EDWARD I. ALTMAN

Analyzing Risks and Returns in the High Yield 'Junk' Bond Market

The high yield debt market in the United States is now an established and dynamic financial sector amounting to over $ 150 billion (Dec. 1987) and about 20% of the total fixed income, non-convertible corporate bond market. Despite its periodic shocks and consistent critics, this market continues to provide a mechanism for financing the growth and restructurings of corporations whose public debt instruments are rated below the so-called 'investment-grade' level, i.e., below BBB- (Standard & Poor's designation) or Baa3 (Moody's). Issuers in this market comprise essentially three types of firms including (1) fallen angels, (2) emerging growth companies, and (3) corporate restructurings.

Fallen angels are firms whose debt was originally rated in one of the four investment grade categories but has since been downgraded to non-investment grade status due to credit deterioration and the consequent non-trivial probability of default. The fallen angel component comprised 28.3% of the total high yield market as of June 30, 1987. Due to its deteriorated state, bonds in this group were referred to as 'junk' in the mid to late 1970's when they comprised the vast majority of the total market. See Tables 1 and 2 for a listing of the market size over time and the current proportion of fallen angels, respectively.

Emerging growth firms, probably about 25–30% of the market, involve firms which prior to the early 1980's were considered too young, small or otherwise unsuited for a public debt security and had to rely on bank debt or other private placement sources to raise debt capital. The securitization of private debt via the high yield market is one of the more important financial innovations of the 1980's.

Table 1: Public Straight Debt Outstanding 1970–1987 ($ million)

Year	Par Value Public Straight Debt Outstanding Over Year[1]	Low Rated Debt[2] Straight Public Debt	Percentage of Public St. Debt	Amount Outstanding Per Issuer	Amount Outstanding Per Issue
1987	648 000	136 952	21.1	155	87
1986	505 150	92 985	18.4	181	85
1985	419 600	59 178	14.1	135	55
1984	358 100	41 700	11.6	125	49
1983	319 400	28 223	8,8	93	39
1982	285 600	18 536	6.5	69	33
1981	255 300	17 362	6.8	62	32
1980	265 100	15 125	5.7	59	31
1979	269 900	10 675	4.0	47	30
1978	252 200	9 401	3.7	49	30
1977	237 800	8 479	3.5	46	27
1976	219 200	8 015	3.7	41	27
1975	200 600	7 720	3.8	41	27
1974	167 000	11 101[4]	6.6	59	35
1973	154 800[3]	8 082	5.2	45	29
1972	145 700	7 106	4.9	45	29
1971	132 500	6 643	5.0	45	29
1970	116 200	6 996	6.0	48	32

[1] Average of beginning and ending years' figures (1974–1986); estimate for 1987 as of June 30, 1987.
[2] Source: *Standard & Poor's Bond Guide* and *Moody's Bond Record*, July issues of each year. Defaulted railroads excluded. Also includes non-rated debt equivalent to rated debt for low-rated firms'.
[3] Estimates for 1973 and earlier based on linear regression of this column vs. the Federal Reserve's Corporate Bonds Outstanding figures *(Federal Reserve Bulletin)*.
[4] Includes $ 2.7 billion in Con Edison debt.

The last category, corporate restructurings, involve leverage buyouts (going private, in some cases to avoid a takeover), mergers and acquisition financing, leverage recapitalizations (a defense takeover strategy), distress exchange of debt issues for failing companies, etc. These heavily publicized transactions probably com-

prise slightly over 50% of the market and have raised the emotion level of market commentators and participants. Such financings usually involve large companies, perhaps which have enjoyed higher ratings in the past, but due to the enormous amount of debt raised, the company's status is considered quite risky.

The purpose of this paper is to present an up-to-date primer on the high yield debt market and to make the case for a market which is far safer than many claim and where the returns to investors have been comparatively excellent over the last 10 years and less volatile than the so-called risk-free government market.

Yields and Returns

Table 3 lists the returns and yields on a diversified portfolio of high yield bonds and a control portfolio of long term governments. Notice that the *return spreads* have varied over time from positive to negative and back again, as interest rates themselves have fluctuated. Indeed, if the

