
Current Conditions in Global Credit Markets

A Tale of Three Periods

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NYU Stern Alumni Reception in Tokyo
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Changes in the Credit Environment: Are Historical Default and Recovery Estimates Still Relevant?

Default and Recovery Forecasting Models

- Macro-Economic Models: Default Probabilities
- Mortality Rate Models: Default Probabilities
- Recovery Rate Models: Loss-Given-Default
- Distressed Debt Market Size Estimate

Factors Affecting the Transformation of Credit Markets in Last Few Years

- Massive Global Liquidity
 - Petrodollars, Foreign Governments, Financial Institutions, Global Money Supply Expansion, etc.
- Explosion of Hedge Fund Activity
- Frenetic Activity in M&A/LBO transactions
- Growth of the Institutional Loan Market, esp. Leveraged Loans
- Easy Credit Standards by both Bank and Non-Bank Lenders
- Record Low Required Yield Spreads in a Higher Credit Risk Profile Environment until June '07
 - Second-Half 2007 Spread Volatility

Factors Affecting the Transformation of Credit Markets in Last Few Years

- Rapid Growth in Derivatives and Synthetics, esp. CDOs
- Historically Low Default Rates and High Recoveries
- Extremely Low Equity and Debt Volatility until Summer '07
- Escalating Leverage Throughout the Credit Markets in Search of Alpha
- Recession in 2008/2009?
 - Hard Landing Default Rate
 - Soft Landing Default Rate

Are Historical Default and Recovery Estimates Still Relevant?

Increased Creditor Influences and Lower Default Rates

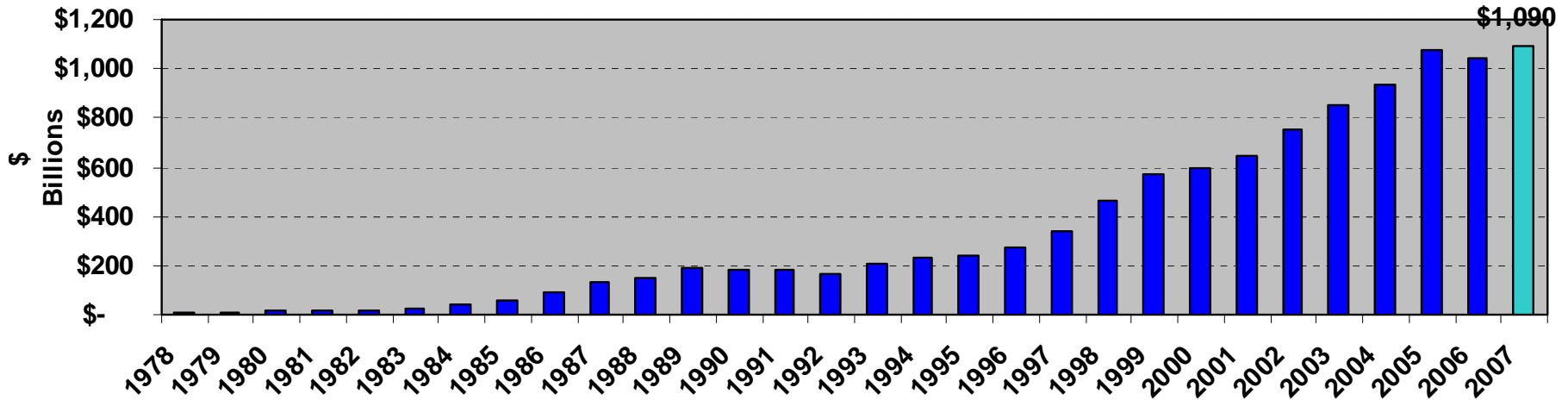
- Rescue Financing Restructurings
(Privatization of Bankruptcy)
- Pre-Petition Credit Facilities
- Distressed Debt Control Investing
- DIP Financings, Exit Financing (Lower Exit Prices)

Major Agencies Bond Rating Categories

<u>Moody's</u>		<u>S&P/Fitch</u>
Aaa		AAA
Aa1		AA+
Aa2		AA
Aa3		AA-
A1		A+
A2		A
A3		A-
Baa1		BBB+
Baa2	Investment Grade	BBB
Baa3		BBB-
Ba1		BB+
Ba2	High Yield ("Junk")	BB
Ba3		BB-
B1		B+
B2		B
B3		B-
Caa1		CCC+
Caa		CCC
Caa3		CCC-
Ca		CC
		C
C		D

Size of the US High-Yield Bond Market

1978 – 2007
(Mid-year US\$ billions)



Historical Default Rates

Straight Bonds Only Excluding Defaulted Issues From Par Value Outstanding, 1971 – 2008 (Feb. 29th)
(US\$ millions)

Year	Par Value Outstanding ^a	Par Value Defaults	Default Rates (%)	Year	Par Value Outstanding ^a	Par Value Defaults	Default Rates (%)
2008 (2/29)	\$1,089,900	\$4,187	0.384%	1982	\$18,109	\$577	3.186
2007	\$1,075,400	\$5,473	0.509	1981	\$17,115	\$27	0.158
2006	\$993,600	\$7,559	0.761	1980	\$14,935	\$224	1.500
2005	\$1,073,000	\$36,181	3.372	1979	\$10,356	\$20	0.193
2004	\$933,100	\$11,657	1.249	1978	\$8,946	\$119	1.330
2003	\$856,000	\$38,451	4.661	1977	\$8,157	\$381	4.671
2002	\$757,000	\$96,855	12.795	1976	\$7,735	\$30	0.388
2001	\$649,000	\$63,609	9.801	1975	\$7,471	\$204	2.731
2000	\$597,200	\$30,295	5.073	1974	\$10,894	\$123	1.129
1999	\$567,400	\$23,532	4.147	1973	\$7,824	\$49	0.626
1998	\$465,500	\$7,464	1.603	1972	\$6,928	\$193	2.786
1997	\$335,400	\$4,200	1.252	1971	\$6,602	\$82	1.242
1996	\$271,000	\$3,336	1.231	Standard Deviation (%)			
1995	\$240,000	\$4,551	1.896	Arithmetic Average Default Rate			
1994	\$235,000	\$3,418	1.454	1971 to 2007	3.096%	3.061%	
1993	\$206,907	\$2,287	1.105	1978 to 2007	3.365%	3.272%	
1992	\$163,000	\$5,545	3.402	1985 to 2007	4.029%	3.435%	
1991	\$183,600	\$18,862	10.273	Weighted Average Default Rate^b			
1990	\$181,000	\$18,354	10.140	1971 to 2007	3.863%		
1989	\$189,258	\$8,110	4.285	1978 to 2007	3.874%		
1988	\$148,187	\$3,944	2.662	1985 to 2007	3.910%		
1987	\$129,557	\$7,486	5.778	Median Annual Default Rate			
1986	\$90,243	\$3,156	3.497	1971 to 2007	1.708%		
1985	\$58,088	\$992	1.708				
1984	\$40,939	\$344	0.840				
1983	\$27,492	\$301	1.095				

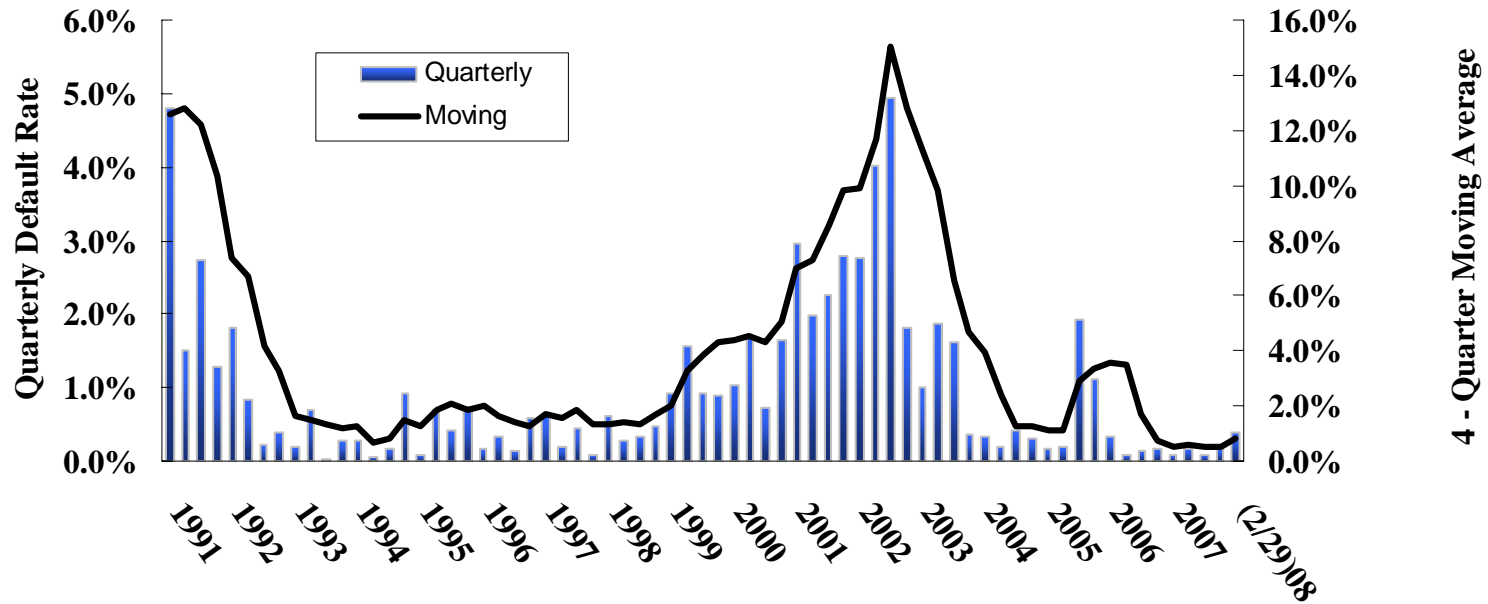
^b Weighted by par value of amount outstanding for each year.

Source: Author's compilation and Citigroup estimates

Historical Default Rates

QUARTERLY DEFAULT RATE AND FOUR QUARTER MOVING AVERAGE

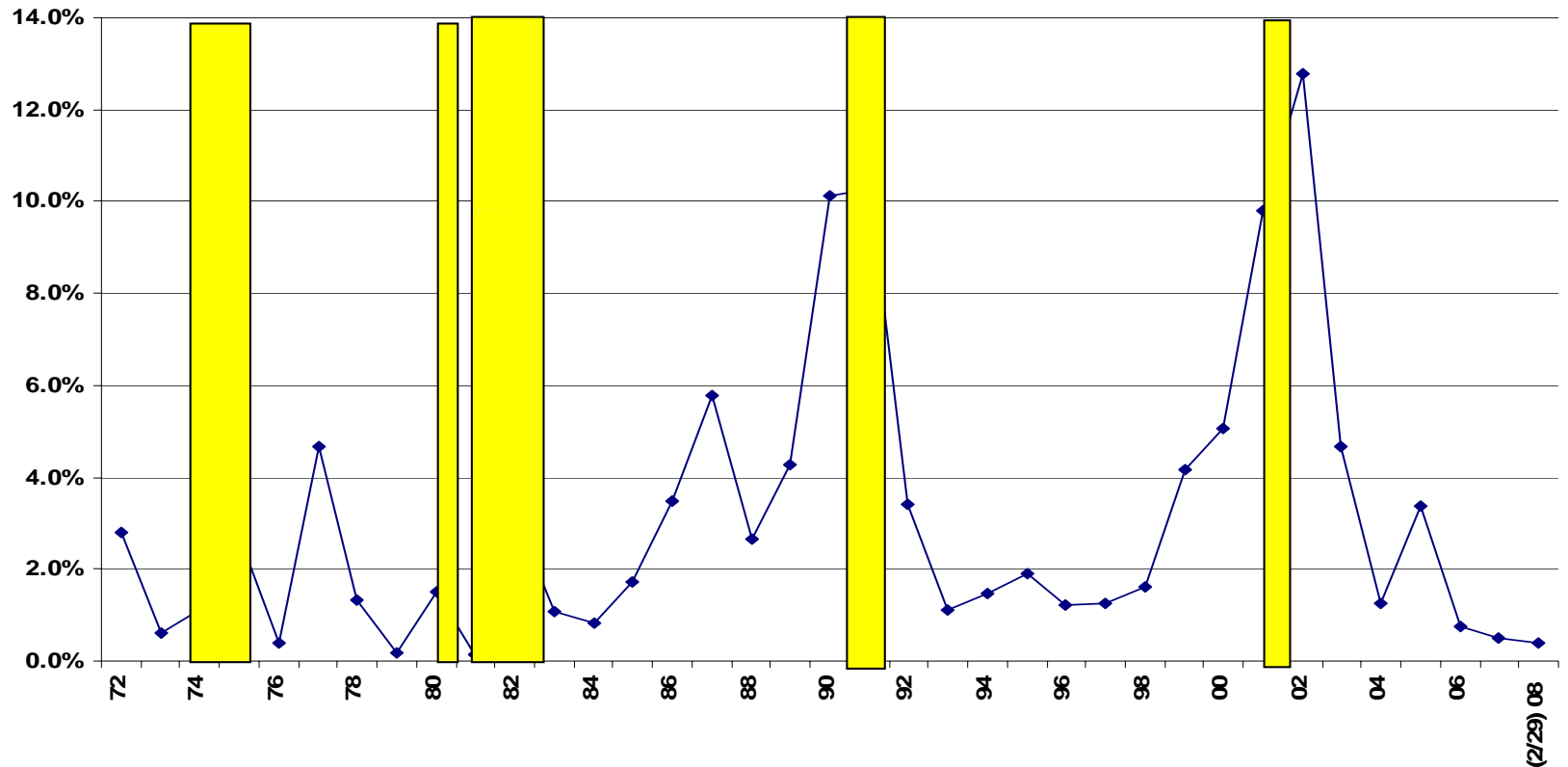
1991 - 2008 (Feb. 29th)



Source: Author's Compilations

Historical Default Rates and Recession Periods in the U.S.

