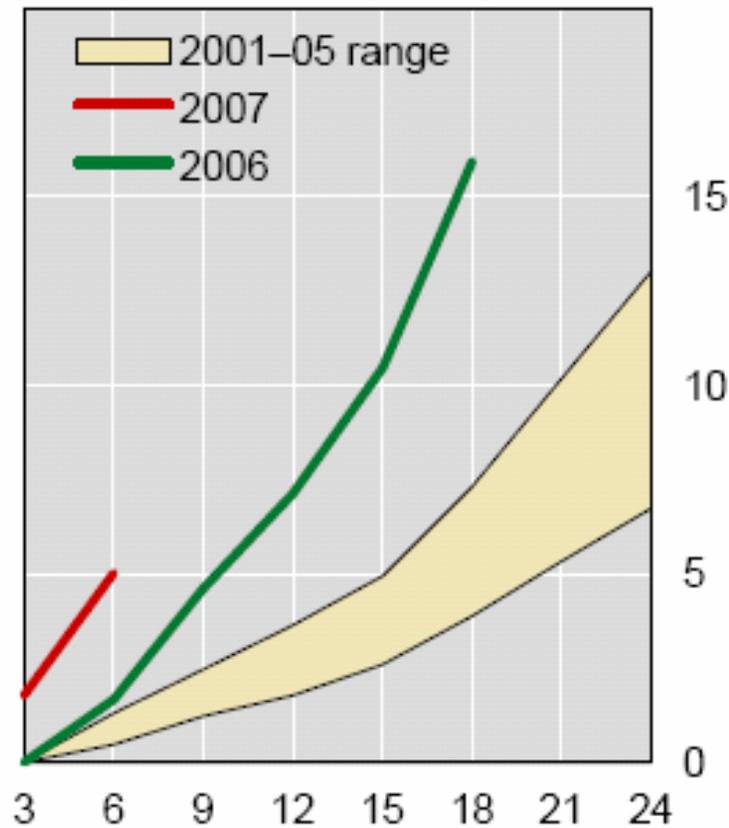
- **Subprime lending** is the practice of making loans to borrowers who do not qualify for the best market interest rates because of their deficient credit history.
- "Subprime borrowers typically have weakened credit histories that include payment delinquencies, and possibly more severe problems such as charge-offs, judgments, and bankruptcies. They may also display reduced repayment capacity as measured by credit scores, debt-to-income ratios, or other criteria that may encompass borrowers with incomplete credit histories." (US Treasury definition)



