

**New York University Salomon Center
Leonard N. Stern School of Business**

Special Report on

**The Investment Performance and Market Dynamics of
Defaulted Bonds and Bank Loans:
2009 Review and 2010 Outlook**

By

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with

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Acknowledgments

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The year 2009 was the best performing annual period in the history of the defaulted securities market, surpassing previous record high returns experienced in 2003. The gain on the Combined Altman-NYU Salomon Center Index was 55.99%. This long-only, U.S. and Canadian debt, index was paced by a remarkably strong performance from defaulted bonds, though defaulted loans also experienced record returns. The Combined Index return was comparable to Citigroup's High-Yield Bond Index (+55.19%), and more than twice that of the S&P 500 Stock Index (+26.46%).

The Altman-NYU Salomon Center Defaulted Bond Index performed exceptionally in 2009, quite in contrast with the record losses of one year earlier (-43.11%). The long-only defaulted bond index gained a record 96.42%. Defaulted bank loans performed similarly with the Altman Defaulted Loan Index posting the largest annual gain since its inception in 1996, with a 2009 positive return of 32.80%.

The market-to-face-value ratio of the defaulted *bond* index more than doubled in 2009 to 33%, an 18 percentage point increase over 2008's year-end level (15%). This increase was driven by the price movement on existing defaulted issues, notably those that defaulted in the later-half of 2008 at significantly below average prices, and then rebounded in 2009, and the recovery rate on new defaults in 2009, which averaged about 36%. The market-to-face value of defaulted *bank loans* rose to 59% from 39% in 2008 and is now only slightly below the historical average of 65%, for similar reasons.

As expected in a year which was spent entirely in a technical market recession, the dollar-denominated default rate on high-yield bonds jumped to its highest level since 2002, increasing from 4.65% in 2008 to 10.74% in 2009. Although not the highest default rate in our history, the actual dollar amount of defaults reached its highest level ever (\$123.8 billion). Default rates on leveraged loans also achieved record highs with an issuer-based default rate of 8.07%, and 9.61% based on issuance, according to S&P's LCD compilations. Even though corporate defaults increased, they were offset by a significant dip in the distressed ratio as well as higher amounts of emergences from reorganization, causing the size of the face value of public and private distressed and defaulted debt to drop by over 50% from \$3.6 trillion at the end of 2008 to \$1.6 trillion. Market values relative to face value increased, as prices on existing defaulted bonds and loans increased, though the absolute dollar value outstanding fell by more than half from \$2.2 trillion at the end of 2008 to \$1.0 trillion one year later.

As for distressed debt hedge-fund indexes, 2009 was also an impressive year, although not nearly as much as the long-only, 100% invested defaulted debt indexes reported above. These hedge fund indexes reflect actual performance averages of samples of hedge funds. The average performance for three of these indexes in 2009 was +30.82%.

Measuring and Monitoring Performance of Defaulted Bonds

Defaulted Bond Index

The Altman-NYU Salomon Center Defaulted Bond Index was developed in 1990 for the purpose of measuring and monitoring the performance of defaulted debt securities.¹ This work was complemented two years later by an analysis of the distressed bank loan market.² The performance statistics on bonds goes back to 1987, and a later time series on defaulted loans was originated in 1996. As of December 31, 2009, the number of issues in our defaulted bond index was 91, up slightly from the 77 at year-end 2008, but only about one-half of its previous highs in the early 1990s and 2001 (Figure 1). The face value of the defaulted bonds that comprised this index increased by 50% to \$45.5 billion from its level in 2008, and was at its highest level since 2002.

There were 34 firms included in the defaulted bond index at year-end 2009, which was more than in 2008, but still below the long-term average. It should be noted that the number and amount of defaulted bond issues is considerably greater than those listed in Figure 1, since our index totals are limited to any one issuer comprising no more than 10% of the index's total market value.

Combined with the higher prices of existing defaulted bonds in 2009, the market value of our index increased more than three-fold to over \$15 billion, and the market-to-face value ratio rose to 33%, a 120% increase (18 percentage points).

¹ This index, originally developed in "Investing in Distressed Securities," E. Altman, The Foothill Group, 1990, is maintained and published on a monthly basis by the NYU Salomon Center of the Leonard N. Stern School of Business. It is available by subscription from the Salomon Center, (212) 998-0701 or (212) 998-0709.

² E. Altman (1992), "The Market for Distressed Securities and Bank Loans," The Foothill Group, Los Angeles, CA.

Figure 1. Size of the Altman-NYU Salomon Center Defaulted Bond Index, 1987–2009

Year-End	Number of Issues	Number of Firms	Face Value (\$ Billions)	Market Value (\$ Billions)	Market/Face Ratio
1987	53	18	5.7	4.2	0.74
1988	91	34	5.2	2.7	0.52
1989	111	35	8.7	3.4	0.39
1990	173	68	18.7	5.1	0.27
1991	207	80	19.6	6.1	0.31
1992	231	90	21.7	11.1	0.51
1993	151	77	11.8	5.8	0.49
1994	93	35	6.3	3.3	0.52
1995	50	27	5.0	2.3	0.46
1996	39	28	5.3	2.4	0.45
1997	37	26	5.9	2.7	0.46
1998	36	30	5.5	1.4	0.25
1999	83	60	16.3	4.1	0.25
2000	129	72	27.8	4.3	0.15
2001	202	86	56.2	11.8	0.21
2002	166	113	61.6	10.4	0.17
2003	128	63	36.9	17.7	0.48
2004	104	54	32.1	16.9	0.53
2005	98	35	29.9	17.5	0.59
2006	85	36	31.2	23.3	0.75
2007	48	17	13.8	6.3	0.46
2008	77	28	29.6	4.5	0.15
2009	91	34	45.5	15.1	0.33

Source: NYU Salomon Center.

Defaulted Bank Loan Index

Bank loans — another major market in defaulted debt instruments — had a similar performance experience in 2009, though the number of issues decreased slightly. As can be seen in Figure 2, the face value of the loan facilities that comprised the index more than doubled in 2009 from 2008, with a more than three-fold increase in market values, as well, from \$10.7 billion to \$34.1 billion. The market-to-face value ratio rose by 20 percentage points to 59% by year-end 2009.

Figure 2. Size of the Altman-NYU Salomon Center Defaulted Bank Loan Index, 1995–2009 (Dollars in Billions)

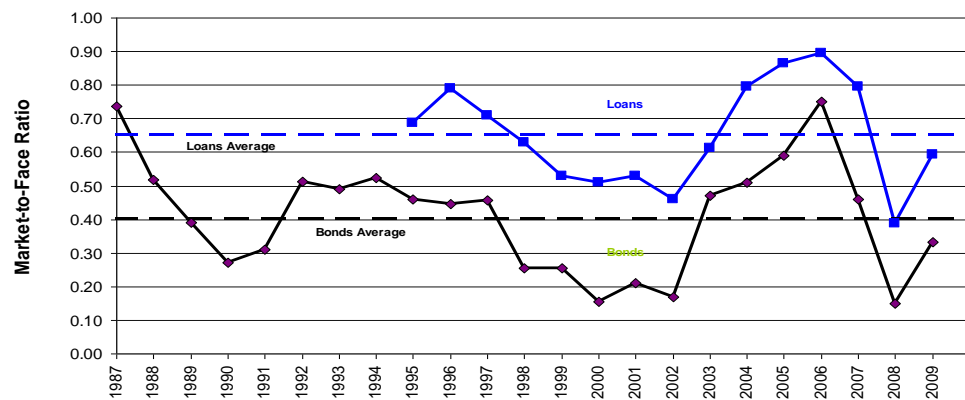
Year-End	Number of Issues	Number of Firms	Face Value (\$ Billions)	Market Value (\$ Billions)	Market/Face Ratio
1995	17	14	2.9	2.0	0.69
1996	23	22	4.2	3.3	0.79
1997	18	15	3.4	2.4	0.71
1998	15	13	3.0	1.9	0.63
1999	45	23	12.9	6.8	0.53
2000	100	39	26.9	13.6	0.51
2001	141	56	44.7	23.8	0.53
2002	64	51	37.7	17.4	0.46
2003	76	43	39.0	23.9	0.61
2004	45	26	22.9	18.2	0.80
2005	41	21	18.7	16.2	0.86
2006	27	23	11.2	10.0	0.89
2007	31	13	13.0	10.4	0.79
2008	71	31	27.5	10.7	0.39
2009	67	27	57.6	34.1	0.59

Source: NYU Salomon Center

Market-to-Face-Value Ratios

Figure 3 shows the time series trend in the market-to-face value ratios of defaulted bonds and bank loans. In 2009, the bond index rebounded from record lows, with the market-to-face ratio more than doubling to 33%, nearing the historical average of 40%. Loan prices increased as well, and are also nearing the historical average of 65%. As of year-end 2009, the market-to-face value ratio for defaulted loans was 59%.