Table 2: Fallen Angel (FA) Proportion of the High Yield Debt (HYD) Market

Fallen Angel Totals		December 1985	June 1986	June 1987
Rated Issues	$ amount ($MM)	$ 23 165	$ 29 564	$ 38 783
	Number of issues	350	321	380
	Number of issuers	72	92	90
Utilities	$ amount ($MM)	$ 8 758	$ 4 929	$ 5 783
	Number of issues	196	107	143
	Number of issuers	13	7	10
Total FA dollars / Total HYD outstanding		$\frac{\$\ 23\ 165}{\$\ 74\ 514} = 31.1\%$	$\frac{\$\ 29\ 564}{\$\ 92\ 985} = 31.8\%$	$\frac{\$\ 38\ 783}{\$\ 136\ 952} = 28.32\%$
Total FA issues / Total HYD issues outstanding		$\frac{350}{1\ 170} = 29.9\%$	$\frac{321}{1\ 093} = 29.4\%$	$\frac{380}{1\ 567} = 24.25\%$
Total FA issuers / Total HYD issuers outstanding		$\frac{72}{488} = 14.8\%$	$\frac{92}{514} = 17.9\%$	$\frac{90}{883} = 10.19\%$

Table 3: Annual Returns, Yields and Spreads on Long-Term (LT) Government Bonds and High Yield (HY) Bonds

	Return (%)			Promised Yield (%)[3]		
Year	HY[1]	LT Govt[2]	Spread	HY	LT Govt	Spread
6–30–87	5.80	−3.47	9.27	12.66	8.75	3.91
1986	16.09	24.08	−7.99	14.45	9.55	4.90
1985	22.51	31.54	−9.03	15.40	11.65	3.75
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 Averages:						
1978–1983	12.01	6.64	5.37	14.33	10.68	3.65
1978–1987 (June 30)	13.15	11.25	1.91	13.04	9.63	3.41
Compounded Averages:						
1978–1983	11.45	5.62	5.83			
1978–1987 (June 30)	12.75	10.18	2.57			

[1] Morgan Stanley composite generated from over 440 high yield issues. Actual portfolio ranged in size from 153 in 1978 to 339 issues in 1983. This data-base goes through 3/31/84; Morgan Stanley estimates based on Standard & Poor data for 1985, 86.
[2] Shearson Lehman Long-Term Government Index.
[3] Promised yield as of beginning of year. It represents the internal rate of return based on the security's current price and scheduled payments of interest and principal.

basic interest rate level is increasing (and prices generally declining), then high yield bonds do better than long term governments, due to higher, earlier yield returns and the consequent lower duration levels. This somewhat counter intuitive risk difference phenomenon, favoring 'junk' bonds, is just beginning to be understood by market participants.

Promised *yield spreads* have fluctuated from under 3% to over 5%. As of June 30, 1987, yield spread levels were just under 4%, down from over 5% at the end of 1986. Over the period January 1978–1987 (June), the average annual yield spread was 3.41% and the compound return spread averaged 2.57%. All of the returns noted in Table 3 are *net of defaults* and include price declines for defaulting securities in the market portfolio.

Another measure of performance is the average return realized by mutual funds which are primarily dedicated to investing in high current yield debt securities. As of June 30, 1987, *Lipper Analytical Services* (N.Y.) reports that there were 67 of these funds investing slightly over $ 30 billion in high yield debt. The average return of 62 reporting funds was 4.80% for the first six months of 1987. This compares to a −1.70% on U.S. Government funds resulting in a return spread of 6.50% favoring high yield debt. This reverses a three year trend when U.S. Government bonds had a higher return than high yield debt. Note that the return spread on an index of high yield debt compared to an index of long term governments, in the first six months of 1987, was even higher at 9.27% (Table 3) reflecting the costs of operation of mutual funds and the lower than 100% concentration in high yield securities of these funds.

New Issue Activity

In the last 3½ years (January 1984–June 1987), 662 issues amounting to $ 79.4 billion of high yield, straight debt have been successfully floated (Table 4). These issues do not include exchange issues of companies, as they often do not increase the size of the market, e.g., distress exchange debt or private placements going public. The market has grown dramatically in this period in absolute and relative terms. New issue dollars accounted for about 6% of the total straight debt market in 1982 but in more recent years from 13–22%, depending on the period. The trend in 1987 so far is for a continuation of strong new issue activity, although the proportion of total new issues dropped to 13.4%. The size of these new issues have been large averaging $ 146 million in 1986 and $ 134 million so far in 1987. In 1986 and 1987, over 50% of the new issues were over $ 100 million in size, indicating a fairly liquid, potential floating supply of bonds.