Rapid growth of subprime mortgages took place in 2005-2007

Sub-merging

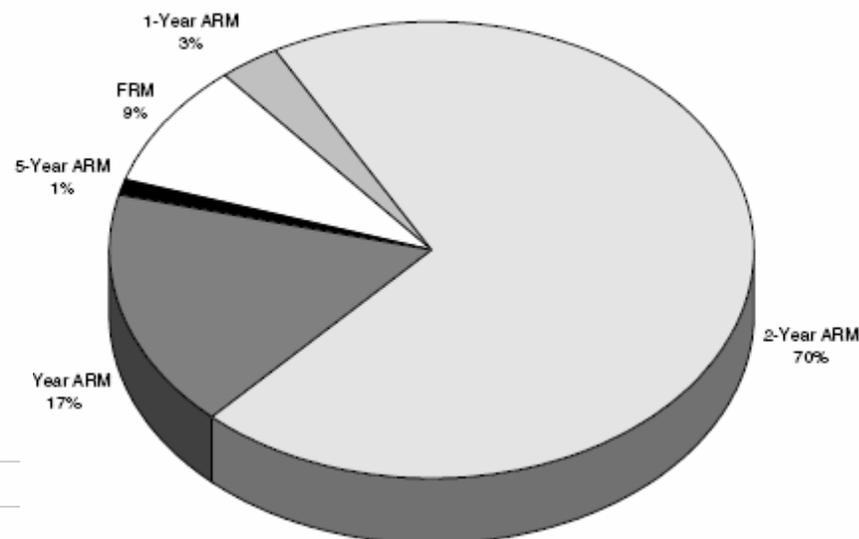
Subprime delinquency rates¹



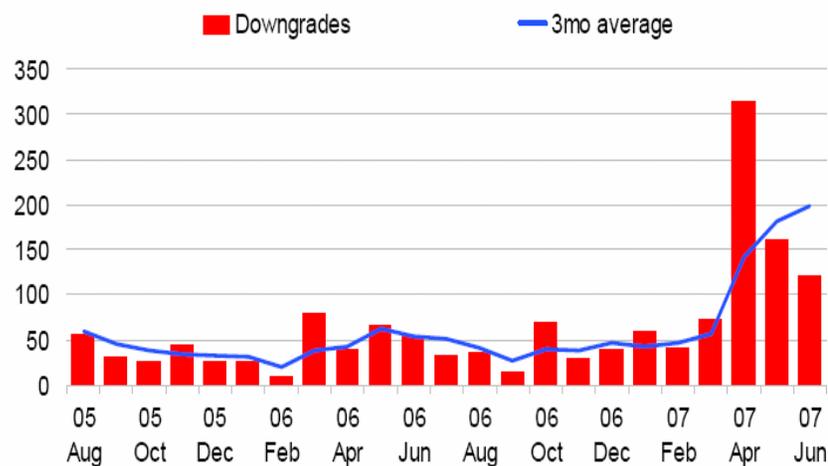
Subprime Down

- > Collateral Attributes
- > Home Prices
- > ARM Resets
- > Prepayment Rates

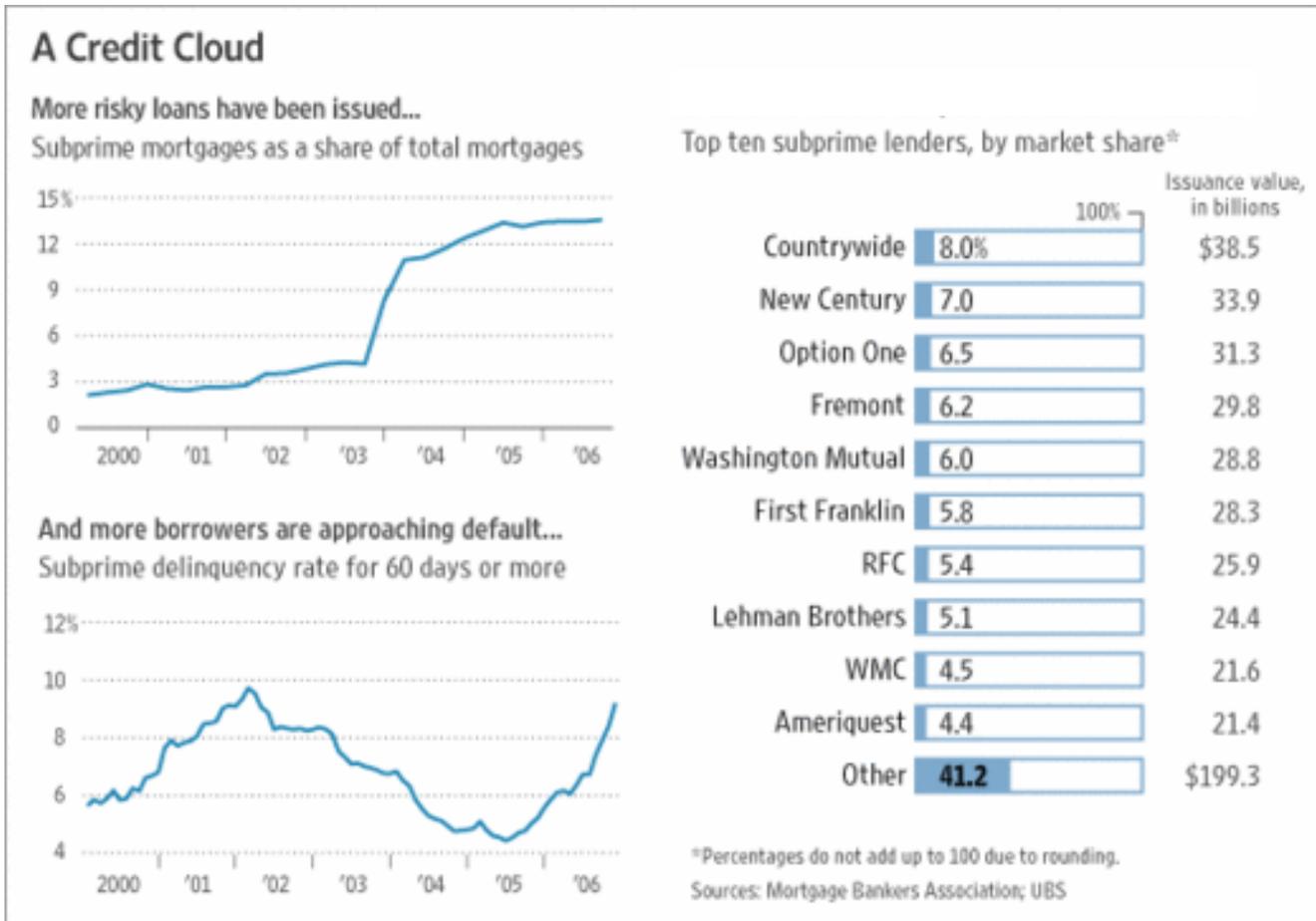
Exhibit 123: Distribution of Subprime MBS Purchase Loans by Loan Type, 2005