Figure 3. Altman-NYU Salomon Center Default Debt Indexes – Market-to-Face Value Ratios, Annual 1987–2009



Note: The loans median market-to-face value is 0.63 and average market-to-face value is 0.65. Bonds median market-to-face value is 0.45 and the average market-to-face value is 0.40.

Sources: Figures 1 and 2, NYU Salomon Center.

Performance Measurement

Our indexes include the securities of firms in different stages of reorganization — either bankruptcy or restructuring. We calculate the returns for the index using data compiled just after default to the point when the bankrupt firm emerges from Chapter 11, is liquidated, or until the default is “cured” or resolved through an exchange. The bond index includes issues of all seniorities, from senior-secured to junior unsecured debt. The return history shows that seniority of the issue is an extremely important characteristic of the performance of defaulted securities over specific periods, whether from issuance to emergence or from default to emergence (see, for example, Altman and Eberhart (1994)³).

Our indexes do not include convertible or non-US and non-Canadian company issues, nor do they include distressed but not defaulted securities or distressed exchange securities. The performance measure is based on a fully invested, long-only strategy. Returns are calculated from individual bond and bank loan price movements; they are not based on average performance by managers. Returns are gross returns and do not reflect manager fees and expenses. There are, however, several distressed debt hedge fund indexes that reflect a sample of investment firms’ performances (discussed later in this report).

2009 Defaulted Bond Performance

The Altman-NYU Salomon Center Index of Defaulted Bonds performed exceptionally in 2009, increasing by a record 96.42%. The average annual rate of return on our index increased by 385bp to 11.64% (Figure 4). It is now 193bp more than the average annual performance of US high-yield bonds over the same period (1987–2009), and, in a reversal of last year, 48bp more than the S&P 500 (dividends reinvested). However, the compound annual rate of return is considerably lower, reflecting its time series negative performance in nine of the 22 years in our sample period. The entire time series of returns in these three indexes is shown in Figure 5. Using the time series as a basis of comparison, the stock market slightly outperformed high-yield bonds, which outperformed defaulted bonds, over the last 23 years.

The volatility of the defaulted bond index is considerably greater than either high-yield bonds or common stocks, when measured on an annual basis, but only slightly greater than common stocks, when measured on a monthly basis. No doubt, the “calming” influence of coupon payments on high-yield bonds is a major reason why that index’s volatility measure (both annual and monthly) is considerably below those of defaulted bonds and common stocks. Indeed, defaulted bonds are “no-yield” bonds since they trade “flat.” Still, as we will show at a later point, this high relative volatility of defaulted bonds is somewhat mitigated by its low correlation with most other asset classes.

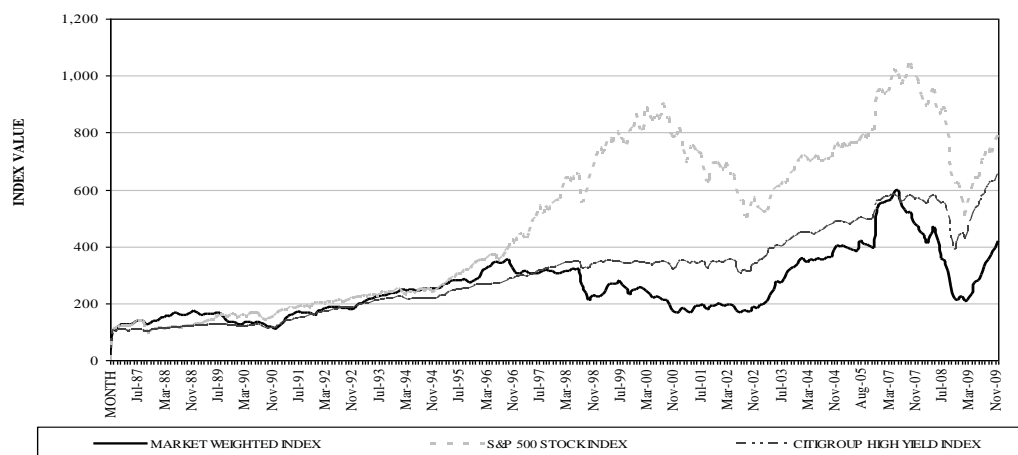
³ Generally, the higher the seniority, the better the performance. See E. Altman and A. Eberhart (1994), “Do Security Provisions Protect Bondholders’ Investments?”, *Journal of Portfolio Management*, Summer.

Figure 4. Altman-NYU Salomon Center Defaulted Bond Index Comparison of Returns, 1987-2009

Year	Altman-NYU Salomon Center Defaulted Bond Index (%)	S&P 500 (%)	Citigroup High Yield Market 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	17.8
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	1.84
2008	-55.09	-37.00	-25.91
2009	96.42	26.46	55.19
Arithmetic Average (Annual) Rate, 1987-2009			
	11.64	11.16	9.71
Standard Deviation			
	34.75	19.01	16.53
Compounded Average (Annual) Rate, 1987-2009			
	6.41	9.39	8.56
Arithmetic Average (Monthly) Rate, 1987-2009			
	0.64	0.86	0.73
Standard Deviation			
	4.86	4.53	2.59
Compounded Average (Monthly) Rate, 1987-2009			
	0.52	0.75	0.69

Sources: NYU Salomon Center, Standard & Poor's, and Citi.

Figure 5. Defaulted Bond, Stock, and High Yield Bond Indexes, Dec 86-Dec 09



Source: NYU Salomon Center.

Defaulted Bank Loan Performance

The Defaulted Bank Loan Index experienced its best year since inception, with an annual gain in 2008 of 32.80% (Figure 6). Consequently, the average annual return rose by 217bp from 2.46% in 2007 to 4.63%. However, the historical average annual return over the 14-year time series compares poorly to the S&P 500 Index (8.51%) and high-yield bonds (8.18%). Again, our compound average annual returns are lower than the arithmetic averages by a wide margin.

The volatility of the Defaulted Bank Loan Index compares favorably with common stocks based on both annual and monthly returns (about a 3.2% lower standard deviation based on annual returns compared to common stocks). The volatility of defaulted loans in comparison to high-yield bonds was comparable, with only a 5bp difference between the two. Some of our defaulted loans continue to pay interest each month, even in the post-Chapter 11 petition period. In general, price changes are less volatile than those of lower-priority bonds. The correlation of defaulted loans and other asset classes, as is the case with defaulted bonds, is very low or even negative in some cases (see our later discussion).

Figure 6. Altman-NYU Salomon Center Defaulted Bank Loan Index Versus S&P 500 and Citigroup High-Yield Market Index – Comparison of Returns, 1996–2009

Year	Altman-NYU	Citigroup	
	Salomon Center Defaulted Bank Loan Index (%)	S&P 500 High Yield Stock Index (%)	High Yield Market 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	1.84
2008	-43.11	-37.00	-25.91
2009	32.80	26.46	55.19
Arithmetic Average (Annual) Rate, 1996–2009			
	4.63	8.51	8.18
Standard Deviation			
	18.27	21.44	18.32
Compounded Average (Annual) Rate, 1996–2009			
	2.86	6.25	6.81
Arithmetic Average (Monthly) Rate, 1996–2009			
	0.31	0.62	0.60
Standard Deviation			
	3.34	4.67	2.97
Compounded Average (Monthly) Rate, 1996–2009			
	0.25	0.51	0.55

Sources: NYU Salomon Center Index of Defaulted Bank Loans, Standard & Poor's, and Citi.

Winners and Losers in 2009

2009 was a year of incredible positive returns on individual bond issues (Figure 7). Indeed, the three *best* performing bonds had returns of over 2,000%, though we must note that the beginning of the year prices on the top two issues were mere pennies or fractions thereof. To be fair, these were only bonds that were in our index for the entire year. All industry sectors appeared to be recovering from the credit meltdown and ensuing recession, with financial service and media and communications

companies experiencing the greatest increase in recovery rates. Defaulting loans tell a similar story, although not as dramatic.