HIGH YIELD BOND MARKET 1972 – 2008 (Feb. 29th)

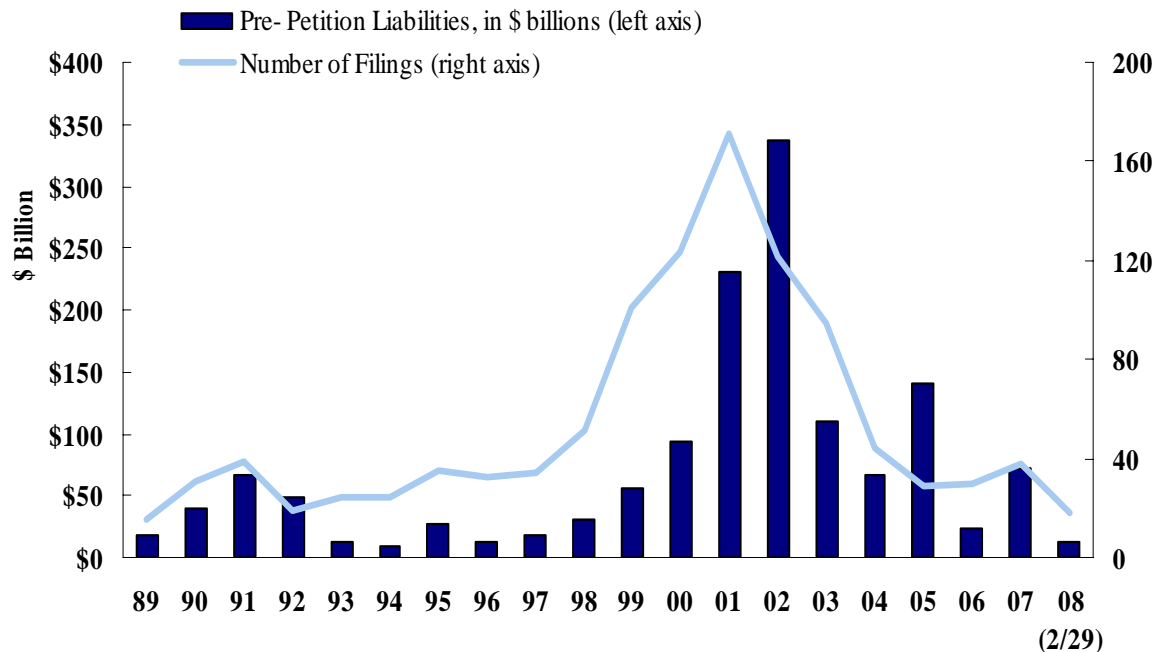


Periods of Recession: 11/73 - 3/75, 1/80 - 7/80, 7/81 - 11/82, 7/90 - 3/91, 4/01 – 12/01

Source: E. Altman (NYU Salomon Center) & National Bureau of Economic Research

Filings for Chapter 11

Number of Filings and Pre-petition Liabilities of Public Companies
1989 – 2008 (Feb. 29th)



2006
30 filings and liabilities of \$23.2 billion

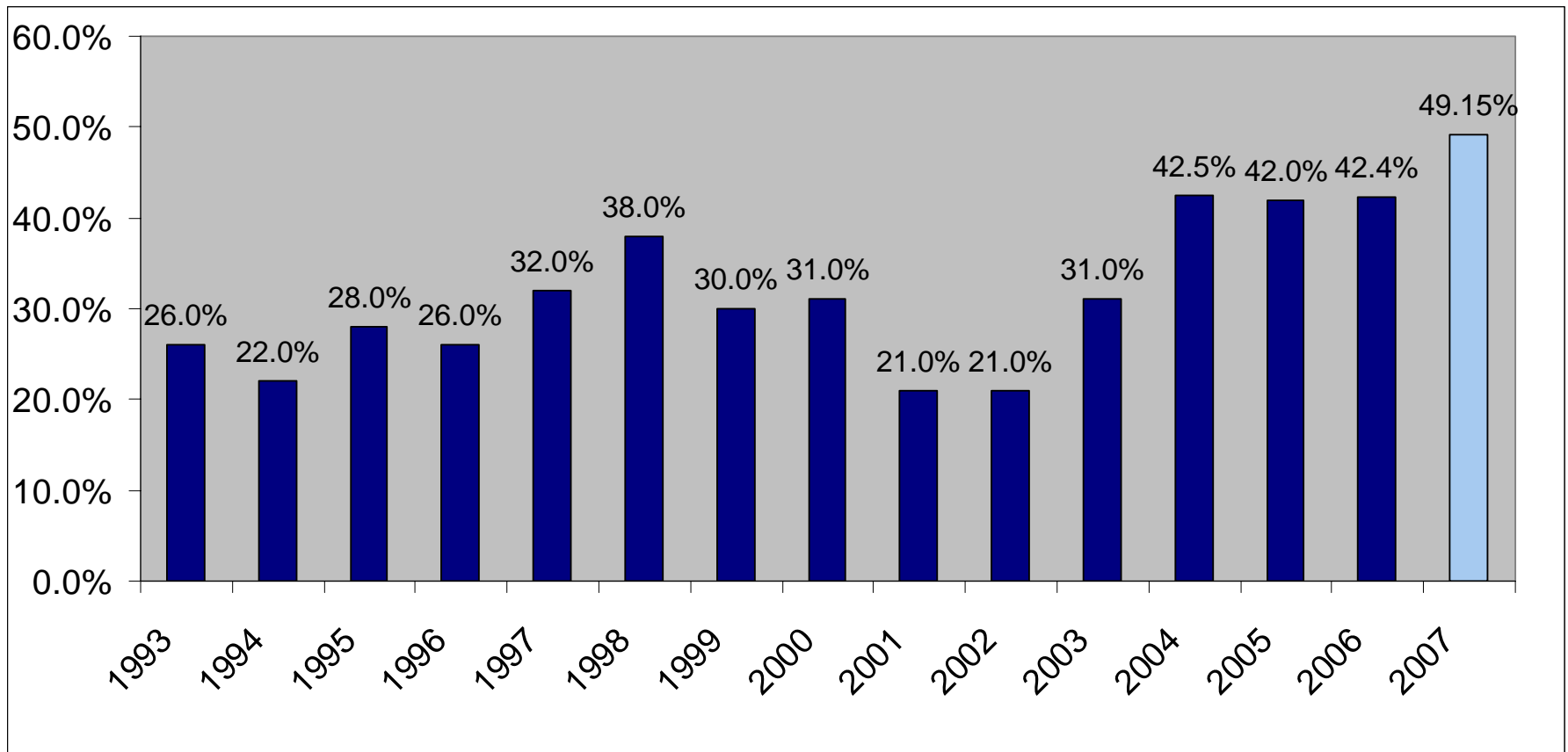
2007
38 filings and liabilities of \$72.65 billion

2008 (2/29)
18 filings and liabilities of \$12.41 billion

Note: Minimum \$100 million in liabilities
Source: NYU Salomon Center Bankruptcy Filings Database

Credit Statistics Trends and Leveraged Market Activity

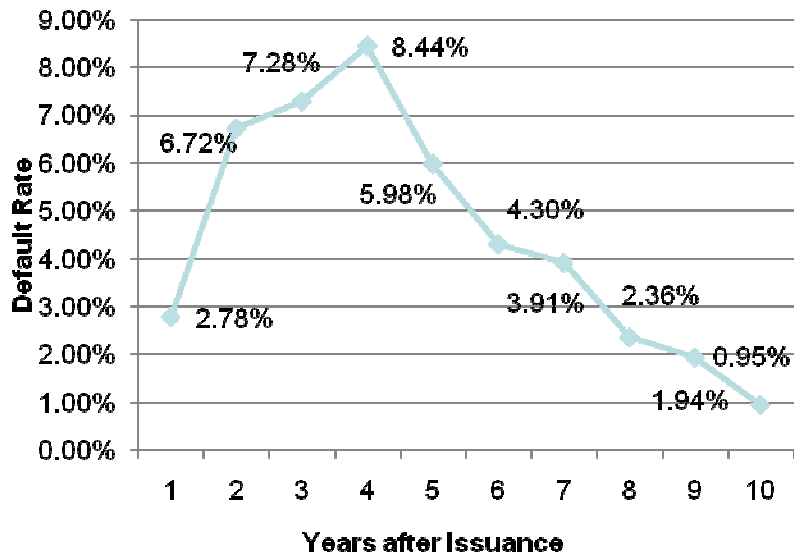
New Issues Rated B- or Below as Percentage of all New Issues (1993 – 2007)



Source: Standard & Poor's Global Fixed Income Research

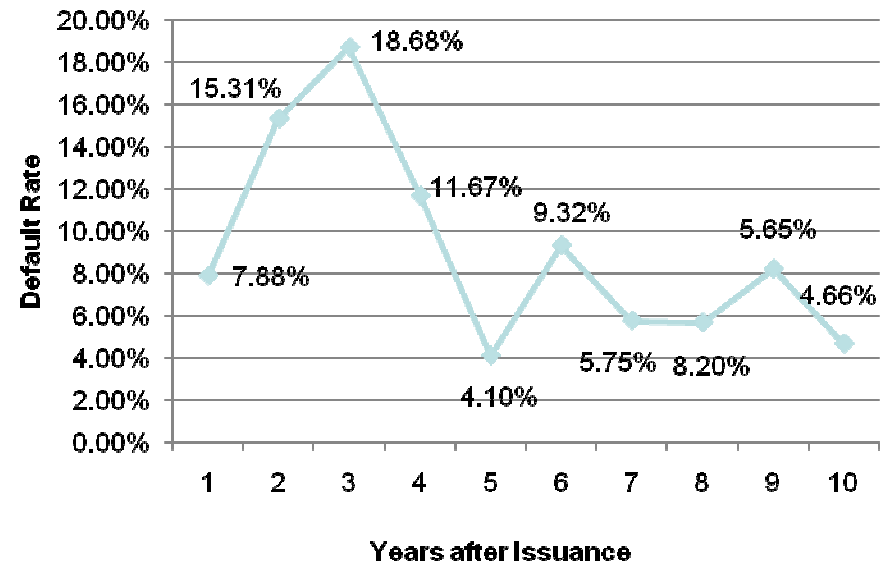
Default Lag After Issuance: 'B' & 'CCC' Rated Corporate Bonds

Default Lag after Issuance for B Ratings



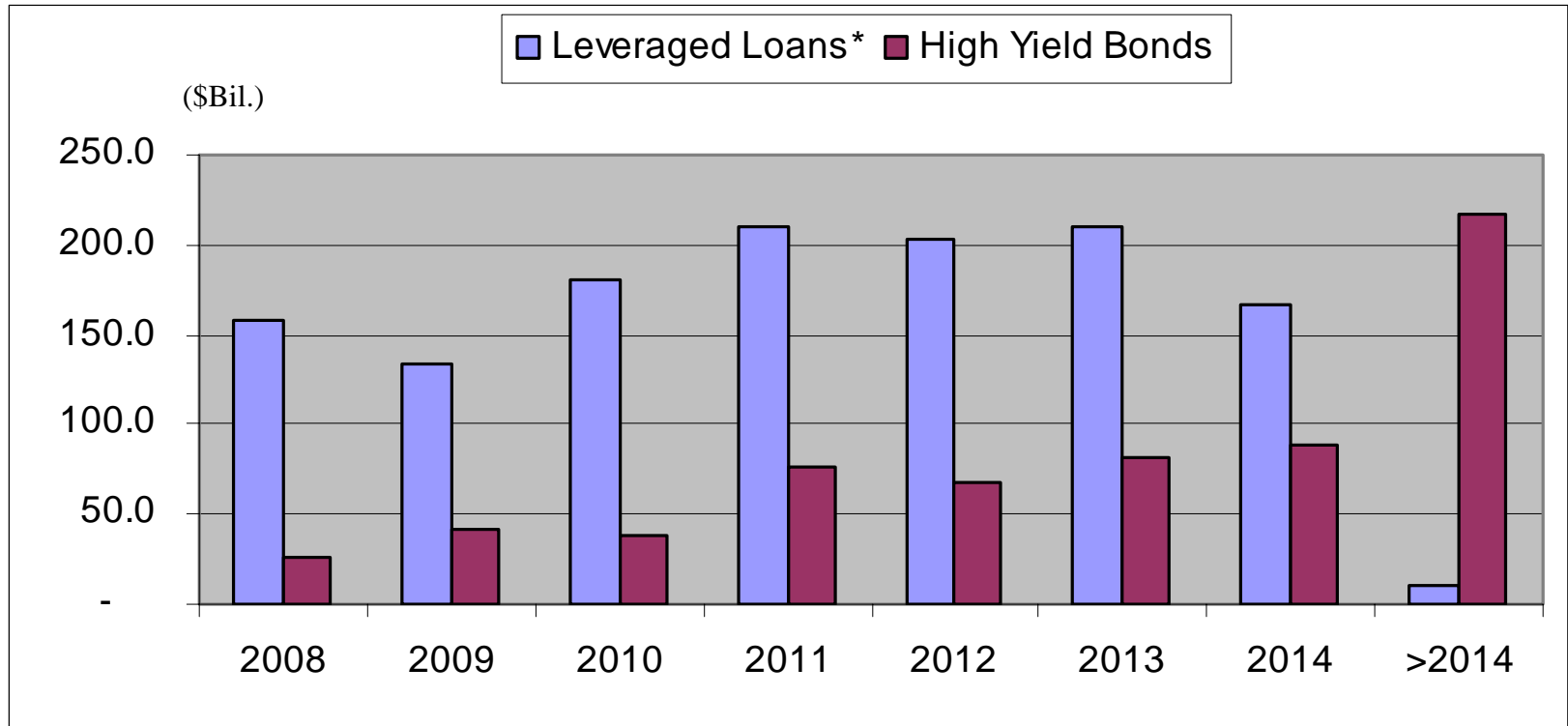
Source: Altman Mortality Tables (1971-2007)

Default Lag after Issuance for CCC Ratings



Source: Altman Mortality Tables (1971-2007)

Below Investment Grade Debt Maturity Schedule (U.S.)