Tranches Downgraded each Month



Subprime -- Falling While Rising

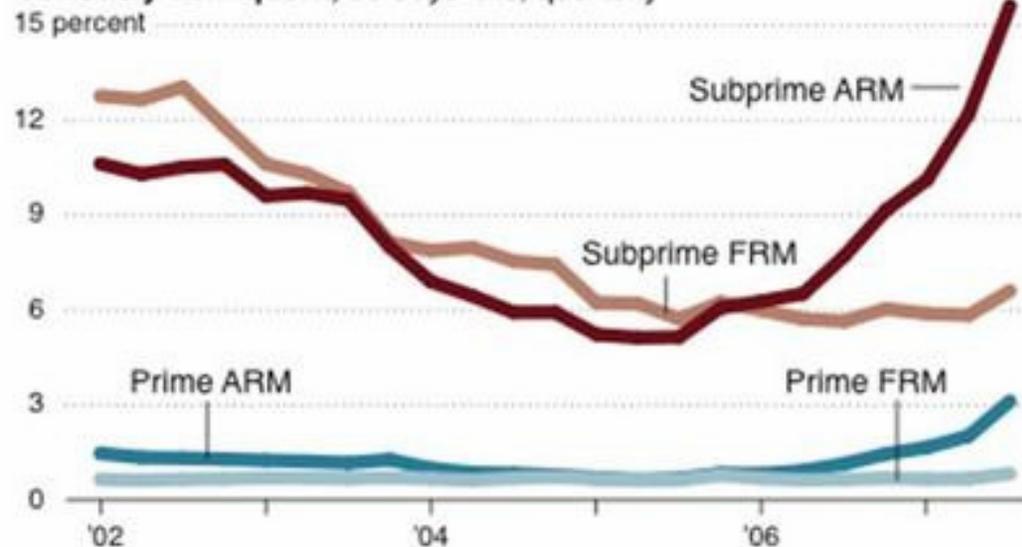


Subprime Disaster is ARM

High delinquency rate for subprimes

More than 15 percent of subprime adjustable-rate mortgages were 90 days or more delinquent or in the process of foreclosure during the third quarter of 2007.

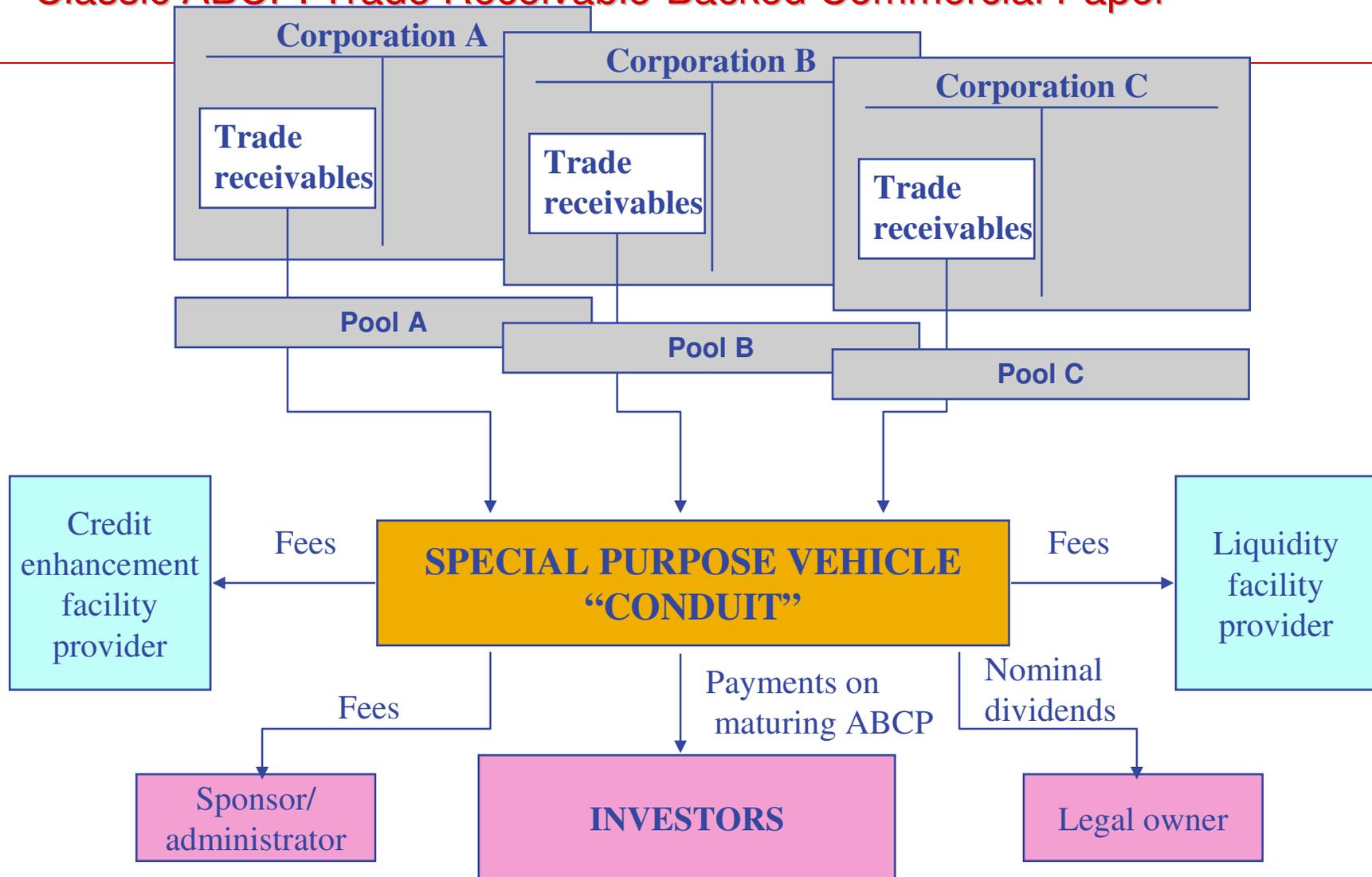
Seriously delinquent, 90 days late, quarterly