Interestingly, for the second year in a row, TOUSA, Inc. appears on both the best performers' lists for bonds and worst performers list for loans. The "best" performers also include Downey Financial and Pilgrim's Pride for bonds, as well as Tribune Co. and Hawaiian Telecomm for loans. Herbst Gaming is on the best performers' list for loans, but the worst for bonds.

Figure 7. Top- and Bottom-Performing Defaulted Bonds and Loans, 2009

Top Three Bonds	Coupon (%)	Maturity	Return (%)
Downey Financial Corp.	6.5	7/01/2014	84,483.3
TOUSA Inc.	7.5	3/15/2011	3,169.8
Pilgrim's Pride Corp.	8.4	5/01/2017	2,575.0
Bottom Three Bonds	Coupon (%)	Maturity	Return (%)
Lehman Brothers Hldgs, Inc.	6.5	7/19/2017	-98.8
Bally Total Fitness Hldgs, Inc.	14.0	10/01/2013	-97.5
Herbst Gaming, Inc.	8.1	6/01/2012	-94.2
Top Three Loans	Facility		Return (%)
Tribune Co.	Term DD		161.6
Herbst Gaming, Inc.	Term B		148.8
Hawaiian Telecomm Communications, Inc.	Term C		71.6
Bottom Three Loans	Facility		Return (%)
TOUSA Inc.	Term C		-93.4
Landsource Communities Development, LLC	Term		-90.8
Buffets Inc.	Term B		-83.8

Source: NYU Salomon Center.

Combined Bond and Bank Loan Index

Our market-weighted combined defaulted debt index was up by a record by 55.99% in 2009, and now shows an average annual rate of return of 6.92% for 1996–2009, up about 378bp from last year's annual average return (Figure 8). The average annual return during this 14-year period, even with such a high-performing year, was still below that of high-yield bonds (8.18%) and the return on common stocks (8.51%). However, the 2009 performance was slightly above the performance of high-yield bonds (+55.19%), and significantly above that of common stocks (+26.46%).

The weights for the combined index as of year-end 2009 were 69% for loans versus 31% for bonds, compared to 78% loans and 22% bonds in 2008. This underscores the fact even though both debt classes performed extremely well, bonds fared much better. The annual volatility of the combined index of defaulted bonds and loans was slightly higher than common stocks, but eight percentage points higher than that of high-yield bonds. Based on monthly returns, however, our combined index had lower volatility than common stocks.

Figure 8. Combined Altman-NYU Salomon Center Defaulted Public Bond and Bank Loan Index Comparison of Returns, 1996–2009

Year	Altman-NYU Salomon Center Defaulted Public Bond and Bank Loan Index (%)	S&P 500 Market Index (%)	Citigroup High Yield Market 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	1.84
2008	-47.52	-37.00	-25.91
2009	55.99	26.46	55.19
Arithmetic Average (Annual) Rate, 1996–2009	6.92	8.51	8.18
Standard Deviation	26.32	21.44	18.32
Compounded Average (Annual) Rate, 1996–2009	3.65	6.26	6.81
Arithmetic Average (Monthly) Rate, 1996–2009	0.55	0.48	0.50
Standard Deviation	3.62	4.80	3.06
Compounded Average (Monthly) Rate, 1996–2009	0.49	0.37	0.45

Sources: NYU-Salomon Center, Standard & Poor's, and Citi.

Performance Comparison With Other Distressed Debt Indexes

We compare our index returns with at least five other “distressed” debt indexes. Three of these (Credit Suisse/Tremont, Hennessey, and HFR) are indexes based on average manager performance, while the Moody’s index is based only on bankrupt bonds, and Credit Suisse’s is based on defaulted bonds. All of the manager-based indexes underperformed both our combined and defaulted bond indexes, with the average performance ranging between 20.95% (Credit Suisse/Tremont) and 42.97% (Hennessey) (see Figure 9). The HFR Distressed Index was up 28.54% in 2009. Keep in mind that the manager-based indexes incorporate all strategies of distressed hedge funds. The returns to the funds are after transaction costs and fees to the manager. The average performance of these three hedge-fund-manager indexes in 2009 was 30.82%.

Figure 9. Hedge Fund Distressed Debt Index Returns, 2003–2009

Calendar Year	Credit Suisse/ Tremont	Hennessee	HFR	Van Hedge	Altman- Combined
2003	25.12%	26.79%	29.58%	27.42%	49.30%
2004	15.60%	18.98%	18.89%	18.19%	15.14%
2005	11.75%	9.71%	8.25%	9.34%	1.73%
2006	15.58%	15.78%	15.95%	15.33%	23.38%
2007	8.28%	8.31%	5.07%	7.37%	-3.30%
2008	-20.48%	-29.28%	-25.21%	-21.05%	-47.52%
2009	20.95%	42.97%	28.54%	N/A	55.99%

Source: Bloomberg and NYU Salomon Center.

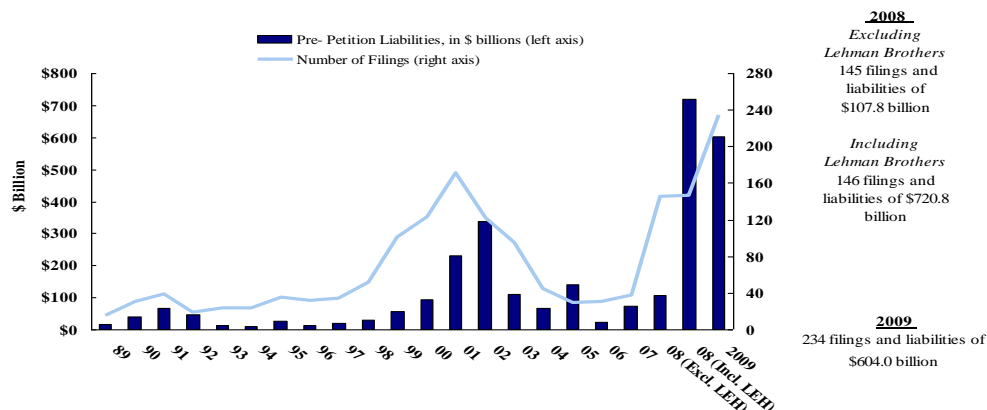
Moody’s bankrupt bond index had an astounding return of 269% in 2009, while Credit Suisse’s defaulted bond index, most similar to our own, posted returns of 187%. Although all three defaulted debt indexes (including our own) did amazingly well in 2009, it is difficult to explain why some did so much better than others.

Bankruptcies and Defaults

New bankruptcies experienced record highs in 2009, excluding the Lehman Brothers’ filing in 2008. Two hundred thirty-four companies with liabilities of more than \$100 million filed for Chapter 11, the most ever (Figure 10). The amount of liabilities increased exponentially to about \$604 billion from \$108 billion in 2008. This amount does not include the Lehman Brothers filing; the total amount of liabilities in 2009 would be a decrease to the \$721 billion with Lehman’s inclusion in 2008. The number of mega-bankruptcies with liabilities greater than \$1 billion increased two-fold to 43 from 21 last year, also the highest annual number ever.

The default rate on high-yield bonds registered 10.74% in 2009, increasing from a low 4.65% in 2008, with \$123.8 billion in new bond defaults, a record dollar amount (Figure 11). The default rate reached its highest point since 2002 and the second highest ever.

Figure 10. Liabilities^a of Public Companies Filing for Chapter 11 Protection, 1989–2009



^a Minimum \$100 million in liabilities.
 Source: NYU Salomon Center Bankruptcy Database.