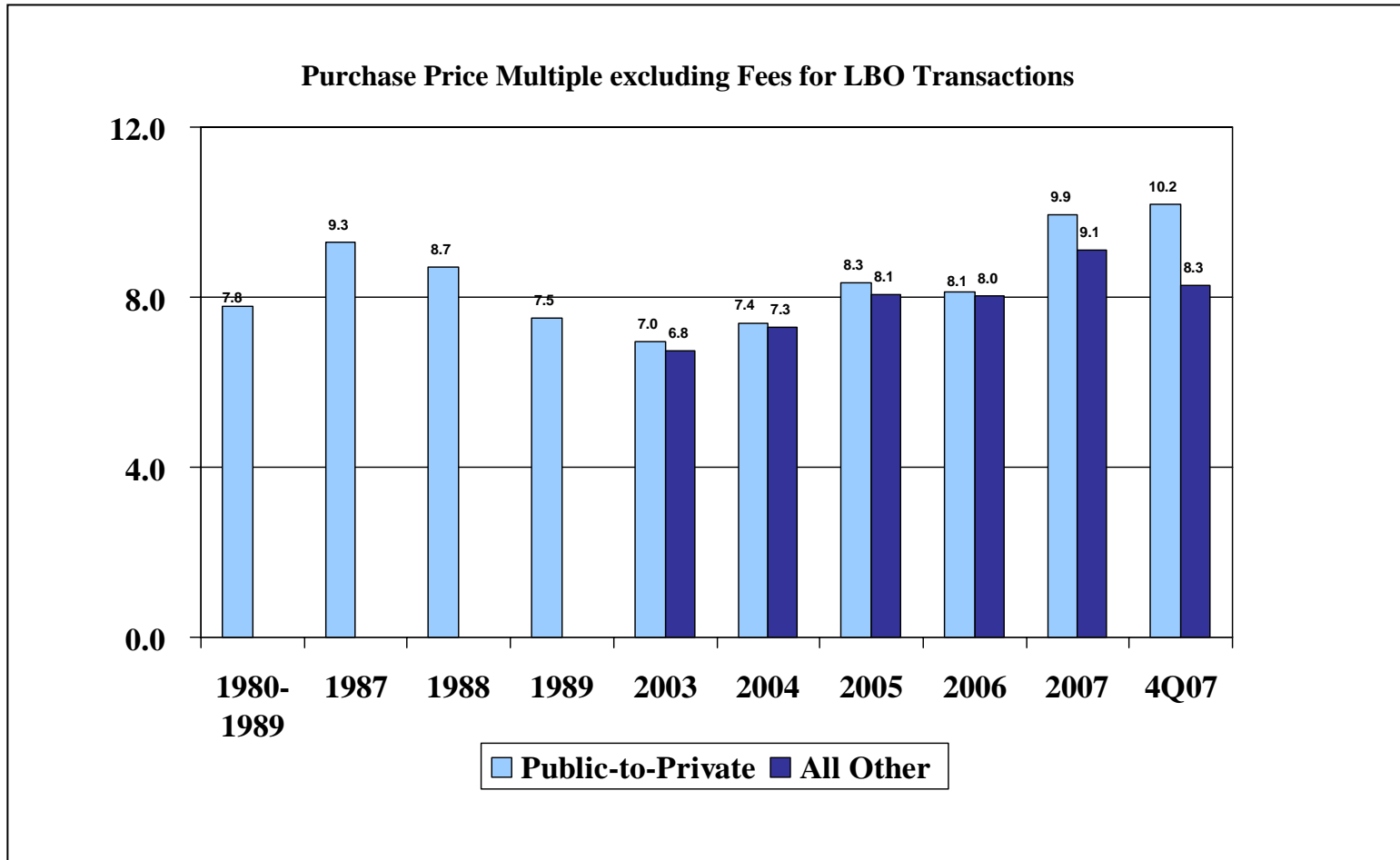


•Includes Term Loans, Revolvers, and Other Loans; Assumes Revolvers are Fully Drawn.

Source: DealLogic, Fitch Ratings.

A Credit Default Analysis of LBOs (2004 – 2007)

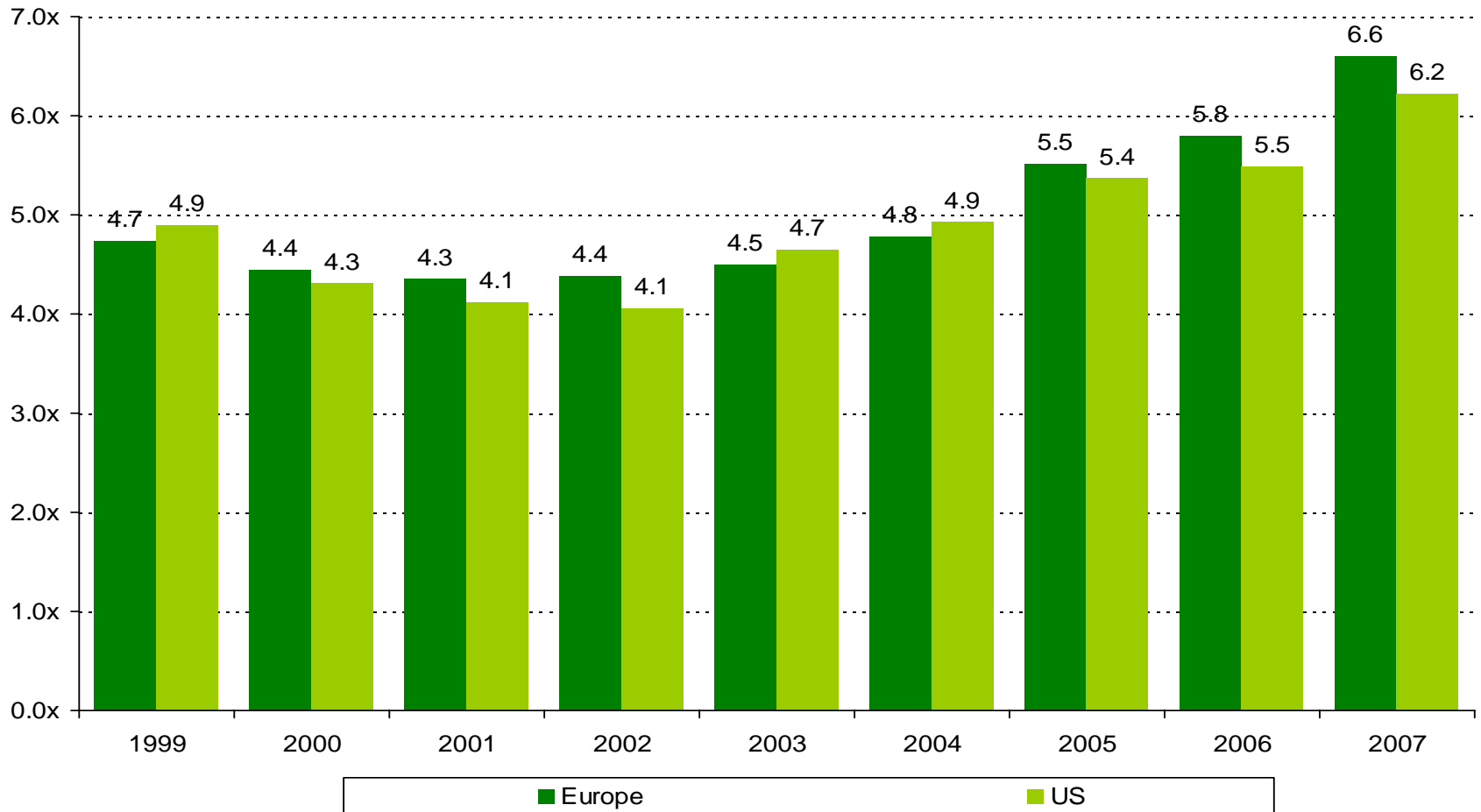
Purchase Price Multiples



Source: Standard and Poor's LCD

Leverage Continues to Increase Current European and U.S. Environments

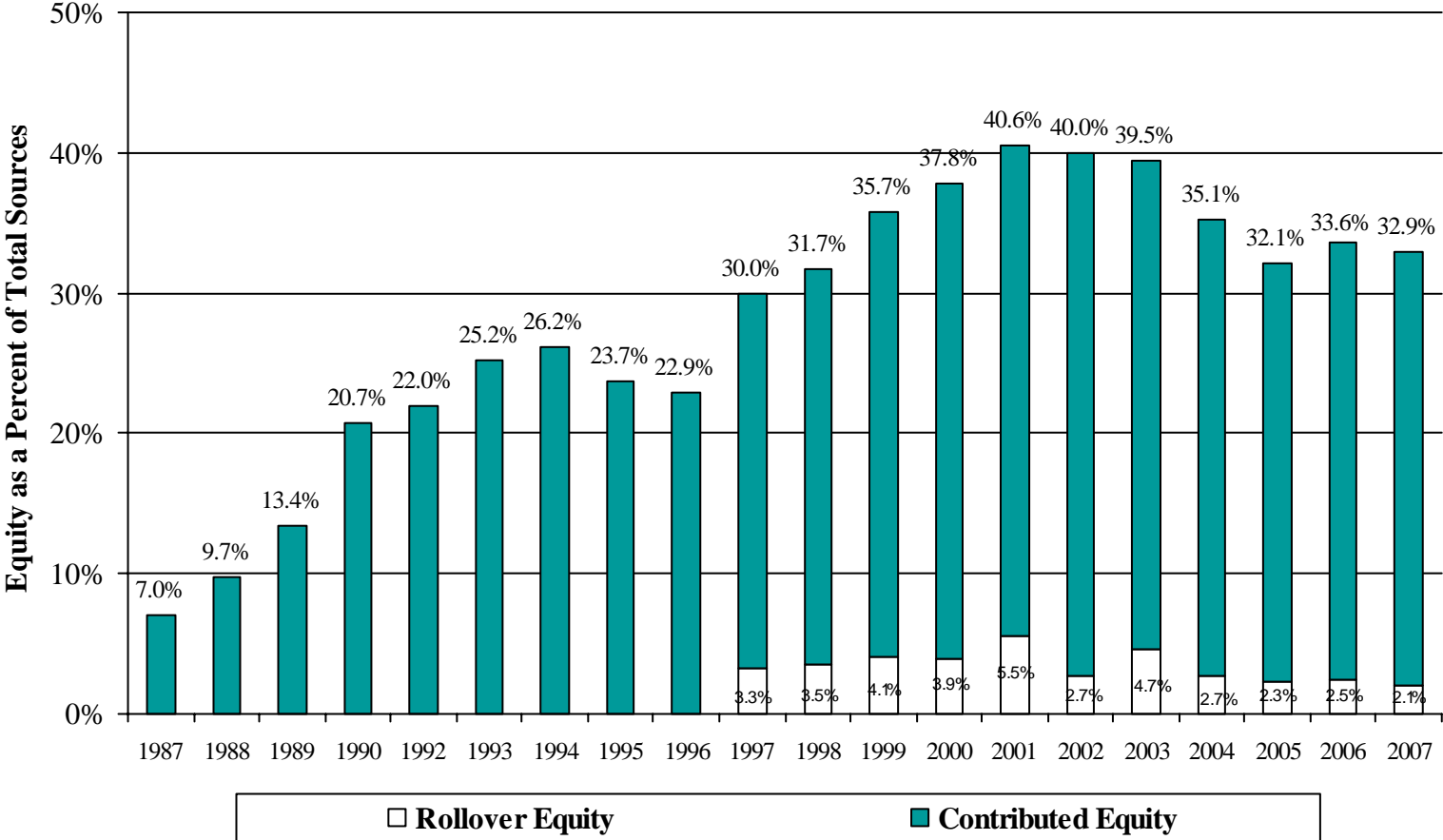
Average Total Debt Leverage Ratio for LBO's: Europe and US with EBITDA of €/\$50M or More



Source: Standard & Poor's LCD

Average Equity Contribution to Leveraged Buyouts

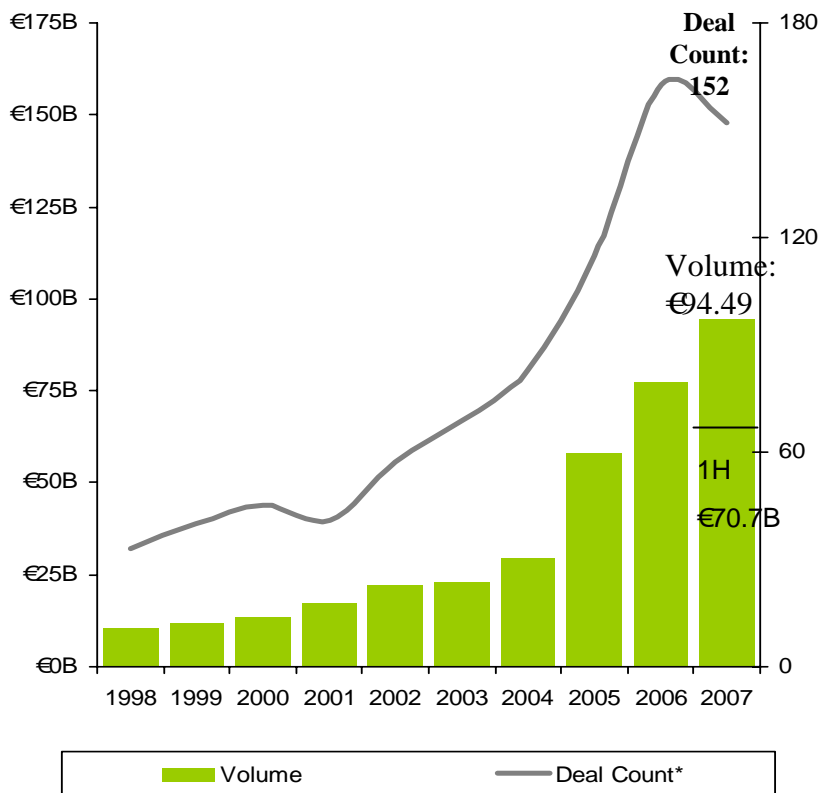
1987 – 2007



Equity includes common equity and preferred stock as well as holding company debt and seller note proceeds downstreamed to the operating company as common equity; Rollover Equity prior to 1996 is not available; There were too few deals in 1991 to form a meaningful sample.