SOURCE: Mortgage Bankers Association

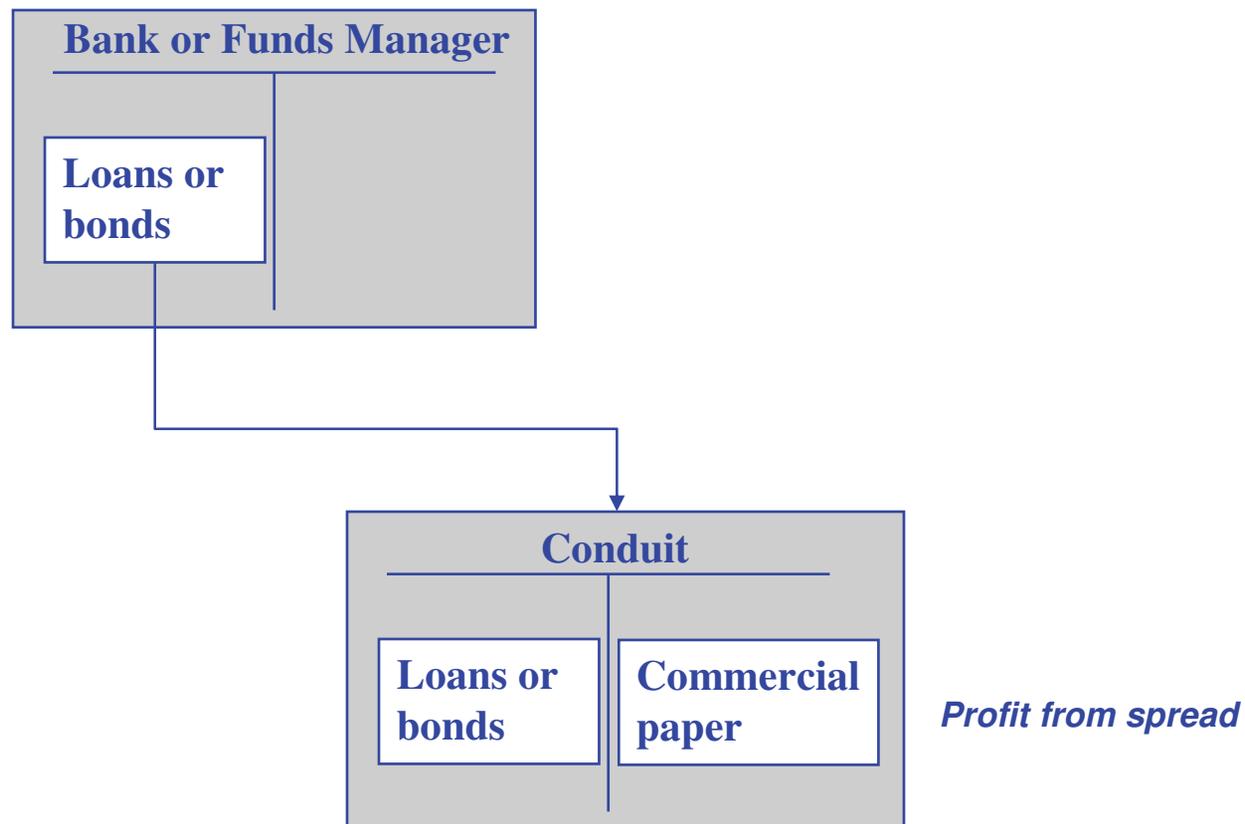
AP

Classic ABCP: Trade Receivable-Backed Commercial Paper

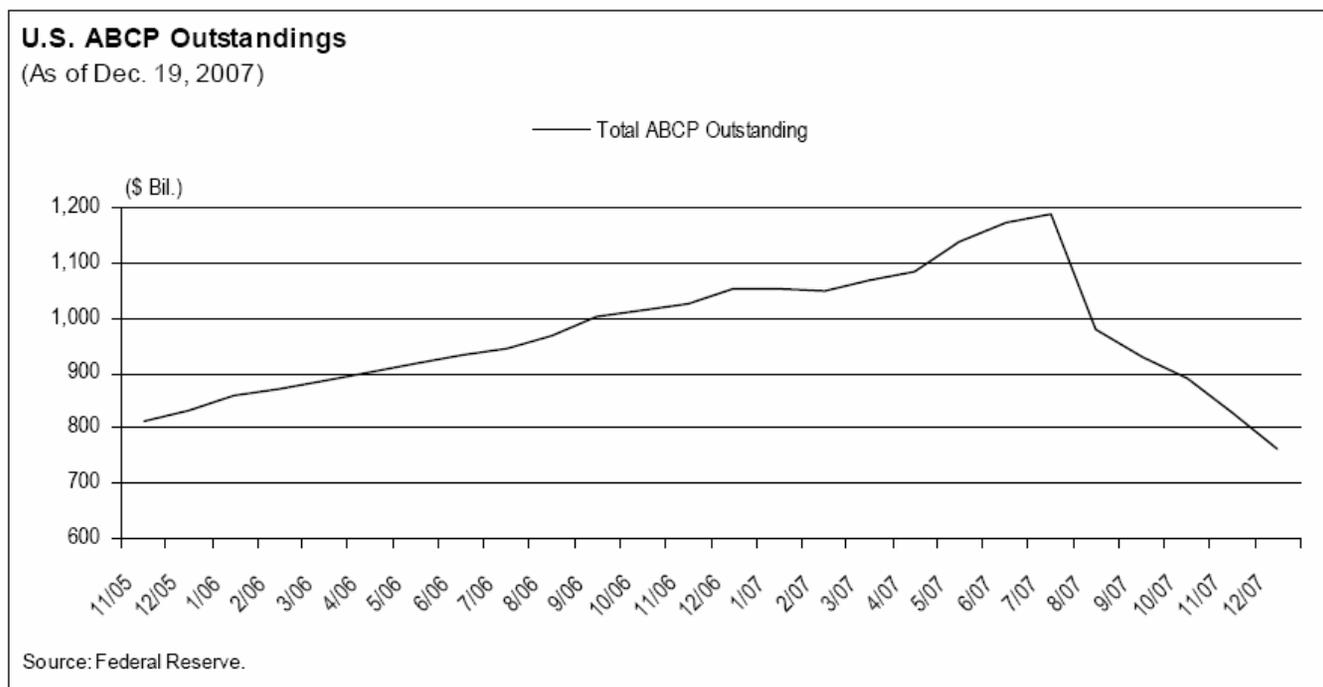