Figure 11. Historical Default Rates (Straight Bonds Only Excluding Defaulted Issues From Par Value Outstanding), 1971–2009 (US Dollars in Millions)

Year	Par Value Outstanding ^a (\$)	Par Value Defaults (\$)	Default Rates (%)	Year	Par Value Outstanding ^a (\$)	Par Value Defaults (\$)	Default Rates (%)
2009	1,152,952	123,824	10.740	1983	27,492	301	1.095
2008	1,091,000	50,169	4.598	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	36,209	3.375	1979	10,356	20	0.193
2004	933,100	11,657	1.249	1978	8,946	119	1.330
2003	825,000	38,451	4.661	1977	8,157	381	4.671
2002	757,000	96,858	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				
1995	240,000	4,551	1.896				
1994	235,000	3,418	1.454				
1993	206,907	2,287	1.105				
1992	163,000	5,545	3.402				
1991	183,600	18,862	10.273				
1990	181,000	18,354	10.140				
1989	189,258	8,110	4.285				
1988	148,187	3,944	2.662				
1987	129,557	7,486	5.778				
1986	90,243	3,156	3.497				
1985	58,088	992	1.708				
1984	40,939	344	0.840				
							Std Dev (%)
					Arithmetic Average Default Rate		
					1971–2009	3.331	3.224
					1978–2009	3.636	3.422
					1985–2009	4.322	3.548
					Weighted Average Default Rate^b		
					1971–2009	4.550	
					1978–2009	4.561	
					1985–2009	4.598	
					Median Annual Default Rate		
					1971–2009	1.896	

^a As of midyear. ^b Weighted by par value outstanding for each year.
Sources: Author's compilations.

Recovery Rates on Defaulted Debt

The weighted-average recovery rate (based on market prices just after defaults) on high-yield bond defaults in 2009 dropped from 42.5% in 2008 to 36.1% by the end of 2009. This is the lowest recovery rate since 2002.

The recovery rate in 2009 was not as affected by a record number of distressed exchange (DE) defaults as it was in 2008. DE recoveries are generally higher than typical defaults. Without DE defaults, the 2009 recovery rate was 34.6%, only 150bp lower than the recovery rate including all defaults. This latter rate is more relevant to our defaulted debt indexes because distressed exchange bonds do not enter our indexes.

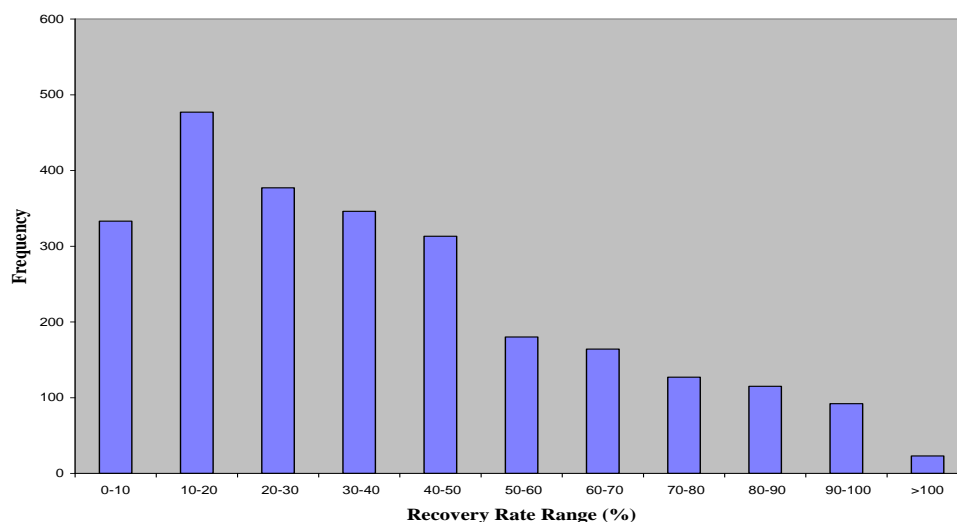
Figure 12 shows the frequency distribution of recovery rates across all seniority and industry classifications for more than 2,500 bond defaults during 1971–2009. Note that the modal value is actually only 10–20%, even though our historical average recovery rate range is 35–40%. The vast majority falls in the 0–50% range. For a more complete treatment and discussion of bond recovery rates, see our companion report on defaults in the high-yield bond market.⁴

The weighted-average recovery rate on defaulted loans was only 53.8% in 2009, compared to the historical average of 65.2% (Figure 3). Recovery rates did increase

⁴ E. Altman and B. Karlin "NYU Salomon Center Special Report on Defaults and Returns in the High-Yield and Distressed Debt Market: The Year 2009 in Review and Outlook", *NYU Salomon Center*, February 2010.

substantially as the year progressed, just as defaulted loan prices in general increased. The frequency distribution of default recovery rates was quite different for corporate loans (Figure 13) than we saw earlier for defaulted bonds (Figure 12). Based on a smaller but still relevant sample of 588 loan defaults during 1996–2009, we can observe loan recoveries based on the price one month after default. Unlike in recent years, the distribution of loan recoveries in 2009 was skewed towards both ends of the default distribution, with similar amounts of recoveries in the 0–10% and 80–90% ranges. Overall, however, the bulk of the corporate loan recoveries are greater than 50%, the opposite as is the case with bonds. The higher average recovery rate on defaulted loans compared to bonds reflects its senior, and often secured, status. The shorter measurement period is also more favorable. The standard deviation of loan recoveries was about 32%, compared to 26% for bonds. Relative to the means, however, the standard deviation divided by mean recoveries for loans was 0.49, compared to 0.65 for bonds, indicative of the higher variability of bond default recoveries⁵.

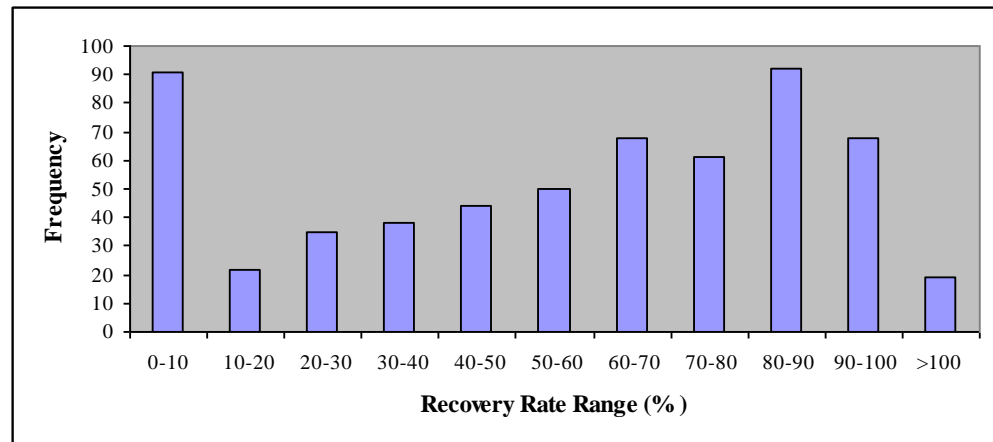
Figure 12. Corporate Bond Default Recovery Rate Frequency (Based on Number of Issues 1971–2009)^a



^a Number of Observations = 2,547. Source: NYU Salomon Center.

⁵ This statistic is known as the coefficient of variation and is a relevant comparative statistic for populations with different mean values.

Figure 13. Loan Default Recovery Rate Frequency (Based on Number of Issues 1996–2009)^a



^a Number of Observations = 588. Source: NYU Salomon Center.

Defaulted Debt Performance Versus Default Rates

We have sometimes commented upon the relatively very high returns on defaulted bonds and loans in the year(s) following a surge in defaults in one or more prior years. The best example of this is the huge outperformance on defaulted bonds (84.9%) and loans (27.5%) in 2003, following the record default rate year of 2002 (12.8%). Something similar occurred in 1991, when defaulted bonds returned 43.1%, although the high default rate year of 1990 was followed by an equally high rate in 1991, mostly in the early months of that year. Those outlier return years are strongly correlated to market outperformance in those years.

In 2009, however, we observed an out-performance on defaulted bonds and bank loans which coincided with a huge year in defaults. Actually, 2009 had two distinct periods. In the first several months, defaults surged and returns were poor. In the second two-thirds of the year, defaults dropped dramatically (especially in the second half, excluding November) and returns surged. So, in effect, a strong recovery in the market did follow a peak in defaults, only both occurred in the same calendar year. The same phenomenon occurred in 1991.

We can examine the relationship between default rates and either concurrent or subsequent returns on defaulted bonds, bank loans, and our combined index in Figure 14. We ran univariate regressions where the independent variable is the default rate and the dependent variable is either the defaulted bond, loan, or combined index performance. It appears that the strongest relationship between default rates and subsequent returns is when the default rate is from one to two years prior to the performance year. There was no relationship found over the period 1987-2008 between default rates and returns measured on a concurrent basis.