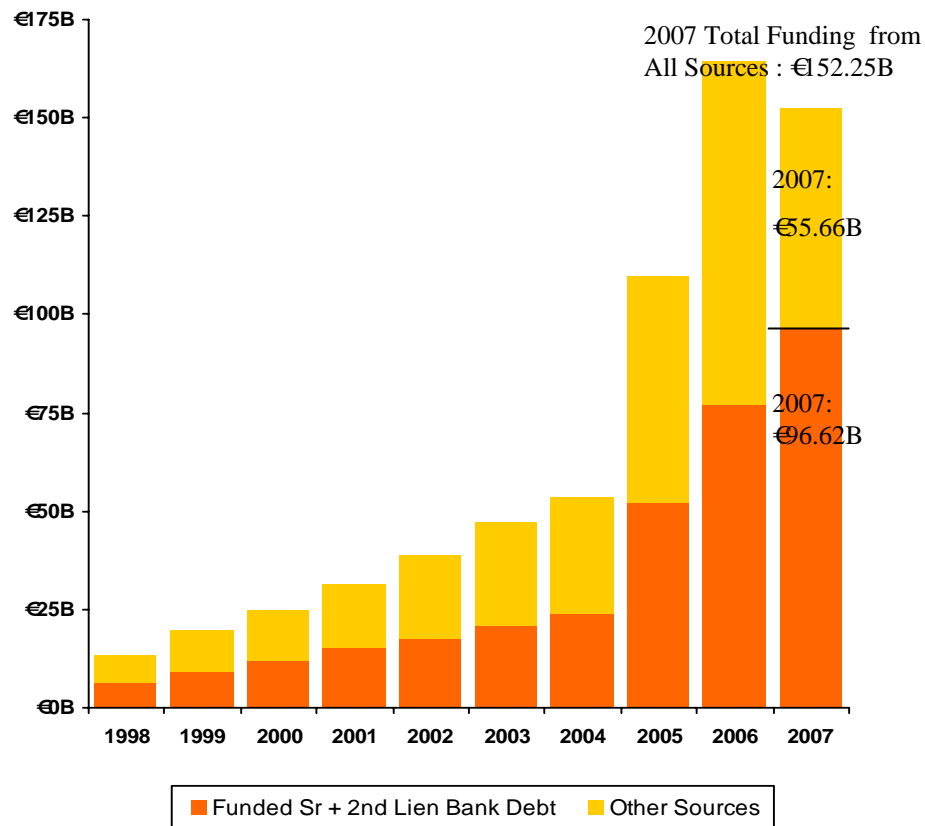
European Initial/Secondary Buyouts: Volume

Annual Senior Loan Volume



* Deal Count counts First and Second Lien portions of a single transaction as one event; Deal Count also excludes any amendments.

LBO Transaction Volume



Reflects total sources of funding of initial or secondary buyout by a private equity firm (**excludes** recaps, refinancings, etc)

Z'' Score Model for Manufacturers, Non-Manufacturer Industrials, & Emerging Market Credits

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

$$X_1 = \frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{Earnings Before Interest and Taxes}}{\text{Total Assets}}$$

$$X_4 = \frac{\text{Book Value of Equity}}{\text{Total Liabilities}}$$

$Z'' > 2.60$ - "Safe" Zone

$1.1 < Z'' < 2.60$ - "Grey" Zone

$Z'' < 1.1$ - "Distress" Zone

US Bond Rating Equivalent Based on Adjusted Z'' Score Model

$$Z'' = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

US Equivalent Rating	Average EM Score	Sample Size
AAA	8.15	8
AA+	7.6	-
AA	7.3	18
AA-	7	15
A+	6.85	24
A	6.65	42
A-	6.4	38
BBB+	6.25	38
BBB	5.85	59
BBB-	5.65	52
BB+	5.25	34
BB	4.95	25
BB-	4.75	65
B+	4.5	78
B	4.15	115
B-	3.75	95
CCC+	3.2	23
CCC	2.5	10
CCC-	1.75	6
D	0	14

Z" Scores for LBOs 2004 - 2007

Z" Scores For 2004 LBOs

	t-1	Launch Year (t)	LTM 6/30/2007
Number of LBOs*	-	45	42
Average Deal Size	-	\$1.3B	-
Average Z" Score (BREs)**	5.77 (BBB)	5.26 (BB+)	4.49 (B+)
Median Z" Score	5.23	4.82	4.68
Z" Score Std. Dev.	2.17	1.07	1.16
Debt/EBITDA		5.7	4.7

Total LBOs with EBITDA >\$50M = 68

Z"-Scores For 2005 LBOs

	t-1	Launch Year (t)	LTM 6/30/2007
Number of LBOs*	-	38	33
Average Deal Size	-	\$2.4B	-
Average Z" Score (BREs)**	6.57 (A)	4.38 (B+)	4.31 (B)
Median Z" Score	6.36	4.69	4.6
Z" Score Std. Dev.	2.98	2.23	2.19
Debt/EBITDA		5.7	4.8

Total LBOs with EBITDA >\$50M = 71

*With sufficient data to calculate Z"-Scores, **BRE = Bond Rating Equivalent

Total LBOs with EBITDA >\$50M in 2004 = 68, 2005 = 71

Continued on following slide

Z'' Scores for LBOs 2004 – 2007 (continued)

Z''-Scores For 2006 LBOs

	t-1	Launch Year (t)	LTM 6/30/2007
Number of LBOs*	-	23	23
Average Deal Size	-	\$4.1B	-
Average Z'' Score (BREs)**	6.49 (A-)	4.63 (BB-)	3.82 (B-)
Median Z'' Score	6.39	4.30	3.94
Z'' Score Std. Dev.	2.05	2.01	1.50
Debt/EBITDA		7.0	6.5

Total LBOs with EBITDA >\$50M = 95

Z''-Scores For 2007 LBOs

	t-1	Launch Year (LTM)
Number of LBOs*	15	15
Average Deal Size	-	\$5.6B
Average Z'' Score (BREs)**	6.92 (A+)	5.14 (BB+)
Median Z'' Score	5.76	4.11
Z'' Score Std. Dev.	3.32	2.75
Debt/EBITDA		6.7

Total LBOs with EBITDA >\$50M = 92

*With sufficient data to calculate Z''-Scores, **BRE = Bond Rating Equivalent

Total LBOs with EBITDA >\$50M in 2006 = 95, 2007 = 92

Testing the Significance of the Change in Credit Quality of LBOs from the Launch Year to the Most Recent LTM (Class of 2004 – 2006 LBOs)

LBO Year	2004	2005	2006
Sample Size (Launch Year/LTM)	45/42	38/33	23/23
Z” Scores Average (Launch year/LTM)	5.26/4.49	4.38/4.31	4.63/3.82
Z” Scores Std Dev (Launch year/LTM)	3.07/1.16	5.23/2.19	2.01/1.50
T-test (difference between year of launch average and LTM year average)*	1.56	0.07	1.55
t-value with 0.05 significance level	1.64	1.64	1.64
Vulnerable % Launch (number of firms)	11.5% (5)	18.4% (7)	21.7% (5)
Vulnerable % LTM (number of firms)	19.0% (8)	27.3% (9)	43.5% (10)

*Formula to calculate t-test (see following slide)

Testing the Significance of the Change in Credit Quality of LBOs from the Launch Year to the Most Recent Period (Class of 2004 – 2006 LBOs)

(Continued)

*Formula to calculate t-test:

$$t = \frac{\bar{Z}''_{(t)} - \bar{Z}_{(LTM)}}{\sqrt{\frac{\text{var}_{(t)}}{n_{(t)}} + \frac{\text{var}_{(LTM)}}{n_{(LTM)}}}}$$

Summary of Findings:

1. Based on t-test at the 0.05 significance level, there is an appreciable decrease between the Z'' averages in the post-launch year vs. LTM (2004 & 2006)
2. The percentage of LBOs that are vulnerable (CCC+ and below) increased from launch year to LTM
3. The percentage of LBOs that are vulnerable increased from 2004 to 2006

Source: Author compilations based on data from Capital IQ financial statements

Vulnerable LBOs as of LTM in 2007:

Class of 2004 to 2007 LBOs

(Based On Z"-Scores With Bond Rating Equivalents (BREs) of CCC+ or Below at LTM)

LBO Class of 2004			
<u>BRE</u>	<u>No. of Firms</u>	<u>% Total In Year</u>	<u>Bonds Outstanding (\$B)</u>
CCC+	3	7.1%	\$0.465
CCC	-	-	-
CCC-	5	11.9%	\$1.959
D	-	-	-
Total	<u>8</u>	<u>19.0% (8 of 42)</u>	<u>\$2.424</u>
LBO Class of 2005			
CCC+	6	18.8%	\$27.339
CCC	-	-	-
CCC-	2	6.3%	\$1.099
D	1	3.1%	\$0.660
Total	<u>9</u>	<u>27.3% (9 of 33)</u>	<u>\$29.098</u>
LBO Class of 2006			
CCC+	5	21.7%	\$5.594
CCC	2	8.7%	\$44.335
CCC-	-	-	-
D	2	8.7%	\$2.807
Total	<u>9</u>	<u>39.1% (9 of 23)</u>	<u>\$52.736</u>
LBO Class of 2007			
CCC+	2	13.3%	\$6.798
CCC	-	-	-
CCC-	-	-	-
D	-	-	-
Total	<u>2</u>	<u>13.3% (2 of 15)</u>	<u>\$6.798</u>
Grand Total	<u><u>28</u></u>	<u><u>24.8% (28/113)</u></u>	<u><u>\$91.056</u></u>

Recent Defaulted LBOs and Their Z'' Scores

Z'' Scores (BREs)									
	Launch Year	Default Date	FY02	FY03	FY04	FY05	FY06	LTM	LTM Date
Autocam	2004	12/15/2006			4.20 (B)	3.69 (CCC+)	- -	1.40 (D)	9/30/2006
Pliant	2002	1/5/2006	2.51 (CCC)	1.82 (CCC-)	1.36 (D)	(6.38) (D)	1.87 (CCC-)	1.55 (D)	9/30/2007

Source: S&P LCD, Capital IQ and Author's Compilation

Recovery Rate Analysis

Default Rates and Losses^a

1978 – 2008 (Feb. 29th)