Another Kind of ABCP

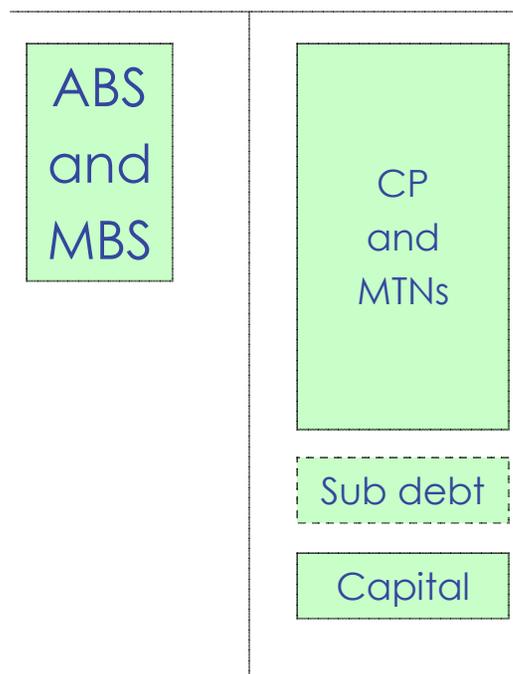
- Single-seller arbitrage conduit



Asset-Backed Commercial Paper: A Market in Shock



What is a Structured Investment Vehicle (SIV)?