Figure 14. Regression (Correlation) Analysis of Defaulted Debt Index Returns Versus Default Rates (1997-2008)

Panel A. Defaulted Bonds (t+1) Versus Default Rate (t)	
Defaulted Bonds (t+1) = $-0.15 + 5.00$ (Default Rate (t))	
Correlation (y/x) = 60.5%	
R2 = 36.7%	
t-test = 3.32 (.01 level)	
Defaulted Loans (t+1) = $-0.09 + 2.61$ (Default Rate (t))	
Correlation (y/x) = 59.6%	
R2 = 35.3%	
t-test = 2.33 (.05 level)	
Combined Index (t+1) = $-0.133 + 3.98$ (Default Rate (t))	
Correlation (y/x) = 64.5%	
R2 = 41.6%	
t-test = 2.66 (.05 level)	
Panel B. Defaulted Debt (t+2) Versus Default Rate (t)	
Defaulted Bonds (t+2) = $-0.13 + 4.11$ (Default Rate (t))	
Correlation (y/x) = 49.0%	
R2 = 24.0%	
t-test = 2.38 (.05 level)	
Defaulted Loans (t+2) = $-0.112 + 2.90$ (Default Rate (t))	
Correlation (y/x) = 63.4%	
R2 = 40.3%	
t-test = 2.46 (.05 level)	
Combined Index (t+2) = $-0.14 + 3.85$ (Default Rate (t))	
Correlation (y/x) = 60.0%	
R2 = 36.0%	
t-test = 2.25 (0.05 level)	
Panel C. Defaulted Debt (t) Versus Default Rate (t)	
Defaulted Bonds (t) = $0.08 - 0.05$ (Default Rate (t))	
Correlation (y/x) = 0.0%	
R2 = 0.0%	
t-test = -0.02 (.not significant)	
Defaulted Loans (t) = $0.02 + 0.06$ (Default Rate (t))	
Correlation (y/x) = 0.0%	
R2 = 0.0%	
t-test = 0.02 (.not significant)	
Combined Index (t) = $0.04 - 0.16$ (Default Rate (t))	
Correlation (y/x) = 0.1%	
R2 = 0.1%	
t-test = -0.09 (.not significant)	

Source: NYU Salomon Center.

We find that the correlation between the default rate on high-yield bonds and the following year's Combined Index of Defaulted Bonds and Bank Loans was quite high, at close to 65% (Panel A, bottom). Indeed, the default rate explained about 42% of the variance in the combined index's next year's performance. Similar results can be seen with the default rate and the bond and the bank loan performance association. While our time series is only 12 years, the t-statistic (2.66), which measures whether the independent variable (default rate) is statistically meaningful, is significant at the 5% level of confidence.

It is important to note that the coincident relationship between default rates and defaulted debt returns shows no association ($R^2 = 0.1\%$ for the combined index, 0.0% for the defaulted bank loans, and 0.0% for the defaulted bonds; see panel C in Figure 14). As noted above, however, our regressions did not pick up the possibility of an intra-year correlation between defaults and subsequent returns on defaulted bonds and bank loans. We will be examining this phenomenon going forward in light of this extremely atypical 2009 relationship.

Diversification: Management Styles and Return Correlations

Return Correlations

We have often noted the attractive diversification strategies with distressed debt and most other asset classes. Several domestic pension, hedge fund, and foreign investors have used this strategy by allocating a portion of their total investments to distressed debt money managers. In addition, the fund of funds, which invest in alternative investment managers, now typically consider distressed debt an important asset class. The principal idea behind this strategy is that returns from distressed debt portfolios have a relatively low correlation with returns from most other asset classes.

In addition, managers have carved out distinctive styles within the distressed space (for example, passive, active, control or near control, long-short, arbitrage, and mid-caps, to name a few (mainly hedge funds and private equity)). We estimate that there are about 200 investment institutions in the United States that specialize in distressed securities with combined assets of approximately \$275-\$300 billion under management. This is up more than \$65 billion from last year, when the estimate was \$210 billion.

Figure 15 shows the correlations between monthly returns on the Altman-NYU Salomon Center Defaulted Bond Index and two other risky asset classes, as well as 10-Yr Treasury Bonds for the 23-year period of 1987–2009. During this period, the correlation of defaulted bond returns with the S&P 500 was 40.38%, 67.24% with Citigroup's High Yield Bonds, and a -27.31%, with 10-Yr Treasury Bonds. All three correlations are comparable to last year, with the correlation between defaulted bonds and 10-yr US Treasuries showing the largest difference, a drop of almost 2%.

Figure 15. Correlation of Altman-NYU Salomon Center Monthly Indexes of Defaulted Bonds With Other Securities Indexes, 1987–2009

	Altman Defaulted Bond Index (%)	S&P 500 (%)	Citi High-Yield Bond Index (%)	10-Yr Tsy Bond (%)
Altman Defaulted Bond Index	100.00	40.38	67.24	-27.31
S&P 500		100.00	56.29	0.33
Citi High-Yield Bond Index			100.00	-2.68
Ten-Year Treasury Bond				100.00

Sources: NYU Salomon Center, S&P and Citi.

As was the case previously, the correlation of high-yield bonds and the Defaulted Bank Loan Index (58.50%) is weaker than with defaulted bonds (69.77%, Figure 15). Note the shorter measurement period for the loan index correlations. The correlation of returns on defaulted bank loans and 10-Yr Treasuries remained negative through 2009 at -26.13% and showed only slight correlation (33.38%) with the S&P 500 Index, the latter of which was up significantly, however, from last year's 22.20% correlation. Indeed, returns for all asset classes in the period 2008-2009 appeared to be more highly correlated than in any other distressed credit cycle that we have ever observed. For example, the correlation between monthly returns of defaulted bonds (and also bank loans) and the S&P 500 stock index exceeded 80% in the period January, 2008 through December, 2009. This compares to only about 40% correlation over the period 1987-2009 (Figure 15) and 1996-2009 (Figure 16).

Finally, the monthly return correlation between our two defaulted debt indexes remained virtually unchanged at 66.29% from 66.62% one year earlier. This follows from the fact that both indexes experienced significant gains in 2009.

Figure 16. Correlation of Altman-NYU Salomon Center Indexes of Defaulted Loans With Other Securities Indexes, 1996-2009 (In Percent)

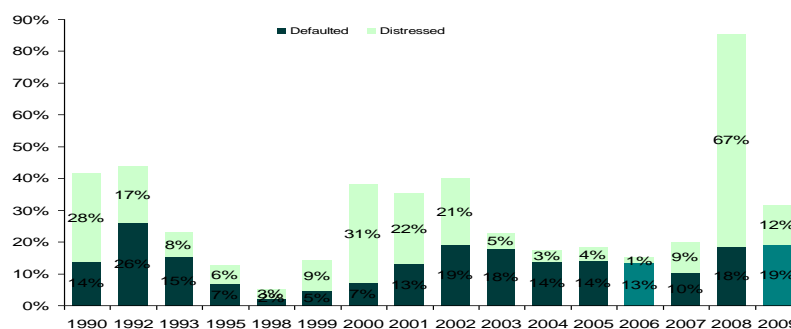
	Altman Bond Index (%)	Altman Loan Index	Altman Combined Index	S&P 500 (%)	Citi High- Yield Bond Index (%) Tsy	10-Yr Bond (%)
Altman Defaulted Bond Index	100.00	66.29	92.09	42.41	69.77	-34.68
Altman Defaulted Loan Index		100.00	89.16	33.38	58.50	-26.13
Altman Combined Index			100.00	40.97	69.21	-33.95
S&P 500				100.00	60.26	-14.63
Citi High-Yield Bond Index					100.00	-14.78
Ten-Year Treasury Bond						100.00

Sources: NYU Salomon Center, S&P, and Citi.

Proportion and Size of the Distressed and Defaulted Public and Private Debt Markets

The distressed and defaulted debt proportion of the high-yield and defaulted debt markets in the United States comprised about 31.5% as of December 31, 2009, down considerably from the 85.2% proportion one year earlier (Figure 17). The primary reason for the steady decrease since December 31, 2008 was the drop in the distress ratio of issues trading at least 1,000bp over the 10-yr US Treasury bond. The “distress ratio” fell from 82.0% of high-yield bond market, as of year-end 2008, to 15.3% by the end of 2009 and from 67% to 12% of the high-yield + defaulted debt markets. As a result, the distressed segment comprised only 12% of the total high-yield plus defaulted debt market (\$1.463 trillion) as of year-end, while the defaulted segment increased to 19%, its highest level since 2002, when it was also 19%.