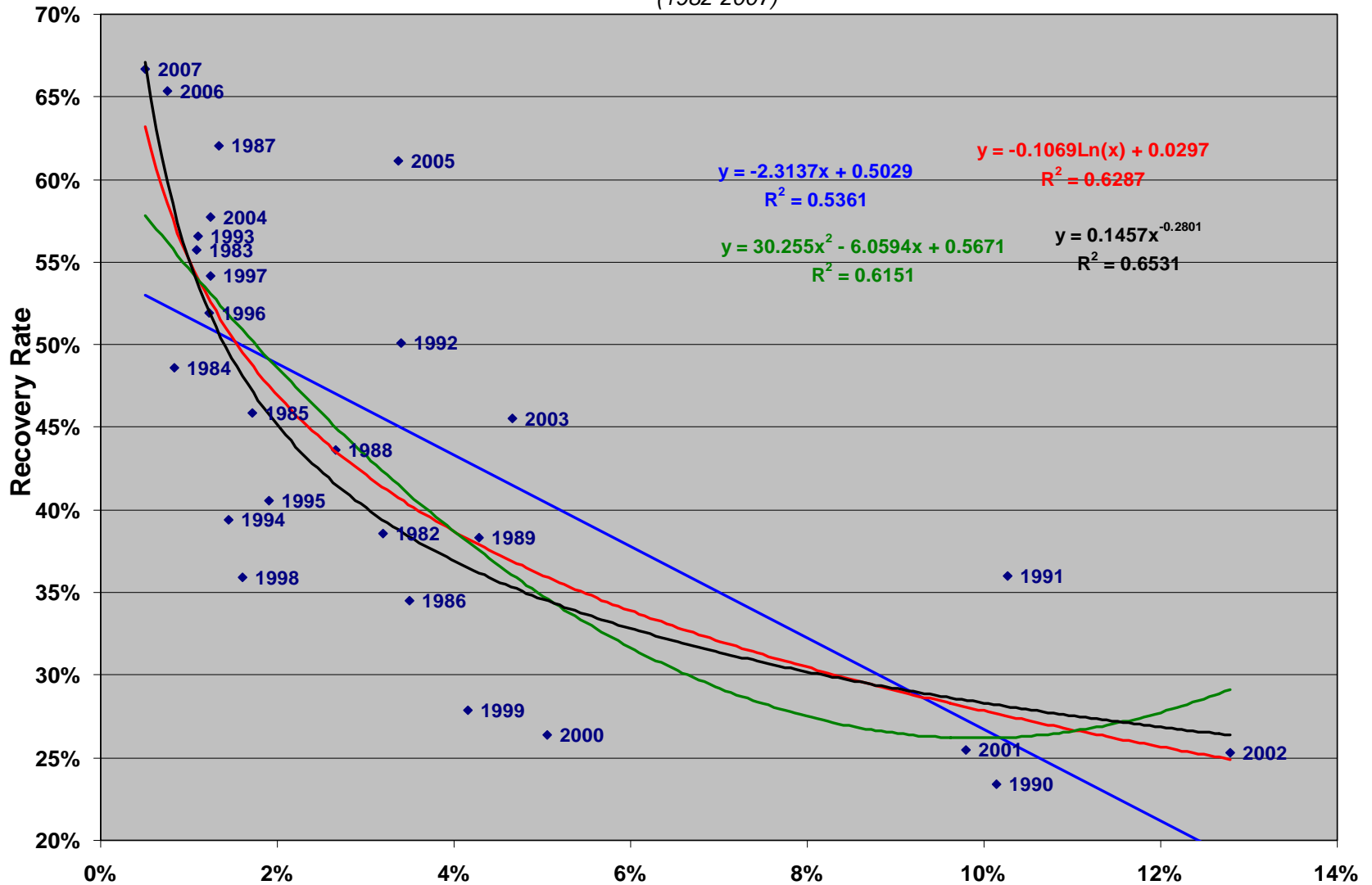
Year	Par Value Outstanding ^a (\$MM)	Par Value Of Default (\$MMs)	Default Rate (%)	Weighted Price After Default	Weighted Coupon (%)	Default Loss (%)
2008 (2/29)	\$1,089,900	\$4,187	0.38	\$44.4	8.53	0.23
2007	\$1,075,400	\$5,473	0.51	\$66.6	9.64	0.19
2006	\$993,600	\$7,559	0.76	\$65.3	9.33	0.30
2005	\$1,073,000	\$36,181	3.37	\$61.1	8.61	1.46
2004	\$933,100	\$11,657	1.25	\$57.7	10.30	0.61
2003	\$825,000	\$38,451	4.66	\$45.5	9.55	2.76
2002	\$757,000	\$96,858	12.79	\$25.3	9.37	10.15
2001	\$649,000	\$63,609	9.80	\$25.5	9.18	7.76
2000	\$597,200	\$30,248	5.06	\$26.4	8.54	3.94
1999	\$567,400	\$23,532	4.15	\$27.9	10.55	3.21
1998	\$465,500	\$7,464	1.60	\$35.9	9.46	1.10
1997	\$335,400	\$4,200	1.25	\$54.2	11.87	0.65
1996	\$271,000	\$3,336	1.23	\$51.9	8.92	0.65
1995	\$240,000	\$4,551	1.90	\$40.6	11.83	1.24
1994	\$235,000	\$3,418	1.45	\$39.4	10.25	0.96
1993	\$206,907	\$2,287	1.11	\$56.6	12.98	0.56
1992	\$163,000	\$5,545	3.40	\$50.1	12.32	1.91
1991	\$183,600	\$18,862	10.27	\$36.0	11.59	7.16
1990	\$181,000	\$18,354	10.14	\$23.4	12.94	8.42
1989	\$189,258	\$8,110	4.29	\$38.3	13.40	2.93
1988	\$148,187	\$3,944	2.66	\$43.6	11.91	1.66
1987	\$129,557	\$7,486	5.78	\$75.9	12.07	1.74
1986	\$90,243	\$3,156	3.50	\$34.5	10.61	2.48
1985	\$58,088	\$992	1.71	\$45.9	13.69	1.04
1984	\$40,939	\$344	0.84	\$48.6	12.23	0.48
1983	\$27,492	\$301	1.09	\$55.7	10.11	0.54
1982	\$18,109	\$577	3.19	\$38.6	9.61	2.11
1981	\$17,115	\$27	0.16	\$12.0	15.75	0.15
1980	\$14,935	\$224	1.50	\$21.1	8.43	1.25
1979	\$10,356	\$20	0.19	\$31.0	10.63	0.14
1978	\$8,946	\$119	1.33	\$60.0	8.38	0.59
Arithmetic Average 1978-2007:			3.37	\$45.15	10.80	2.27
Weighted Average 1978-2007:			3.82			2.64

^a Excludes defaulted issues.

Source: Authors' compilations and various dealer price quotes.

Recovery Rate/Default Rate Association

Dollar Weighted Average Recovery Rates to Dollar Weighted Average Default Rates
(1982-2007)



Annual Returns

Yields and Spreads on 10-Year Treasury (Treas) and High Yield (HY) Bonds 1978 – 2008 (Feb. 29th)

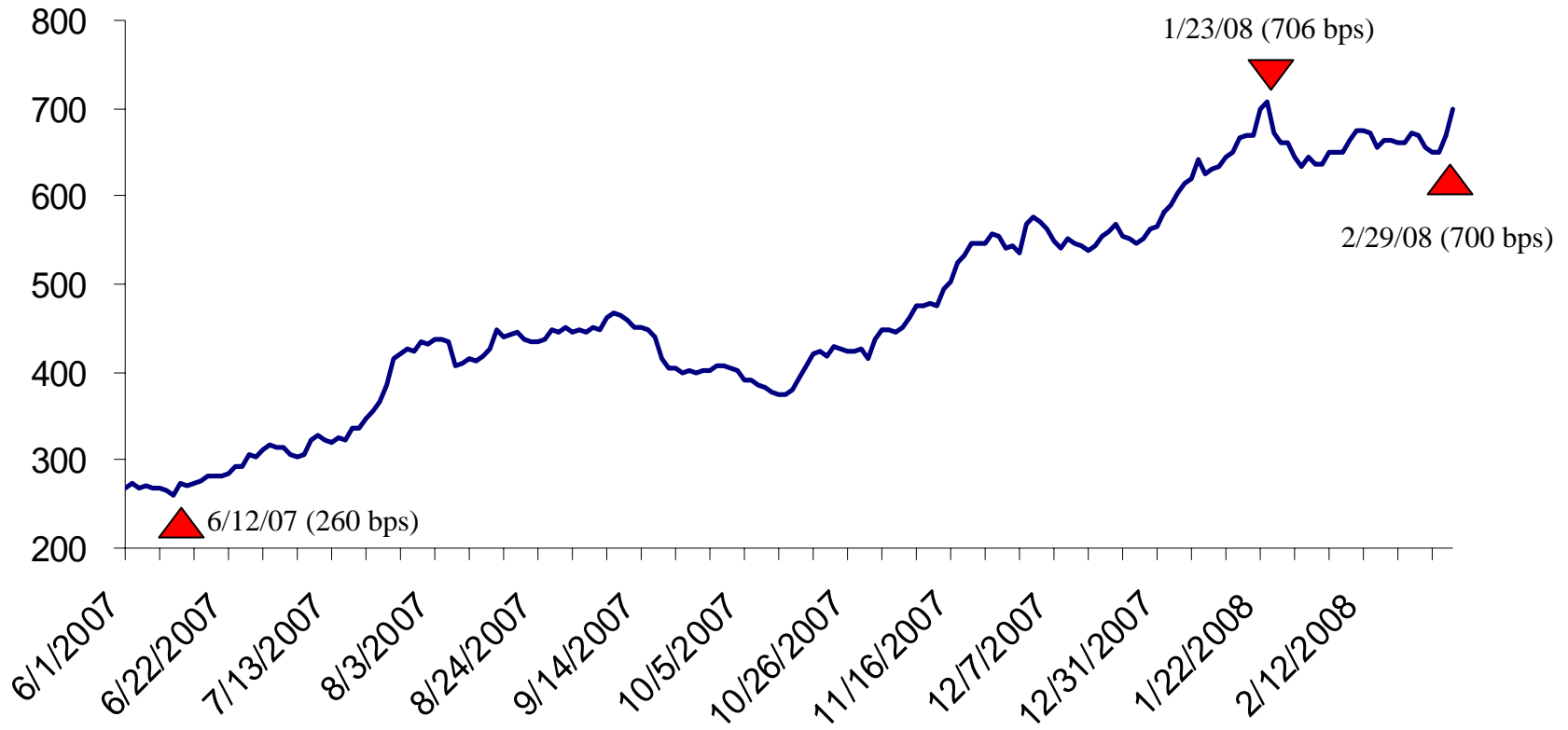
Year	Return (%)			Promised Yield (%) ^a		
	HY	Treas	Spread	HY	Treas	Spread
2008 (2/29)	(2.52)	4.64	(7.18)	10.53	3.53	7.00
2007	1.83	9.77	(7.95)	9.69	4.03	5.66
2006	11.85	1.37	10.47	7.82	4.70	3.11
2005	2.08	2.04	0.04	8.44	4.39	4.05
2004	10.79	4.87	5.92	7.35	4.21	3.14
2003	30.62	1.25	29.37	8.00	4.26	3.74
2002	(1.53)	14.66	(16.19)	12.38	3.82	8.56
2001	5.44	4.01	1.43	12.31	5.04	7.27
2000	(5.68)	14.45	(20.13)	14.56	5.12	9.44
1999	1.73	(8.41)	10.14	11.41	6.44	4.97
1998	4.04	12.77	(8.73)	10.04	4.65	5.39
1997	14.27	11.16	3.11	9.20	5.75	3.45
1996	11.24	0.04	11.20	9.58	6.42	3.16
1995	22.40	23.58	(1.18)	9.76	5.58	4.18
1994	(2.55)	(8.29)	5.74	11.50	7.83	3.67
1993	18.33	12.08	6.25	9.08	5.80	3.28
1992	18.29	6.50	11.79	10.44	6.69	3.75
1991	43.23	17.18	26.05	12.56	6.70	5.86
1990	(8.46)	6.88	(15.34)	18.57	8.07	10.50
1989	1.98	16.72	(14.74)	15.17	7.93	7.24
1988	15.25	6.34	8.91	13.70	9.15	4.55
1987	4.57	(2.67)	7.24	13.89	8.83	5.06
1986	16.50	24.08	(7.58)	12.67	7.21	5.46
1985	26.08	31.54	(5.46)	13.50	8.99	4.51
1984	8.50	14.82	(6.32)	14.97	11.87	3.10
1983	21.80	2.23	19.57	15.74	10.70	5.04
1982	32.45	42.08	(9.63)	17.84	13.86	3.98
1981	7.56	0.48	7.08	15.97	12.08	3.89
1980	(1.00)	(2.96)	1.96	13.46	10.23	3.23
1979	3.69	(0.86)	4.55	12.07	9.13	2.94
1978	7.57	(1.11)	8.68	10.92	8.11	2.81
Arithmetic Annual Average 1978-2007	10.76	8.55	2.21	12.09	7.25	4.83
Compound Annual Average 1978-2007	10.16	8.00	2.16			

^a End-of-year yields.

Source: Citigroup's High Yield Composite Index

YTM Spread Between High Yield Markets & 10 Year Treasury Notes

June 1 – February 29, 2008

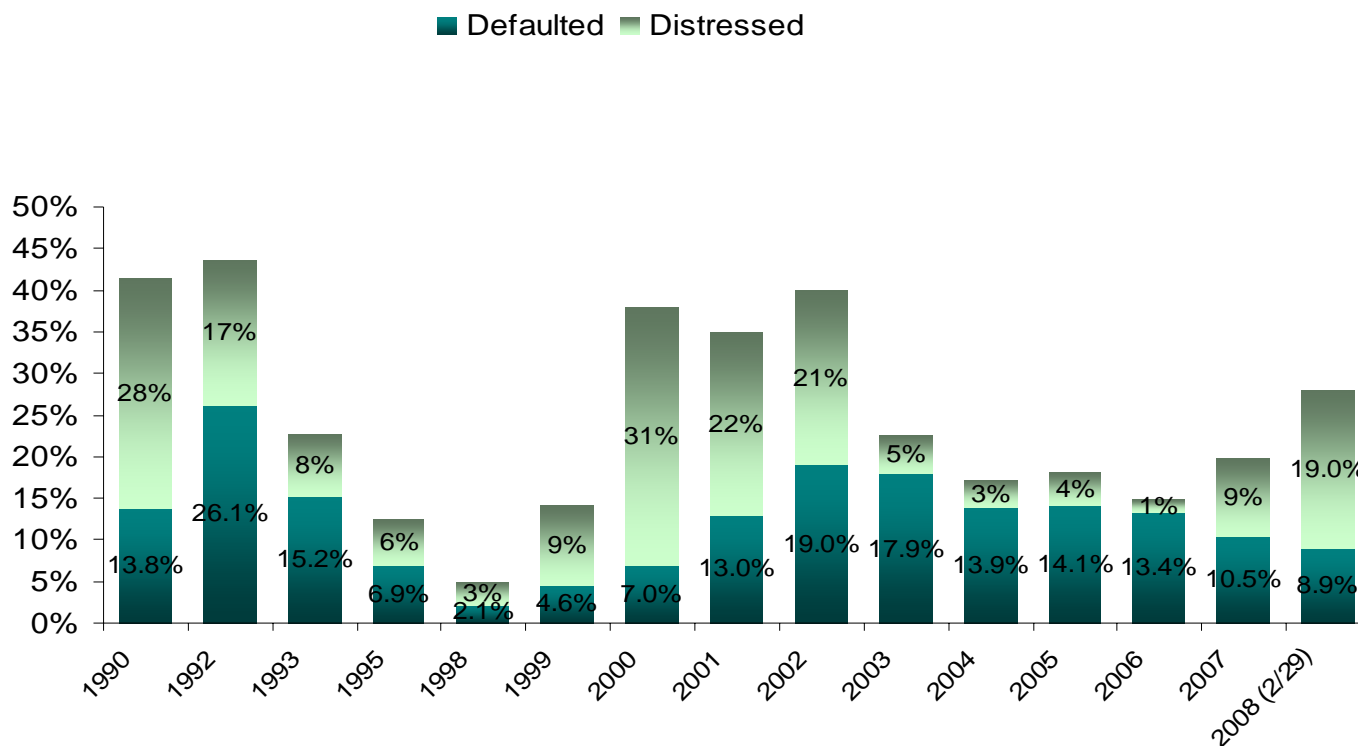


Source: Citigroup Yieldbook Index Data

Size of Distressed Debt Market

Distressed^a And Defaulted Debt as a Percentage of High Yield And Defaulted Debt Markets^b

1990 - 2008 (Feb. 29th)



(a) Defined as yield-to-maturity spread greater than or equal to 1000bp over comparable Treasuries.