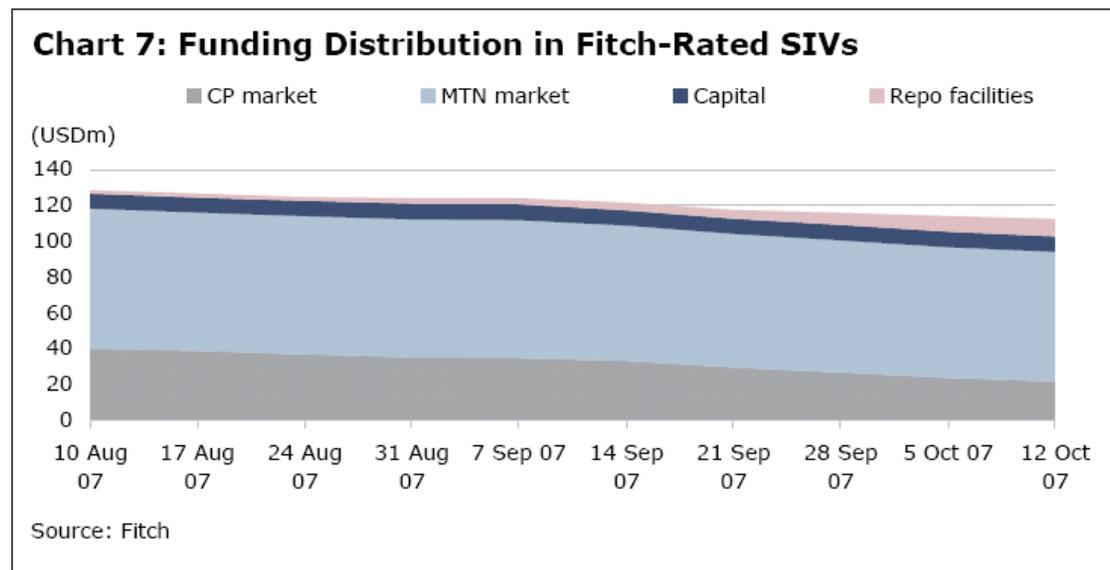


- An SIV is a bank-sponsored SPV that borrows money mainly using commercial paper, which it traditionally issues close to the interest rate of LIBOR. It then uses the money to purchase bonds - effectively lending it out much as a bank would provide loans. The bonds usually selected by an SIV are predominantly (70-80%) Aaa/AAA rated ABS and MBS. The SIV is effectively providing the funds for mortgages, credit cards, student loans and similar products.
- An SIV would typically earn around 0.25% more on the bonds than it has to pay to the CP. This difference represents the profit for the SIV which will be paid to the capital note holders and the investment manager