Figure 17. Distressed^a and Defaulted Debt as a Percentage of Total High Yield Plus Defaulted Debt Market^b, 1990–2009^c



^a Defined as yield-to-maturity spread greater than or equal to 1,000bp over comparable Treasuries. ^b \$1.463 trillion as of December 31, 2009. ^c Some years not available as no survey results available.
Source: NYU Salomon Center.

Figure 18 shows our estimate of the size of the defaulted and distressed debt markets for both public and privately issued debt. The estimated face value of distressed public debt is \$181.0 billion, down from \$888.5 billion one year earlier. As previously discussed, this is attributable to the decrease in the “distressed ratio.”

We are now using a private-to-public debt ratio of 2.5 times⁶ (increased from 2.2 times in prior reports) to estimate the amount of defaulted and distressed private debt (mainly bank loans, mortgages, and trade debt). Applying the 2.5 ratio to our public debt totals, we estimate the face value of private defaulted and distressed debt is \$1.1 trillion. The total face value of public and private, defaulted and distressed debt as of December 31, 2009, is an estimated \$1.6 trillion (Figure 34). This is a staggering decrease of about \$2.0 trillion from one year earlier, due entirely to the decrease in

⁶ Based on an updated sample of over 150 bankrupt firms from 2007-2009.

the distressed ratio. Figure 19 shows that the total face value of distressed and defaulted debt was well above average in 2009 and higher than any year except 2008, but still decreased significantly from one year earlier.

As indicated in Figure 18, consistent with our observations of both newly defaulted and existing defaulted loan issues in our NYU Salomon Center Index of Defaulted Bond and Bank Loan performance, we have chosen to increase our market-to-face value ratios from year-end 2008. When applied, the market value estimate of defaulted and distressed debt is about \$1.01 trillion — down from the third quarter and significantly lower than one year earlier.

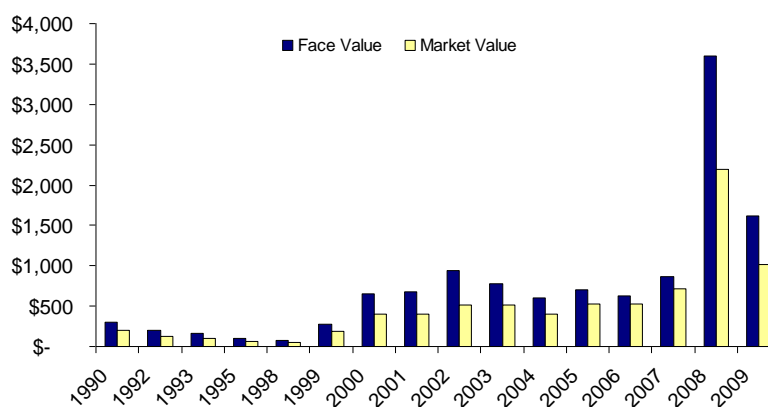
Figure 18. Estimated Face and Market Values of Defaulted and Distressed Debt, 2006–2009 (Dollars in Billions)

	Face Value (\$)			Market Value (\$)			Market/ Face Ratio ^d
	31 Dec 07	31 Dec 08	31 Dec 09	31 Dec 07	31 Dec 08	31 Dec 09	
Public Debt							
Defaulted	127.32	234.36	279.56 ^a	76.39	40.69	97.85	0.35
Distressed	113.56	888.53	181.00 ^b	85.17	488.69	135.75	0.75
Total Public	240.88	1,122.89	460.56	161.56	529.38	233.59	
Private Debt							
Defaulted	331.03	515.59	698.90 ^c	281.38	299.11	419.34 ^c	0.60
Distressed	295.26	1,954.76	452.50 ^c	265.74	1,368.33	362.00 ^c	0.80
Total Private	626.29	2,470.35	1,151.40	547.11	1,667.44	781.34	
Total Public and Private	867.18	3,593.24	1,611.96	708.68	2,196.82	1,014.93	

^a Calculated using: (2008 defaulted population) + (2009 defaults) - (2009 Emergences) - (2009 Distressed Restructurings). ^b Based on 15.3% of the size of the high-yield market (\$1.183 trillion). ^c Based on a private/public ratio of 2.5. ^d The market/face value ratio was 0.25 for public defaulted debt, 0.55 for public distressed debt, 0.60 for private defaulted debt and 0.70 for private distressed debt in 2008.

Source: NYU Salomon Center and estimates by Professor Edward I. Altman.

Figure 19. Size of the Defaulted and Distressed Debt Market, 1990–2009 (Dollars in Billions)



Source: Professor Edward I. Altman estimates, NYU Salomon Center.

Demand for Distressed Debt Securities

At the end of 2007, we estimated that the amount of assets under management (AUM) in distressed debt hedge funds and related investment vehicles was \$350 billion. In 2008, however, due to average investment losses of about 20–25% and net redemptions of limited partner funds of a similar percentage, we now estimate that the investment in distressed assets by these funds dropped by at least 40% to \$210 billion, or less.

In 2009, distressed debt's attraction came roaring back as the credit market's meltdown dissipated and government actions calmed financial markets. Despite a considerable increase in defaults, returns soared and investors came back to some funds. We estimate that AUM increased by over 30% to \$275-\$300 billion, mainly due to exceptional performance and less so due to net inflows.

Appendix A lists the Distressed Debt Managers in the US and Europe as well as those managers who practice an active/control strategy. We try to update our lists periodically, but would appreciate your editing the list and informing us of any changes.

Forecasting Default Rates and Recoveries

Note: The following material is excerpted from our earlier report on "Defaults and Returns in the High-Yield Bond and Distressed Debt Market" (February 8, 2010). Readers who have already seen that report may skip this section.

Forecasting aggregate default and recovery rates is a tricky exercise that can be based on a "bottom-up" approach on individual issues and issuers or a macro, "top-down" approach – or both. For practical and track-record reasons, we have chosen the top-down approach using both aggregate amounts of new issuance over the last decade stratified by the major ratings categories (mortality statistics) and also point-in-time proportions of issues by the major non-investment grade, high-yield bond categories, but specific to recessionary results (scenario analysis). Finally, we also analyze the information content of market-based measures, such as yield spreads and distressed ratios, to forecast the near-term default performance of the market. These four techniques are then averaged to arrive at our single default rate estimate, although the range of probable outcomes can be observed as well. Our default rate estimates are then used as the basis for estimates of aggregate recovery rates on corporate high-yield bond defaults.

Using our standard mortality rate forecasting method (see our earlier discussion), our forecast was higher than the actual rate in 2007, when credit markets were abnormally buoyant. For 2008, we were pleased and a bit surprised that our forecast of 4.64% for the high-yield bond default rate was remarkably close to the actual 2008 rate, which came in at 4.65% (Figure 20). We then expected our 2009 default rate forecast to be on the low side, using the same mortality rate methodology. After all, the mortality rate incidences of the past have been based on six recession periods covering only about six-and-a-half years of the 38 in our sample period (1971–2008). Therefore, a nonrecessionary, macroeconomic climate dominates our statistics, and

with a severe recession in place coming into 2009, we expected the mortality rate methodology to underestimate the actual default results. Indeed, the actual default rate was 10.7% in 2009 compared to our forecast of 7.98%, a respectable underestimate. For this reason, we also in addition consider recession scenario analyses and market-based statistics to provide useful estimates of future results.

Mortality Rate Based Forecast

Utilizing the updated mortality rate statistics and inputting new issuance statistics per rating class over the past ten years, we estimate that the 2010 default rate will be 5.06%, with a recovery rate of about 35% (Figure 20). Our forecast also utilizes an estimate of the expected size of the high-yield bond market for 2010.

Figure 20. Mortality Rate Based Forecasts of Default and Recovery Rates in the High-Yield Bond Market, 2007 - 2010

Year	Default Rate	Default Amount (\$ Billion)	Recovery Rate
2007 (Forecast)	2.50%	\$27.5	59.4%
2007 (Actual)	0.51%	\$5.5	66.6%
2008 (Forecast)	4.64%	\$53.1	39.6% ^a
2008 (Actual)	4.60%	\$50.2	42.5%
2009 (Forecast)	7.98%	\$92.0	30.0% ^a
2009 (Actual)	10.74%	\$123.8	36.1%
2010 (Forecast)	5.06%	\$62.5	34.9%

^aBased on the log-linear and linear default/recovery rate regressions.