(b) \$1085.7 billion as of 2/29/2008 (Estimate)

Note: Some years not available as no survey results available

Source: NYU Salomon Center

Estimated Face And Market Values Of Defaulted And Distressed Debt (\$ Billions)

2006 - 2008 (Feb. 29th)

	<u>Face Value</u>			<u>Market Value</u>			Market/Face Ratio
	12/31/2006	12/31/2007	2/29/2008	12/31/2006	12/31/2007	2/29/2008	
<u>Public Debt</u>							
Defaulted	\$ 156.2	\$ 127.3	\$ 106.4 ⁽¹⁾	\$ 101.5	\$ 76.4	\$ 63.8	0.60 ⁽⁴⁾
Distressed	\$ 17.9	\$ 113.6	\$ 226.9 ⁽²⁾	\$ 13.4	\$ 85.2	\$ 158.8	0.70 ⁽⁴⁾
Total Public	\$ 174.1	\$ 240.9	\$ 333.3	\$ 115.0	\$ 161.6	\$ 222.7	
<u>Private Debt</u>							
Defaulted	\$ 406.1	\$ 331.0	\$ 234.0 ⁽³⁾	\$ 365.5	\$ 281.4	\$ 187.2	0.80 ⁽⁴⁾
Distressed	\$ 46.6	\$ 295.3	\$ 590.0 ⁽³⁾	\$ 44.3	\$ 265.7	\$ 501.5	0.85 ⁽⁴⁾
Total Private	\$ 452.7	\$ 626.3	\$ 824.0	\$ 409.7	\$ 547.1	\$ 688.7	
Total Public and Private	\$ 626.8	\$ 867.2	\$ 1,157.3	\$ 524.7	\$ 708.7	\$ 911.4	

(1) Calculated using: (2007 defaulted population) + (2008 defaults) - (2008 Emergences)- (Distressed Restructurings)

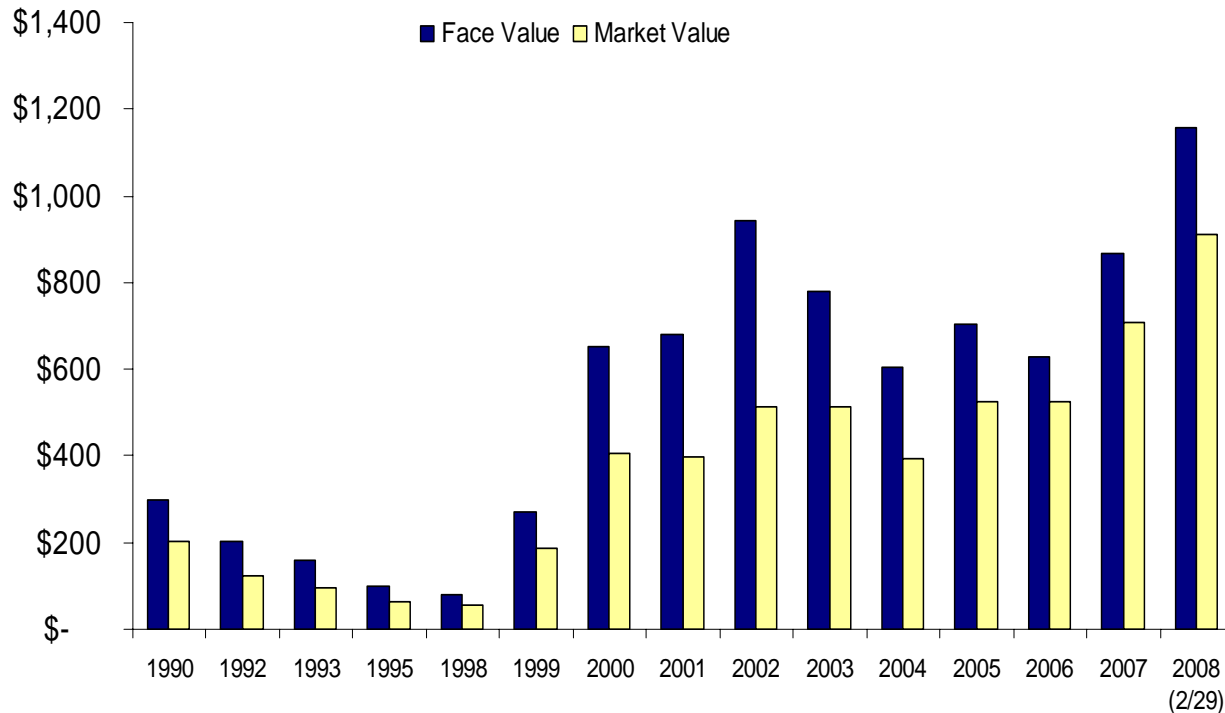
(2) Based on 20.9% of the high yield bond market (\$1085.7 billion (Estimate))

(3) Based on a private/public ratio of 2.2.

Sources: Estimated by Professor Edward Altman, NYU Stern School of Business from NYU Salomon Center's Defaulted Bond and Bank Loan Databases

Size Of The US Defaulted And Distressed Debt Market (\$ Billions)

1990 - 2008 (Feb. 29th)

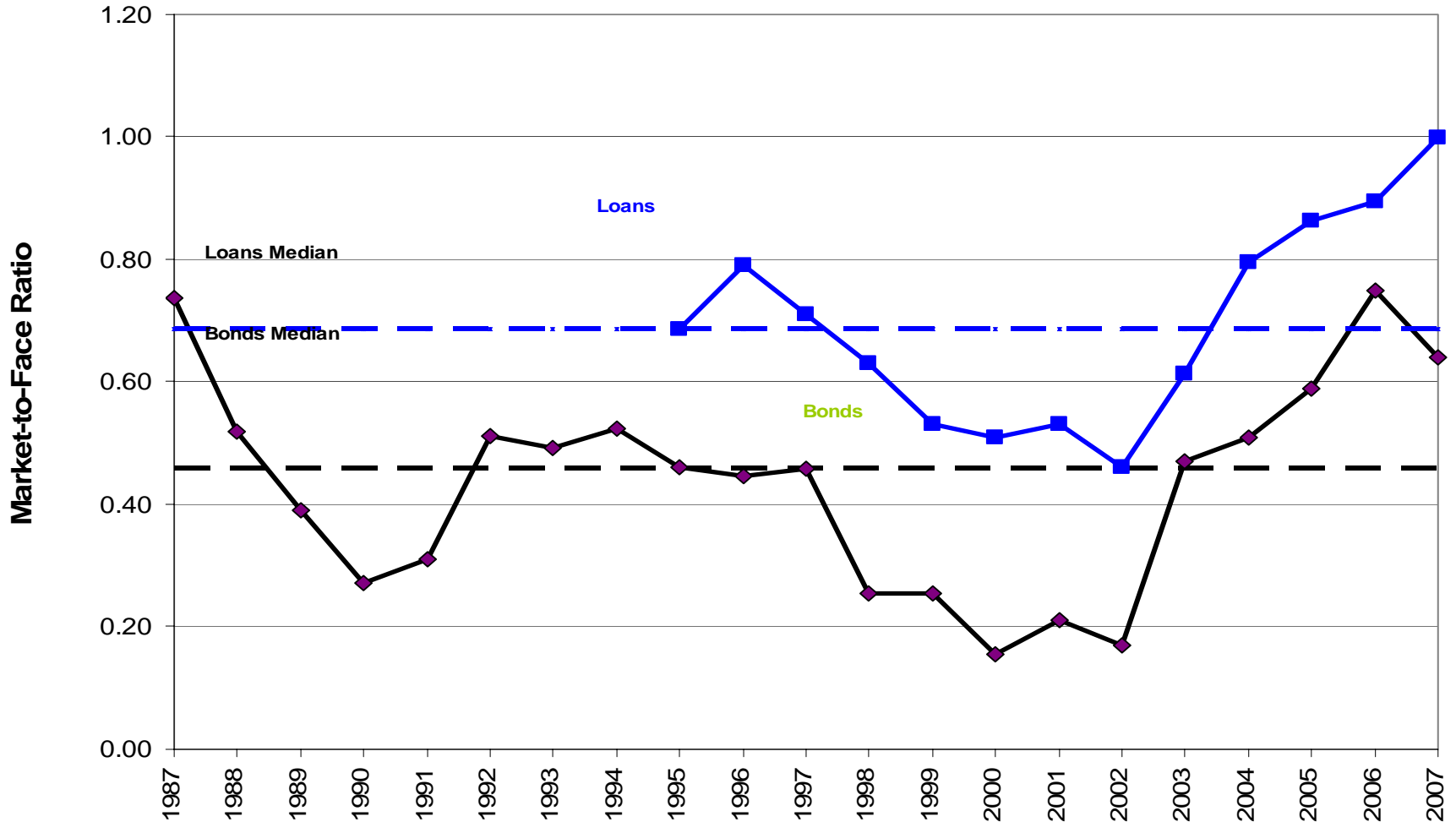


Source: Author's Compilations

Returns and Correlations of the Defaulted Debt Markets

Defaulted Debt Indexes: Market-to-Face Value Ratios

(1987 - 2007)



Loans Median Market-to-Face value is 0.69 and Average Market-to-Face value is 0.69

Bonds Median Market-to-Face value is 0.46 and Average Market-to-Face value is 0.43

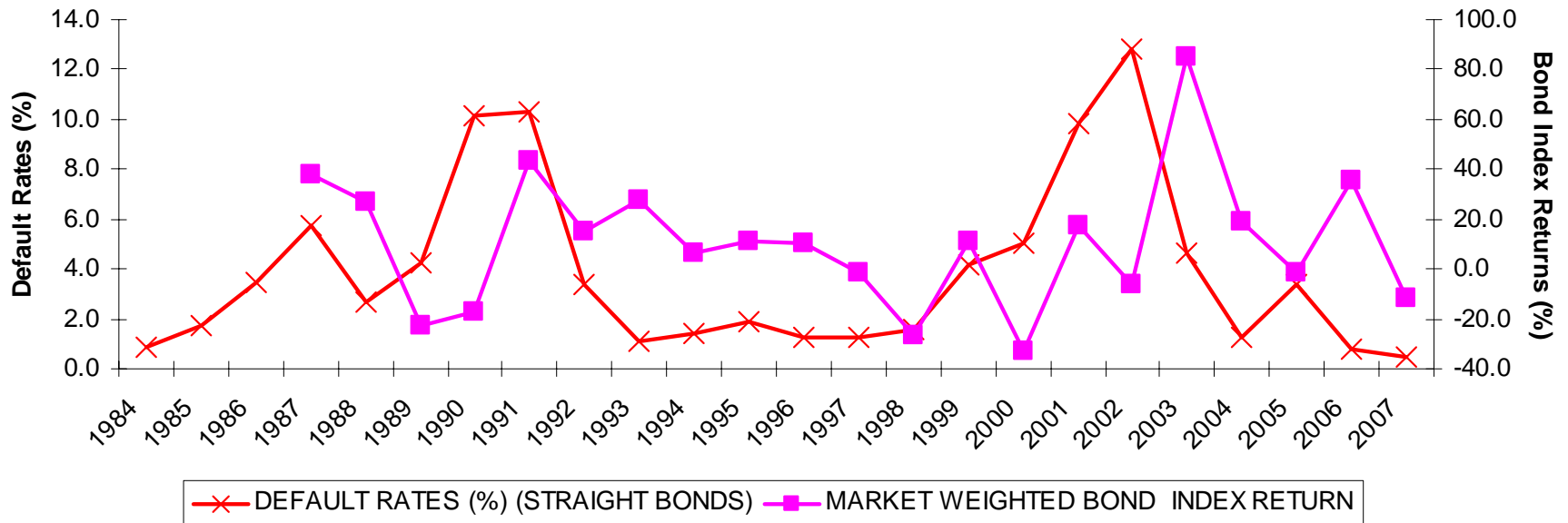
Source: Altman-NYU Salomon Center Defaulted Debt Indexes