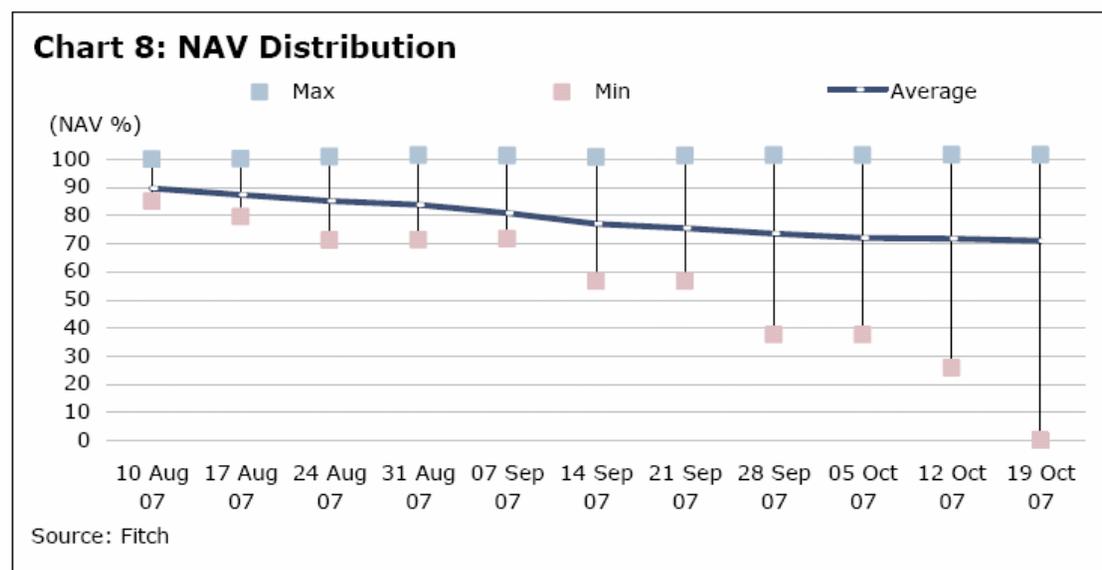
A Risky Funding Structure

- The short-term securities that an SIV issues often contain two tiers of liabilities, junior and senior, with a leverage ratio in the range of 10 to 15 times. The senior debt is invariably rated AAA/Aaa/AAA and A-1+/P-1/F1 (usually two rating agencies are chosen), while the junior debt may or may not be rated. When it is rated it is usually in the BBB area. There may be a mezzanine tranche rated A by rating agencies.
- The senior debt is a combination of medium term note (MTN) issuance and commercial paper (CP) issuance. The junior debt is traditionally puttable rolling 10 year bonds, however shorter maturities and bullet notes are becoming more common.
- In order to support the high senior rating, SIVs are also obliged to obtain liquidity facilities from banks to partially cover some of the senior issuance. This helps to protect the investors from the risks of , for example if the SIV is unable to refinance debt coming due in say the CP coming due in the capital markets
- The current situation is that they have not been able to refinance their commercial paper – by mid-2007 spreads widened by 100bps and liquidity evaporated – so the banks have had to absorb much of their losses, and the SIVs' AAA debt may be downgraded.

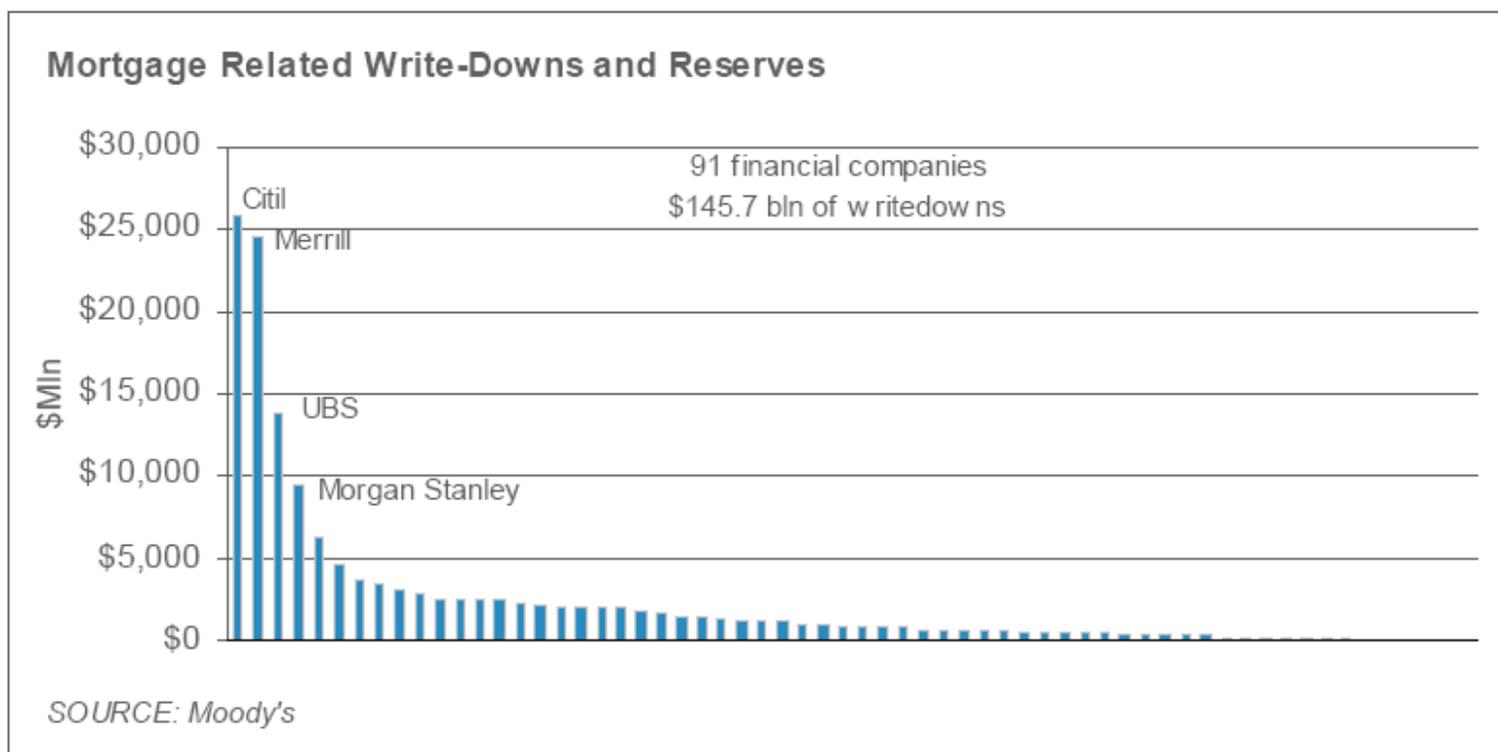
SIV CP Funding Evaporates...