Source: NYU Salomon Center.

Scenario Based Forecasts

Based on recent work (see last year's Default Report, Altman & Karlin, 2009), we observed the behavior of default rates during the two most recent recessions, 1991 and 2001⁷. Our forecasts are based on the proportional breakdown of the three major high-yield noninvestment-grade rating categories (Ba, B, and Caa) just before these recessions (Figure 21) and the subsequent default experience from these categories (Figure 22). We then applied the breakdown of rating class percentages as of year-end 2009 to estimate default rates for 2010, given the 1991 and 2001 recession scenarios.

The resulting default rate forecast for 2009 is 15.8%, given a 1991 default scenario, and 12.2% given a 2001 scenario, which are much higher than our mortality rate estimate and assume that factors such as market conditions, structure, etc. will remain quite similar as in the two prior recessions. Please note that these forecasts are only relevant if the economy remains in a recessionary state or "double-dips" sometime in the second-half of 2010, assuming the NBER declares that the 2008-2009 recession ended in late 2009 or early 2010. We will use a 14% expectant default rate in 2010 for this approach (the mean between 15.8% and 12.2%).

⁷ Martin Fridson first reported this scenario approach in his article in the *Distressed Debt Investor*, September 28, 2006.

Figure 21. Rating Distributions Prior to Recessions

(Percent of Issuers)

	1990	2000	2008 ^a	2009 ^a
Ba/BB	54	32	43	33
B/B	44	54	35	49
Caa+Ca/C				
CCC/CC	2	14	22	18

^a Year-end based on Moody's and S&P ratings in 2008 and 2009 (based on dollar amounts); Moody's only in prior years.

Figure 22. Scenario Based Forecasts of Default in the High-Yield Bond Market, 2009 & 2010

	Subsequent One-Year 1991	Default Rate 2001	2009 Forecasts ^a	2010 Forecasts ^a
			1991/2001 Scenarios	1991/2001 Scenarios
Ba/BB	4%	2%	1.7% / 0.9%	1.3% / 0.7%
B/B	6%	11%	5.6% / 3.9%	7.8% / 5.4%
Caa+Ca/C				
CCC/CC	37%	34%	8.1% / 7.5%	6.7% / 6.1%
H.Y. Default Rate	11.0%	10.6%	15.4% / 12.3%	15.8% / 12.2%

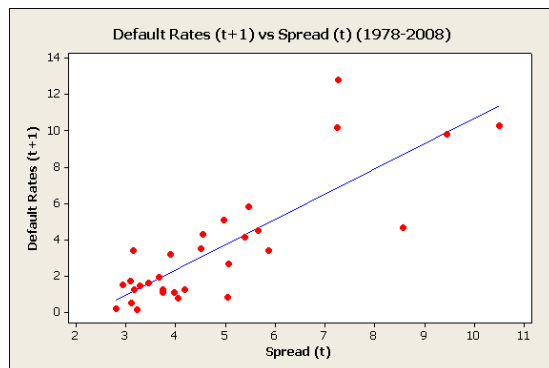
The total is based on the summation of the three rating category contributions.
Sources: NYU Salomon Center.

Market Based Methods for Forecasting Defaults

In 2008, we introduced two alternative methods for forecasting default rates. The first relies on the market's spread on high-yield bonds compared to 10-yr US Treasuries. The second utilizes the proportion of high-yield bonds selling at 1,000bp over 10-yr US Treasuries (distressed ratio). In both cases, we regress the market-based measure in period (t) and the subsequent one-year default rate in period (t+1).

Based on the yield-spread regression (Figure 23) on December 31, 2007, this method predicted a 4.62% 2008 default rate, essentially a perfect forecast, and as of the end of 2008, it predicted an astounding 20.81% default rate. As of the end of 2009, we estimate through this method that the cumulative default rate for the next 12 months, ending December 2010, will be 3.89%.

Figure 23. Market Based Forecast: Default Rate (t+1) versus Yield-Spread (t)



The regression equation is
Default Rate = - 3.25 + 1.39 * Spread

Predictor	Coef	SE Coef	T	P
Constant	-3.2490	0.9072	-3.58	0.001
Spread	1.3904	0.1741	7.99	0.000

S = 1.86079 R-Sq = 69.5% R-Sq(adj) = 68.4%

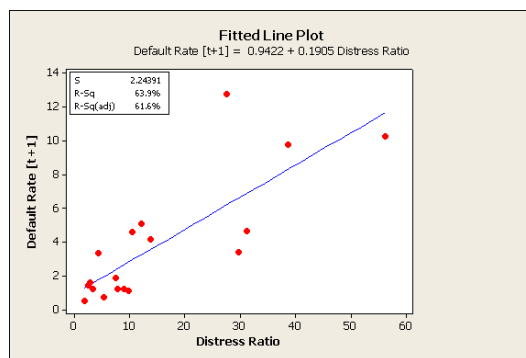
Application

Applying Yield spread (12/31/2007) of 566 bps, $P_D = -3.25 + 1.39 \times 5.66 = 4.617\%$
 Applying Yield spread (12/31/2008) of 1,731 bps, $P_D = -3.25 + 1.39 \times 17.31 = 20.811\%$
 Applying Yield spread (12/31/2009) of 513 bps, $P_D = -3.25 + 1.39 \times 5.13 = 3.883\%$

Sources: Figures 1 and 29, NYU Salomon Center and authors' compilation.

A second market-based method utilizes the distressed ratio, that is, the proportion of the high-yield bond market trading at least 1,000bp over Treasuries. The updated regression equation for 2008 is shown in Figure 24. Inserting the distressed ratio of 15.30% as of the end of 2009, the model reveals an expected 3.86% default rate for year-end 2010.

Figure 24. Market Based Forecast: Default Rate (t+1) versus Distress Ratio (t)



The regression equation is
Default Rate = 0.942 + 0.190 * Distress Ratio

Predictor	Coef	SE Coef	T	P
Constant	0.9422	0.7596	1.24	0.233
Distress Ratio	0.19045	0.03579	5.32	0.000

S = 2.24391 R-Sq = 63.9% R-Sq(adj) = 61.6%

Application

Applying Distress Ratio (12/31/2007) of 10.42%, $P_D = 0.810 + 0.193 \times 10.42 = 2.820\%$
 Applying Distress Ratio (12/31/2008) of 82.00%, $P_D = 0.810 + 0.193 \times 82.00 = 16.636\%$
 Applying Distress Ratio (12/31/2009) of 15.30%, $P_D = 0.942 + 0.190 \times 15.30 = 3.856\%$

Sources: Merrill Lynch & Co., NYU Salomon Center and authors' compilation.

Default and Recovery Conclusions

Considering the various forecasting methods, we observe that the forecast range is between 3.86% (distressed ratio) and 14.00% (recession scenarios). There is no obvious way to reach a consensus from the different techniques, so we simply took the average of the four to obtain our forecast of 6.70% (Figure 25). Inputting this

estimate into our recovery regression (Figure 21 in our companion report⁸), we estimate that 2010's high-yield bond default recovery rate will be 31.8%, based on our log-linear model.

Note that the 6.70% forecast assumes that the recession scenario is relevant. If, as most economists forecast, the U.S. economy does *not* experience a recession in 2010, the three remaining default rate forecasting methods average to 4.27%, with a 36.7% recovery rate (Figure 25). This implies a fairly normal default rate environment in 2010. Of course, if one assumes that the following year, 2011, will manifest renewed stress in the economy, the default recession scenario will again be relevant.

Figure 25. 2010 Default and Recovery Forecasts: Summary of Forecast Models

Model	2009 Default	12/31/2010	12/31/2010
	Rate Forecast as of 12/31/2008	Recession Default Rate Forecast as of 12/31/2009	No Recession Default Rate Forecast as of 12/31/2009
Mortality Rate	7.98%	5.06%	5.06%
Recession Scenarios	14.05%	14.00%	n/r
Spread	18.32%	3.89% ^b	3.89% ^b
Distressed Ratio	14.16%	3.86% ^c	3.86% ^c
Average of Models (Recovery Rates) ^a	13.63% (24.3%)	6.70% (31.8%)	4.27% (36.7%)

^a Based on the log-linear regression (Figure 21). ^b Based on 12/31/2009 yield-spread of 513.16bp. ^c Based on 12/31/2009 Distressed Ratio of 15.3%.