**ALTMAN-NYU SALOMON CENTER
DEFAULTED BOND INDEX
COMPARISON OF RETURNS
(1987 - 2007)**

Year	Altman-NYU Salomon Center Defaulted Bond Index	S&P 500 Stock Index	Citigroup High Yield Bond Index
1987	37.85%	5.26%	3.63%
1988	26.49%	16.61%	13.47%
1989	-22.78%	31.68%	2.75%
1990	-17.08%	-3.12%	-7.04%
1991	43.11%	30.48%	39.93%
1992	15.39%	7.62%	17.86%
1993	27.91%	10.08%	17.36%
1994	6.66%	1.32%	-1.25%
1995	11.26%	37.56%	19.71%
1996	10.21%	22.96%	11.29%
1997	-1.58%	34.36%	13.18%
1998	-26.91%	28.58%	3.60%
1999	11.34%	20.98%	1.74%
2000	-33.09%	-9.11%	-5.68%
2001	17.47%	-11.87%	5.44%
2002	-5.98%	-22.08%	-1.53%
2003	84.87%	28.70%	30.62%
2004	18.93%	10.88%	10.79%
2005	-1.78%	4.92%	2.08%
2006	35.62%	15.80%	11.85%
2007	-11.53%	5.50%	1.83%
1987 - 2007 Arithmetic Average (Annual) Rate	10.78%	12.72%	9.13%
Standard Deviation	27.31%	16.34%	11.60%
1987 - 2007 Compounded Average (Annual) Rate	7.68%	11.53%	8.57%
1987 - 2007 Arithmetic Average (Monthly) Rate	0.71%	0.99%	0.71%
Standard Deviation	4.22%	4.24%	2.02%
1987 - 2007 Compounded Average (Monthly) Rate	0.62%	0.90%	0.69%

Annual Default Rate vs. Market-Weighted Bond Index Returns

1987 - 2007



Regression (Correlation) Analysis of Defaulted Bond Returns vs. Default Rates

Defaulted Bonds (t+1) = -9.45 + 4.34 (Default Rate (t))

Correlation (y/x) = 58.0%

R² test = 33.6%

t-test = 3.01 (.05 level)

Defaulted Bonds (t+2) = -6.80 + 3.38 (Default Rate (t))

Correlation (y/x) = 44.0%

R² = 19.4%

t-test = 2.04 (.05 level)

Defaulted Bonds (t) = 10.60 + 0.03 (Default Rate (t))

Correlation (y/x) = 0.0%

R² = 0.0%

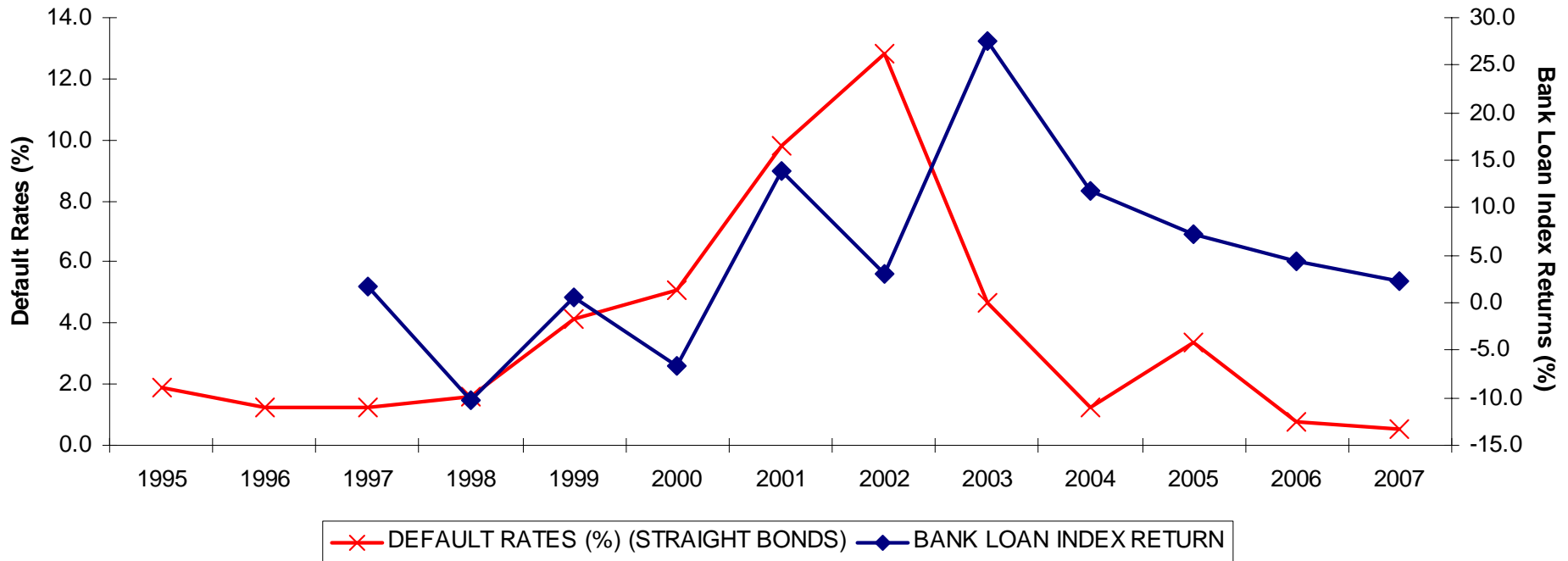
t-test = 0.02 (not significant)

**ALTMAN-NYU SALOMON CENTER
DEFAULTED BANK LOAN INDEX
COMPARISON OF RETURNS
(1996 - 2007)**

Year	Altman-NYU Salomon Center Defaulted Bank Loan Index	S&P 500 Stock Index	Citigroup High Yield Bond Index
1996	19.56%	22.96%	11.29%
1997	1.75%	34.36%	13.18%
1998	-10.22%	28.58%	3.60%
1999	0.65%	20.98%	1.74%
2000	-6.59%	-9.11%	-5.68%
2001	13.94%	-11.87%	5.44%
2002	3.03%	-22.08%	-1.53%
2003	27.48%	28.70%	30.62%
2004	11.70%	10.88%	10.79%
2005	7.19%	4.92%	2.08%
2006	4.35%	15.80%	11.85%
2007	2.27%	5.50%	1.83%
<hr/>			
1996 - 2007 Arithmetic Average (Annual) Rate	6.26%	10.80%	7.10%
Standard Deviation	10.60%	17.89%	9.43%
1996 - 2007 Compounded Average (Annual) Rate	5.78%	9.38%	6.74%
<hr/>			
1996 - 2007 Arithmetic Average (Monthly) Rate	0.52%	0.84%	0.57%
Standard Deviation	2.50%	4.21%	2.14%
1996 - 2006 Compounded Average (Monthly) Rate	0.48%	0.73%	0.54%

Annual Default Rate vs. Bank Loan Index Returns

1997 - 2007



Regression (Correlation) Analysis of Defaulted Loan Returns vs. Default Rates

$$\text{Defaulted Loans (t+1)} = -2.56 + 1.77 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 66.0\%$$

$$R^2 \text{ test} = 43.6\%$$

$$t\text{-test} = 2.48 (.05 \text{ level})$$

$$\text{Defaulted Loans (t+2)} = -1.22 + 1.71 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 69.8\%$$

$$R^2 = 48.6\%$$

$$t\text{-test} = 2.57 (.05 \text{ level})$$

$$\text{Defaulted Loans (t)} = 3.12 + 0.47 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 18.5\%$$

$$R^2 = 3.3\%$$

$$t\text{-test} = 0.02 (\text{not significant})$$

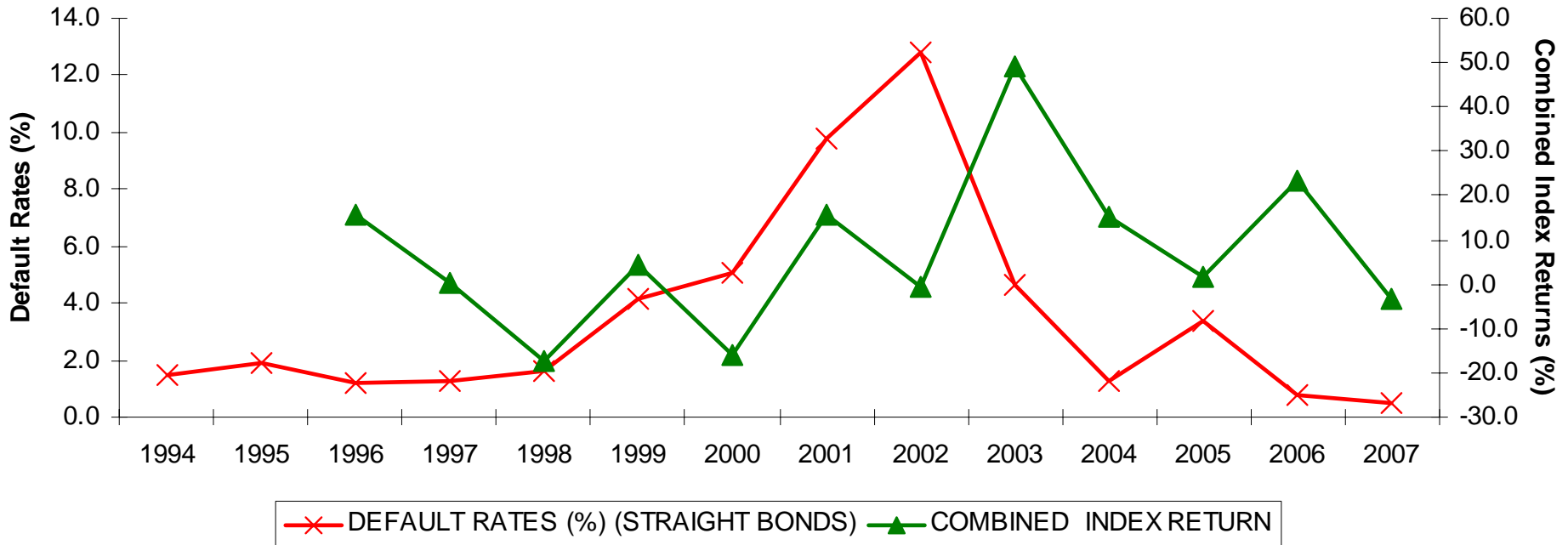
**COMBINED ALTMAN-NYU SALOMON CENTER
DEFAULTED PUBLIC BOND AND BANK LOAN INDEX**

**COMPARISON OF RETURNS
(1996 - 2007)**

Year	Altman-NYU Salomon Center Combined Index	S&P 500 Stock Index	Citigroup High Yield Bond Index
1996	15.62%	22.96%	11.29%
1997	0.44%	34.36%	13.18%
1998	-17.55%	28.58%	3.60%
1999	4.45%	20.98%	1.74%
2000	-15.84%	-9.11%	-5.68%
2001	15.53%	-11.87%	5.44%
2002	-0.53%	-22.08%	-1.53%
2003	49.30%	28.70%	30.62%
2004	15.40%	10.88%	10.79%
2005	1.84%	4.92%	2.08%
2006	23.40%	15.80%	11.85%
2007	-3.30%	5.58%	1.83%
1996 - 2007 Arithmetic Average (Annual) Rate	7.40%	10.81%	7.10%
Standard Deviation	18.18%	17.89%	9.43%
1996 - 2007 Compounded Average (Annual) Rate	6.06%	9.39%	6.74%
1996 - 2007 Arithmetic Average (Monthly) Rate	0.53%	0.81%	0.56%
Standard Deviation	3.03%	4.22%	2.15%
1996 - 2007 Compounded Average (Monthly) Rate	0.48%	0.72%	0.54%

Annual Default Rate vs. Combined Index Returns

1996 - 2007



Regression (Correlation) Analysis of Combined Index Returns vs. Default Rates

$$\text{Combined Index (t+1)} = -4.13 + 2.88 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 59.8\%$$

$$R^2 \text{ test} = 35.8\%$$

$$t\text{-test} = 2.36 (.05 \text{ level})$$

$$\text{Combined Index (t+2)} = -5.56 + 2.85 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 57.5\%$$

$$R^2 = 33.0\%$$

$$t\text{-test} = 2.10 (.05 \text{ level})$$

$$\text{Combined Index (t)} = 7.27 + 0.02 (\text{Default Rate (t)})$$

$$\text{Correlation (y/x)} = 0.0\%$$

$$R^2 = 0.0\%$$

$$t\text{-test} = 0.02 (\text{not significant})$$

CORRELATION OF ALTMAN NYU-SALOMON CENTER INDEXES OF DEFAULTED BONDS WITH OTHER SECURITIES INDEXES 1987 - 2007

Correlation of Altman Bond Index Monthly Returns

	Altman Bond Index	S&P 500	Citi HY Index	10yr T-Bond
Altman Bond Index	100.00%	29.43%	60.23%	-22.32%
S&P 500		100.00%	50.19%	1.43%
Citi HY Index			100.00%	8.20%
10-yr T-Bond				100.00%

CORRELATION OF ALTMAN NYU-SALOMON CENTER INDEXES OF DEFAULTED LOANS WITH OTHER SECURITIES INDEXES 1996 - 2007

Correlation of Altman Indices Monthly Returns

	Altman Bond Index	Altman Loan Index	Altman Combined Index	S&P 500	Citi HY Index	10yr T- Bond
Altman Bond Index	100.00%	58.65%	91.98%	25.64%	61.44%	-29.96%
Altman Loan Index		100.00%	84.12%	0.21%	43.57%	-22.31%
Altman Combined Index			100.00%	16.26%	58.48%	-29.96%
S&P 500				100.00%	51.59%	-18.54%
Citi HY Index					100.00%	-6.68%
10-yr T-Bond						100.00%