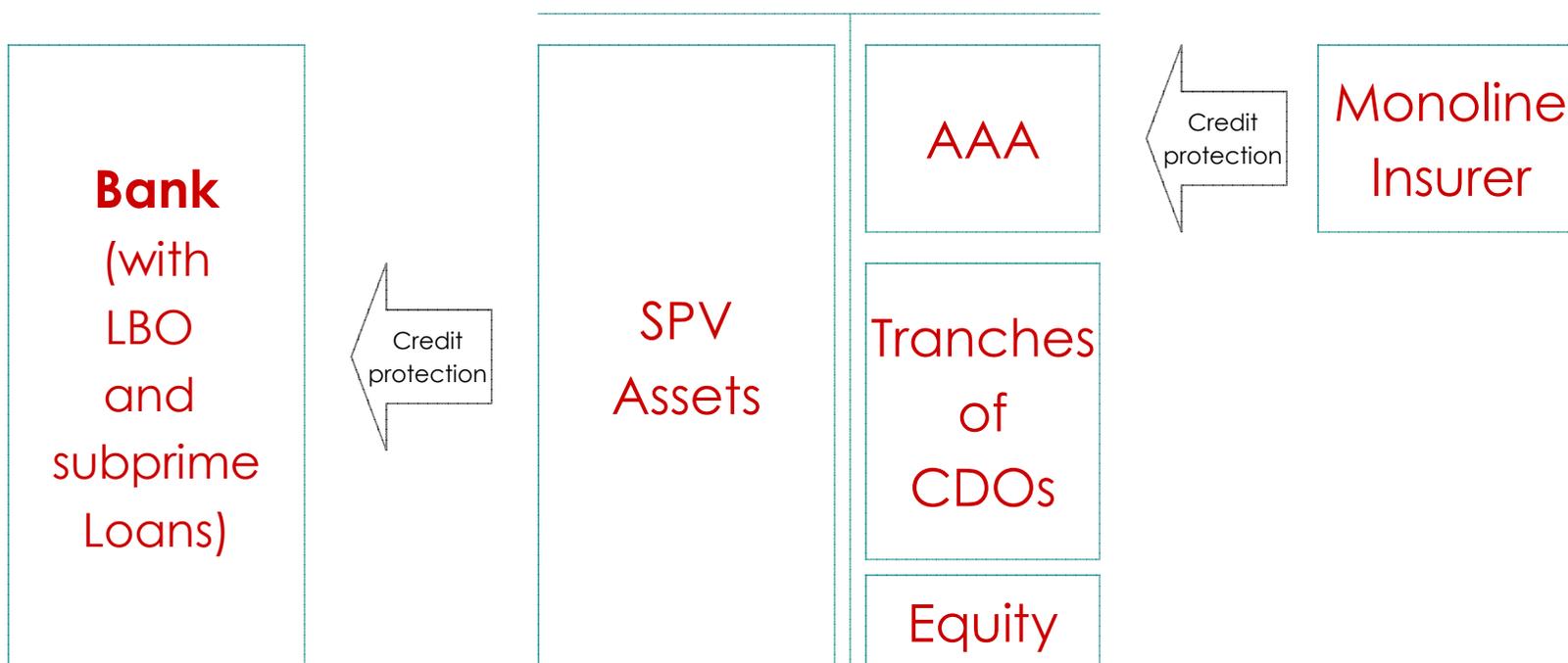
... as Net Asset Value Deteriorates...



... and Banks are Hit



Structured Finance: When Triple-A Goes Bad



Delinquencies, Defaults, Downgrades

- ❑ Ratings on Global SF CDOs with RMBS exposure: lots of downgrades
- ❑ Mezzanine SF CDOs with large exposure to 2005-2007 vintage US subprime RMBS experienced severe rating downgrades based on actual credit deterioration of underlying collateral.

Rating Migration Summary (USDm)									
		Current rating category							
		AAA	AA	A	BBB	BB	B	CCC or lower	Total
Previous rating category	AAA	205,444	7,391	6,986	20,376	11,067	5,590	2,143	258,996
	AA		7,720	299	1,549	1,533	583	2,242	13,926
	A			7,205	190	1,125	625	1,490	10,634
	BBB				2,743	415	541	1,645	5,344
	BB					928	129	728	1,785
	B						998	303	1,301
	CCC or lower							1,297	1,297
	Total		205,444	15,110	14,489	24,858	15,067	8,465	9,847

Source: Derivative Fitch

The Sum of All Fears

- ❑ Leveraged Loans
- ❑ Mortgage-Backed Securities
 - ❑ RMBS, including Subprime
 - ❑ CMBS
- ❑ Consumer Finance ABS
- ❑ Asset-Backed Commercial Paper
- ❑ Structured Investment Vehicle
- ❑ When Triple-A goes Bad



Contact Information

Ian H. Giddy

NYU Stern School of Business

Tel. 646-808-0746

ian.giddy@nyu.edu

<http://giddy.org>