Table 4: New Non-Convertible Domestic Debt Issues: 1978–1987 ($MM)[1]

	Total Par Value New Public Straight Debt Issues		Total Par Value New High Yield Debt Issues		New Issue Dollars	Variable Rate Debt	
Year	Amount ($)	No.	Amount ($)	No.	Percent	Amount ($)	No.
1987[1]	116 065	728	15 571[2]	116[2]	13.4	–	–
1986	155 672	1 041	34 177[3]	234[3]	22.0	661	8
1985	101 098	1 212	14 670	188	14.5	2 543	12
1984	99 416	721	14 952	124	15.0	3 927	27
1983	46 903	511	7 417	86	15.8	–	–
1982	47 798	513	2 798	48	5.9	40	1
1981	41 651	357	1 648	32	4.0	104	2
1980	37 272	398	1 442	43	3.9	137	4
1979	25 678	277	1 307	45	5.0	–	–
1978	22 416	287	1 493	52	6.7		
Total	693 969	6 045	95 475	968	13.75	7 412	54

[1] Not including exchange offers, secondary offerings, tax exempts, convertibles or government agencies. Six month figures in 1987.
[2] Includes 37 non-rated issues of about $ 4 billion but does not include about $ 1.7 billion of private placements coming public.
[3] In 1985, exchange offers and reorganization issues totaled $ 3.96 billion; retirements were $ 1.62 billion and secondary issues were at least $ 1.1 billion. In 1986, exchange offers and recapitalizations totaled $ 9.6 billion and retirements were over $ 8 billion. Private placements coming public totaled $ 3.4 billion.
Source: *Investors' Dealers Digest*, Merrill Lynch & Co., and Morgan Stanley & Co. Inc.

Underwriting Activity

Much has been made of late about the increased competitive nature of new issue underwritings in the high yield debt market and the apparent increased liquidity of issues in secondary markets, as well. Table 5 reinforces those observations as it appears that Drexel Burnham Lambert, while still the dominant firm, has seen its market share cut somewhat from 69% in 1984 to about 46% in 1986. In terms of new issue size, Drexel's average issue was larger in 1986 ($ 191 million) than any other firm's. Merrill Lynch was second in total dollars and number of issues with 11% of the market and an average size of $ 151 million. Morgan Stanley's average size ($ 188 million) was just below Drexel's and its overall amount put it in a third place tie with Salomon Brothers in 1986.

In 1987, based on 98 issues reported by *Investors Information Services,* Drexel's market share fell slightly to 43% with Merrill Lynch second (17.3%), Morgan Stanley (14.3%) and First Boston (13.8%) rounding out the top four. Of these four, First Boston had the largest average size of $ 226 million followed by Morgan's $ 208 million, Merrill $ 142 million and Drexel's 130 million.

Assessing Risk

We have indicated (see ALTMAN and NAMMACHER, *Investing in Junk Bonds,* J. Wiley, 1987) that returns to investors of high yield debt have surpassed other portfolio strategies and we also addressed the risk dimension facing investors. The three primary risk areas common to all fixed income instruments are interest rate risk, default risk and liquidity risk. One could add the emotional element of market credibility risk when dealing with junk bonds since there has been considerable media attention given to this aspect of the market. This latter risk element was certainly relevant in the aftermath of the October 1987 market crash.

Interest Rate Risk

Interest rate risk involves the change in price of debt securities given changes in interest rates. The simple fact is that high yield 'junk' bonds face *lower* interest rate risks than other debt securities of similar maturities. This is due to the higher current yield returns which translates into shorter durations[1]. Indeed, we found that high yield bond portfolio durations averaged just over 6 years compared to 8½ years for 'risk-free' long-term governments. BLUME and KEIM (1987) found that the monthly standard deviation of high yield bonds over the period 1982–1986 was lower than investment grade and government bonds. In an earlier study, ALTMAN and NAMMACHER (1987) found similar results (see Table 6 for details).

The reality of lower volatility in high yield returns is beginning to permeate through to the media and practitioners as governments fluctuated downward in 1987 (i.e., *New York Times,* 1987). It should be noted that lower volatility of the supposedly more risky high yield bonds is also evident in declining interest rate periods.

Table 5: New Issue Statistics by Lead Underwriter: 1982–1986 ($ million)