U.S. Distressed Debt Managers (January 2008)

Abrams Capital	The Broe Companies	DDJ Capital Management
ADM Maculus	Buckeye Capital Partners	Deephaven Capital Management
AEG	Canyon Capital	Delaware Street Capital
Angelo, Gordon & Company	Camulos Capital	Deltec Recovery Fund
Apex Fundamental Partners	Candlewood Partners	Drucker Capital Management
Apollo Management	Cardinal Capital	Durham Asset Management
Appaloosa Management	Carl Marks	Eagle Rock Capital
Ares Corporate Opp. Fund	Carlyle Strategic Partners	Elliott Advisors
Ashmore Asian Recovery	Cargill Value Investment	Endurance Capital
Aurelius Capital Management	Catlock Capital	EOS Partners
Avenue Capital Group	Centerbridge Capital	Epic Asset Management
Basso Asset Management	Cerberus Partners	Fairfield Greenwich
Bay Harbour Management	Citadel Investments	Farallon Partners
Bayside Capital	Cohanzick Management	Fir Tree Partners
Beltway Capital	Columbus Hill Capital Management	Forest Investment Management
Bennett Management Co.	Commonwealth	Franklin Mutual Recovery
Black Diamond	Concordia Advisors	Fortress Capital Corp.
Blackport Capital Fund, LTD	Contrarian Capital Management	GE Finance
Blackstone Group	Corsair	Glenview Capital Management
Blue Wolf Capital	Cypress Management	Golden Capital
Boone Capital Management	D.E. Shaw	Golden Tree
Brigade Capital	Davidson / Kempner	

U.S. Distressed Debt Managers (January 2008)

Gracie Capital	K Capital Partners	MHR
Gradient Partners	KD Distressed Capital	Millennium
Gramercy Capital	Kilimanjaro Advisors	MJ Whitman Mgmt Co.
Greenwich Capital	King Street Advisors	Monomoy Capital
Greywolf Capital	KPS Special Situations Fund	Moore Asian Recovery Fund
Gruss Asset Management	KS Distressed Debt	MSD Capital
GSC Group	Lampe Conway	Murray Capital
H.I.G.	Langley Management	MW Post
Halbis Capital Management (US), Inc.	Laurel Ridge Asset Mgmt.	New Generation Advisers
Halcyon/Slika (Alan B.) Mgmt.	Leucadia National Corporations	Oakhill
Harbert Capital	Levco Debt Opportunities	Oaktree Capital
Harvest Capital	Litespeed Partners	Och Ziff Friedheim
Helios Advisors	Littlejohn & Co.	Owl Creek Capital
Highbridge Capital Management	Loeb Partners	Pacholder Associates, Inc.
Highland Capital	Lonestar Partners	Pacific Alternative Asset Mgmt.
Highland Rest. Capital Partners	LongAcre Capital Partners	Paige Capital
Huizenga Capital Management	Longroad Asset Management	Pardus Capital
Industria Partners	Marathon Capital	Patriarch
Insight Equity	Mariner Investment Group	Pegasus Investors
Ivory Investment Management	Mason Capital Management	Pequot Capital
JLL Partners	MatlinPatterson Global Advisors	Perry Partners
JMB Capital	Mellon HBV Capital Mgmt	Peter Schoenfeld Asset Mgmt.

U.S. Distressed Debt Managers (January 2008)

Pine Creek	Scott's Cove Capital Mgmt.	Triage Capital
Pinewood Capital Partners	Seneca Capital Invest. Partnership	Trilogy Capital
Plainfield Asset Management	Signature Capital Partners	Trust Company of the West
PMI	Silvergang	Tuckerbrook
Post Advisory Group	Silverpoint Capital	Turnberry Capital
PPM America	Spring Street	Tyndall Partners
Proprietary Trdg of Mkt Makers	Stanfield Capital Management	Van Kampe
Quadrangle Group	Stairway Capital Advisors	Varde Partners, Inc.
Questor Management	Stark Investments	Venor Capital Management
Radius Equity Partners	Strategic Value Partners	Versa Capital Management
Redwood Capital	Summit	W.L. Ross & Co.
Republic	Stonehill Capital	Washington Corner Capital Mgmt
Resolution Partners	Stony Lane Partners	Wayland Fund
Restoration Capital Management	Sun Capital Partners, Inc.	Wayzata Investment Partners
Resurgence Corporate Fund	Sunrise Capital Partners	Wellspring Capital Partners
Robeco/Weiss Peck & Greer	TA Mckay & Co.	Wexford Capital
Salisbury	Taconic Capital Partners	William E. Simon & Sons
Sandell Asset Management	Tennenbaum Capital	Woodside Management
Sandelman Partners	The Baupost Group	Whippoorwill Associates, Inc.
Satellite Asset Management	Third Avenue Value Fund	Xerion Partners
Sato Capital	TPG Credit Management	York Capital
Scoggin Capital	Treadstone Group	Z Capital Partners

U.S. Distressed Funds with European Offices

Apollo Management
Avenue Capital Group
Camulos Capital
Cargill Investors
Cerberus Partners
Citadel Investments
Davidson Kempner
D.E. Shaw
Elliott Advisors
EOS Partners
Fortress Capital Corp
HBK Investments
Highbridge Capital Management
Kelso Place Asset Management
Lonestar Partners
Marathon Capital
Matlin Patterson Global Advisors
Millennium Capital
Oaktree Capital
Och Ziff Capital Management

Peter Schoenfeld Asset Mgmt.
Silverpoint Capital
Strategic Value Partners
TPG Credit Management

European Distressed Debt Managers (Home Grown)

Alchemy Partners
Argo Capital
Bluebay Asset Management
Butler Capital Management
Centaurus Capital
Cheyne Capital
Cognis Capital
Cyrus Capital
Equinox
EQT Opportunities
Fortelus Capital management
H2 Equity Partners
Klesch Capital Partners
Omnis Capital
Orn Capital
Picus Capital Management
RAB Capital
Rutland Fund
Sisu Capital
Thames River
Tisbury Capital
Trafalgar Asset Managers

Distressed Active/Control Investors

American Securities	Industria Partners	Resurgence Asset Management
Angelo, Gordon & Co.	Levine Liechtman	Sandell Asset Management Corp.
Apollo Management	Littlejohn & Co.	Saybrook Capital
Appaloosa Management	Lone Star Partners	Silver Point Capital
Audax Credit Opportunities	Longroad Asset Management	Stark Investments
Aurelius Capital Management	KPS Special Situations Fund	Stony Lane Partners
Avenue Capital Partners	Marathon Capital	Strategic Value Partners
Bay Harbour Management	MatlinPatterson Global Advisors	Sun Capital Partners
Black Diamond	Mellon HBV	Sunrise Capital
BlackEagle Partners	MHR Institutional Partners	TCW Crescent Mezzanine
Carlyle Strategic Partners	Millroad Partners	TPG Credit Management
Catalyst Partners	Monomoy Capital Partners	Tuckerbrook
Centerbridge Capital Partners	Newport Global Advisors	Tudor Investment Corp et al
Cerberus Partners	Oakhill	Versa Capital Management
Citadel Limited Partnership	Oaktree Capital	Wayzata Investment Partners
DDJ Capital Management	Panagaen Capital Management	W.L. Ross & Co
D.E. Shaw	P. Schoenfeld Asset Management	Whippoorwill Associates
Elliott Associates	Pequot Investors	Wingate Partners
Ewing Management	Perry Capital	York Capital
Farallon Capital	Plainfield Asset Mgt	Z Capital Partners
GSC Group	Ramius Capital Group	
Harbinger Capital Partners	Relativity Fund	
Highland Rest. Capital Partners	Remedial Capital	

Investment Styles and Target Returns in Distressed Debt Investing

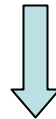
<u>Active/Control</u>	<u>Active/Non-Control</u>	<u>Passive</u>
Requires 1/3 minimum to block and ½ to control; may require partner(s)	Senior secured, senior unsecured	Invest in undervalued securities trading at distressed levels
Take Control of company through debt/equity swap	Active participation in restructuring process; Influence process	Sub-strategies: trading/buy-hold/senior or senior secured/sub debt/“busted converts”/capital structure arbitrage/long-short, value
Restructure or even purchase related businesses; roll-up	Exit via debt or equity (post-chapter 11) markets	Trading oriented; Sometimes get restricted
Equity infusion; run Company	Generally do not control	Holding period of 6 months to 1 year generally; Longer sometimes
Exit 2-3 years	Holding period of 1-2 years	Target return: 12-20%
Large or Mid-Small Cap focus	Large or Mid-Small Cap focus	
Target return: 20-25%	Target return: 15-20%	

Forecasting Default and Recovery Rates

Forecasting Defaults and the Default Rate

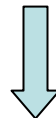
MODEL DRIVERS

- Mortality Rate Estimates: 1971 - 2006
= f {bond rating, age, redemptions, defaults}
- Historical New Issuance over last 10 years by credit quality
 - Bond-ratings
 - Z-score Bond-equivalent ratings



New Defaults and Default Rate in 2006

- Estimate high yield market growth in 2007



New Defaults and Default Rate in 2007, 2008

Marginal and Cumulative Mortality Rate Equation

$$\text{MMR}_{(t)} = \frac{\text{Total value of defaulting debt in year } (t)}{\text{total value of the population at the start of the year } (t)}$$

MMR = Marginal Mortality Rate

One can measure the cumulative mortality rate (CMR) over a specific time period (1,2,..., T years) by subtracting the product of the surviving populations of each of the previous years from one (1.0), that is,

$$\text{CMR}_{(t)} = 1 - \prod_{t=1} \text{SR}_{(t)},$$

here $\text{CMR}_{(t)}$ = Cumulative Mortality Rate in (t) ,
 $\text{SR}_{(t)}$ = Survival Rate in (t) , $1 - \text{MMR}_{(t)}$

Mortality Rate Concept (Illustrative Calculation)

For BB Rated Issues

Security No.	Issued Amount	Year 1 Default	Call	SF	Year 2 Default	Call	SF
1	50	--	--	5	--	--	5
2	50	50	--	--	NE	NE	NE
3	100	--	100	--	NE	NE	NE
4	100	--	--	--	100	--	--
5	150	--	--	--	--	--	15
6	150	--	--	--	--	--	--
7	200	--	--	20	--	--	20
8	200	--	--	--	--	200	--
9	250	--	--	--	--	--	--
10	250	--	--	--	--	--	--
Total	1,500	50	100	25	100	200	40
Amount Start of Period	1,500	-	175	-	1,325	- 340	= 985
Marginal Mortality Rate		Year 1			Year 2		
		50/1,500 = 3.3%			100/1,325 = 7.5%		
Cumulative Rate		3.3%			1 - (SR1 x SR2) = CMR2 1 - (96.7% x 92.5%) = 10.55%		

NE = No longer in existence
SF = Sinking fund

Mortality Rates by Original Rating

All Rated Corporate Bonds*
1971-2007

Years after issuance

		1	2	3	4	5	6	7	8	9	10
AAA	Marginal	0.00%	0.00%	0.00%	0.00%	0.04%	0.02%	0.01%	0.00%	0.00%	0.00%
	Cumulative	0.00%	0.00%	0.00%	0.00%	0.04%	0.06%	0.07%	0.07%	0.07%	0.07%
AA	Marginal	0.00%	0.00%	0.29%	0.13%	0.02%	0.02%	0.00%	0.00%	0.04%	0.01%
	Cumulative	0.00%	0.00%	0.29%	0.42%	0.44%	0.46%	0.46%	0.46%	0.51%	0.51%
A	Marginal	0.01%	0.07%	0.02%	0.05%	0.05%	0.08%	0.05%	0.21%	0.08%	0.04%
	Cumulative	0.01%	0.08%	0.10%	0.15%	0.20%	0.28%	0.33%	0.54%	0.62%	0.66%
BBB	Marginal	0.31%	3.08%	1.29%	1.21%	0.70%	0.29%	0.23%	0.17%	0.11%	0.38%
	Cumulative	0.31%	3.38%	4.63%	5.78%	6.44%	6.71%	6.93%	7.08%	7.19%	7.54%
BB	Marginal	1.13%	2.39%	4.28%	2.22%	2.48%	1.24%	1.63%	1.09%	1.69%	3.42%
	Cumulative	1.13%	3.49%	7.62%	9.69%	11.90%	13.01%	14.42%	15.36%	16.79%	19.63%
B	Marginal	2.78%	6.72%	7.28%	8.44%	5.98%	4.30%	3.91%	2.36%	1.94%	0.95%
	Cumulative	2.78%	9.22%	15.83%	22.93%	27.54%	30.65%	33.36%	34.93%	36.20%	36.80%
CCC	Marginal	7.88%	15.31%	18.68%	11.67%	4.10%	9.32%	5.75%	5.65%	0.82%	4.66%
	Cumulative	7.88%	21.98%	36.56%	43.96%	46.26%	51.37%	54.07%	56.66%	57.02%	59.02%

*Rated by S&P at Issuance
Based on 1,990 issues
Source: Standard & Poor's (New York) and Author's Compilation

Forecasts of Default and Recovery Rates in the High-Yield Bond Market

2007 - 2009

<u>Year</u>	<u>Default Rate</u>	<u>Default Amount (\$ billion)</u>	<u>Recovery Rate*</u>
2007 (Forecast)	2.50%	\$27.5	59.4%
2007 (Actual)	0.51%	\$5.5	66.6%
2008 (Forecast)	4.64%	\$53.1	35.8%
2009 (Forecast)	5.05%	\$62.1	34.9%

*Based on the log-linear default rate/recovery rate regression (Slide 29).