Sources: All Corporate Bond Issuance, Figures 27, 37-40, and Authors' Estimates of Market Size in 2010.

⁸ E. Altman and B. Karlin "NYU Salomon Center Special Report on Defaults and Returns in the High-Yield and Distressed Debt Market: The Year 2009 in Review and Outlook", *NYU Salomon Center*, February 2010.

Appendix A

US Distressed Debt Managers

Abrams Capital	Black River Asset Mgmt.	Corsair Capital	Fulcrum Capital Mgmt.
ADM Maculus	Blackrock	Cypress Mgmt	GE Finance
AEG	Blackstone Group	Cyrus Capital Partners	Glenview Capital Mgmt.
Anchorage Advisors	Blue Mtn. Cap Mgmt	D.E. Shaw	GLG Partners, NA
Angelo, Gordon & Co.	Blue Wolf Capital	Davidson / Kempner	Global Credit Advisors
Apex Fndmntl Partners	Bluebay Asset Mgmt.	DDJ Capital Mgmt	Golden Capital
Apollo Management	Bluecrest Cap. Mgmt.	Deephaven Cap. Mgmt.	GoldenTree Asset Mgmt.
Appaloosa Mgmt.	Bond Street Capital	Delaware Street Capital	Goldman Spec Situations
Archview Investment	Boone Capital Mgmt.	Deltec Recovery Fund	Gracie Capital
Ares Corp. Opp. Fund	Brencourt Advisors	DKPR Wolf Point Mgm.t	Gradient Partners
Ashmore Asian Recov.	Brigade Capital	Drake Mgmt.	Gramercy Capital
Atalaya Cap. Mgmt.	The Broe Companies	Dreman Value Mgmt.	Greenlight Capital
Aurelius Capital Mgmt.	Brookfield Asset Mgmt.	Drucker Capital	Greywolf Capital
Avenue Capital Group	Canyon Capital	Dune Capital Mgmt.	Gruss Asset Mgmt.
Basso Asset Mgmt.	Candlewood Partners	Durham Asset Mgmt.	GSC Group
Baupost Group	Cardinal Capital	Eagle Rock Capital	GSO Capital Prtnrs
Bay Harbour Mgmt.	Carl Marks	Elliott Advisors	Guggenheim Inv. Mgmt.
Bayside Capital	Carlyle Strategic	Endurance Capital	H.I.G.
Beltway Capital	Cargill Value Invstmt	EOS Partners	Hain Capital
Bennett Mgmt Co.	CarVal Investors	Epic Asset Mgmt.	Halbis Cap. Mgmt. (US)
Black Diamond	Caspian Capital	Everest Capital Ltd	Halcyon/Slika Mgmt.
Blackport Capital Fund	Centerbridge Capital	Fairfield Greenwich	Harbert Fund Advisors
Black River Asset Mgmt.	Cerberus Partners	Farallon Partners	Harbinger Capital
Blackrock	Citadel Investments	Fintech Advisory	Harvest Capital
Blackstone Group	Cohanzick Mgmt.	Fir Tree Partners	Helios Advisors
Blue Mtn Cap Mgmt.	Columbus Hill Cap.	Forest Investment Mgmt.	HIG Brightpoint Cap.
Blue Wolf Capital	Commonwealth Advisors	Franklin Mutual Rec.	Highbridge Cap. Mgmt.
Bluebay Asset Mgmt.	Concordia Advisors	Fridson Investment Advisors	Highland Capital
Bluecrest Cap. Mgmt.	Contrarian Cap. Mgmt	Durham Asset Mgmt.	Highland Rest. Cap.

US Distressed Debt Managers (Continued)

Huizenga Capital Mgmt.	MHR	Questor Management	Stone Lion Capital
Icahn Capital Corp.	Millennium	Radius Partners	Stony Lane Partners
Insight Equity	MJ Whitman Mgmt Co.	Ramius	Strategic Value Partners
Ivory Invest. Management	Monarch Alternative Cap.	Redwood Capital	Summit
Jana Partners	Monomoy Capital	Resolution Partners	Sunrise Capital Partners
JLL Partners	Mount Kellett Cap. Mgmt	Restoration Cap. Mgmt.	TA McKay & Co.
JMB Capital	MSD Capital	Resurgence Corp. Fund	Taconic Capital Partners
K Capital Partners	New Generation Advisers	Salisbury	Tennenbaum Capital
Katonah Scott's Cove Cap. Mgmt.	Normandy Hill Capital	Sandell Asset Mgmt.	Third Avenue Value Fund
KD Distressed Capital	Oakhill	Scoggin Capital	Third Point
Kilimanjaro Advisors	Oaktree Capital	Seneca Cap. Inv. Ptnshp	Tiburon Capital Mgmt.
King Street Advisors	Och Ziff Capital Management	Signature Cap. Partners	TPG Credit Management
Knighthood Capital	Octavian Advisors	Silverpoint Capital	Treadstone Group
KPS Spec. Siittns Fd	Onex Credit Partners	Solus Alternative Mgmt.	Tricadia Capital
Lampe Conway	Orehill Partners	Soros NY	Triage Capital
Latigo Partners	Owl Creek Asset Mgmt.	Spring Street	Trilogy Capital
Laurel Ridge Ast Mgmt.	Pacholder Assoc., Inc.	Stanfield Capital Mgmt.	Trust Co. of the West
Leucadia Nat'l Corp.	Pacific Altern. Ast Mgmt.	Stairway Capital Advisors	Tuckerbrook
Levco Debt Opps	Paige Capital	Standard General Mgmt.	Tudor Investment Corp.
Litespeed Partners	Pardus Capital	Seneca Cap. Inv. Ptnshp	Turnberry Capital
Littlejohn & Co.	Patriarch	Signature Cap. Partners	Tyndall Partners
Loeb Partners	Paulson & Co.	Silverpoint Capital	Van Kampe
Lonestar Partners	Pegasus Investors	Solus Alternative Mgmt.	Varde Partners, Inc.
LongAcre Cap. Partners	Perella Weinberg Ptnrs Cap.	Soros NY	Venor Capital Mgmt.
Longroad Asset Mgmt.	Perry Partners	Spring Street	Versa Capital Mgmt.
Marathon Capital	Phoenix Investment Adviser	Stanfield Capital Mgmt.	Viking Global
Marathon Capital	Pine Creek	Stairway Capital Advisors	W.L. Ross & Co.
Mariner Invest. Group	Pinewood Cap. Partners	Standard General Mgmt.	Washington Corner Cap.
Mason Capital Mgmt	Plainfield Asset Mgmt	Stark Investments	Watershed Asset Mgmt.
MatlinPatterson Global	PMI	Stone Harbor Inv. Ptnrs	Wayzata Invest. Partners
Mellon HBV Cap. Mgmt.	Principal Global Investors	Stonehill Capital	Wellspring Cap. Partners

US Distressed Debt Managers (Continued)

Wexford Capital	William E. Simon & Sons	York Capital
Whippoorwill Assoc., Inc.	Woodside Management	Z Capital Partners

US Distressed Funds with European Offices

Aladdin Capital Management	Highbridge Capital Management
Apollo Management	Kelso Place Asset Management
Avenue Capital Group	Lonestar Partners
Camulos Capital	Marathon Capital
Cargill Investors	Matlin Patterson Global Advisors
Cerberus Partners	Millennium Capital
Citadel Investments	Oaktree Capital
Davidson Kempner	Och Ziff Capital Mgmt.
D.E. Shaw	Peter Schoenfeld Asset Mgmt.
Elliott Advisors	Silverpoint Capital
EOS Partners	Strategic Value Partners
Fortress Capital Corp.	TPG Credit Mgmt.
HBK Investments	Värde Partners

European Distressed Debt Managers (Home Grown)

Alchemy Partners	HIG Europe Capital Partners
Argo Capital	Ilex
Arrowgrass Capital Partners	Marco Polo
Bluebay Asset Management	Nordwind Capital
Butler Capital Management	Orlando Management GmbH
Carousel	Perusa
Cyrus Capital	Providente
Development & Partenariat	RAB Capital
Endless	Rutland Fund
EQT Opportunities	Sisu Capital
Equinox	Sothic Capital Management
Fin'active	Trafalgar Asset Managers
Fortelus Capital management	Verdoso Special Opportunity Fund
Green Recovery	Vermeer Capital Partners
H2 Equity Partners	

Distressed Active/Control Investors

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