	1986				1985				1984				1983				1982			
Underwriter	Amount	%	Number	%	Amount	%	Number	%	Amount	%	Number	%	Amount	%	Number	%	Amount	%	Number	%
Drexel Burnham Lambert	15 775	45.86	82	35.04	7 239	49.71	83	44.15	10 358	69.28	67	54.03	4 346	58.60	46	53.49	1 544	55.18	28	58.33
Merrill Lynch	3 782	10.95	25	10.68	666	4.57	9	4.79	530	3.54	4	3.23	427	5.76	5	5.81	699	24.99	7	14.58
Morgan Stanley	2 817	8.16	15	6.28	1 050	7.21	13	6.91	319	2.13	5	4.03	80	1.08	1	1.16	–	–	–	–
Salomon Brothers	2 814	8.15	16	6.41	1 464	10.06	13	6.91	865	5.79	9	7.26	423	5.70	4	4.65	–	–	–	–
Shearson Lehman	1 903	5.51	11	4.60	708	4.86	8	4.26	718	4.80	8	6.45	230	3.10	1	1.16	25	0.89	1	2.08
First Boston	1 650	4.78	11	4.60	640	4.39	9	4.79	390	2.61	5	4.03	325	4.38	3	3.49	–	–	–	–
Goldman Sachs	1 228	3.56	9	3.77	615	4.22	5	2.66	100	0.67	1	0.81	125	1.69	1	1.16	–	–	–	–
Bear Stearns	1 145	3.32	14	5.86	456	3.13	7	3.72	360	2.41	4	3.23	380	5.12	5	5.81	35	1.25	1	2.08
Kidder Peabody	880	2.55	7	2.93	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Paine Webber	545	1.58	4	2.93	206	1.41	2	1.06	65	0.43	1	0.81	235	3.17	3	3.49	225	8.04	1	2.08
E.F. Hutton	370	1.07	5	2.09	280	1.92	2	1.06	145	0.97	3	2.42	190	2.56	2	2.33	83	2.95	2	4.17
Prudential-Bache	357	1.03	4	1.67	435	2.99	8	4.26	950	6.35	13	10.48	275	3.71	6	6.98	40	1.43	1	2.08
Donaldson, Lufkin & Jenrette Inc.	338	0.98	7	2.93	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Others	864	2.50	24	9.62	804	5.52	29	15.43	152	1.02	4	3.23	381	5.14	9	10.47	147	5.27	7	14.58
Total	34 117		234		14 562		188		14 952		124		7 417		86		2 798		48	

Table 6: Standard Deviation of Monthly Returns on Portfolios of High Yield Bonds Compared to Investment Grade and Government Bond Portfolios

Study	Period Analyzed	Standard Deviations Monthly: High Yield Bonds	Long Term Government Bonds	Investment Grade Bonds
ALTMAN/NAMMACHER (1986)	4/1978–3/1984	3.42%	n.a.	n.a.
BLUME and KEIM (1987)	1/1982–12/1986	2.25%	3.71%	3.26%

Source: ALTMAN and NAMMACHER, (1986); BLUME and KEIM, (1987).

Default Risk

High yield bonds are considered speculative, risky, 'junk' securities due to their perceived and observed relatively high default risk. The investor must carefully consider default possibilities when assessing whether or not the yield spread is sufficient compensation. Default statistics are available in several forms including amounts, rates, and losses to investors. Although amounts and rates are of interest, the key statistic is clearly what investors have lost, and could be expected to lose, from defaults. In our analysis, we consider a diversified 'market' portfolio of high yield bonds.

Default Amounts

Defaults, defined as either debt issues dropping to a D rating or those involved in a formal bankruptcy, whichever comes first, reached record levels in 1986. The $ 3.156 billion in defaults easily surpassed the next highest year (1985) with under $ 1 billion (Table 7).

Defaulting companies in 1986 numbered 23 parent firms and 33 overall if you count non-consolidated subsidiaries with debt from individual issuing entities. For example, the giant LTV Corp. bankruptcy in July 1986 involved eight subsidiaries with debt outstanding. For a complete list, see ALTMAN (1987). LTV and its subsidiaries accounted for over one-half of the total amount of defaults.

In 1987 defaulting dollar amounts increased to $ 7 billion. This includes the Texaco Inc., Texaco Corp., Texaco Capital default totals resulting from the giant Texaco 'bankruptcy'. I think it appropriate to measure 1987 defaults with and without Texaco since these defaults came about due to the special legal circumstances involving the Texaco-Pennzoil legal struggle and, more importantly, since the prices of those securities fell only modestly resulting in relatively small losses to bond investors. Without Texaco debt, the defaulting amount is much less at $ 1.4 billion.

Table 7: Historical Default Rates – Low Rated, Straight Debt only ($ million)

Year	Par Value Outstanding with Utilities	Par Value Defaulted	Default Rate in Percent
1987	$ 136 952	$ 6 419.00 ($ 775.0)[1]	4.687 (0.566)[1]
1986	92 985	3 155.76	3.394
1985	59 078	992.10	1.679
1984	41 700	344.16	0.825
1983	28 233	301.08	1.066
1982	18 536	577.34	3.115
1981	17 362	27.00	0.155
1980	15 126	224.11	1.482
1979	10 675	20.00	0.187
1978	9 401	118.90	1.265
1977	8 479	380.57	4.488
1976	8 015	29.51	0.368
1975	7 720	204.10	2.644
1974	11 101	122.82	1.106
1973	8 082	49.07	0.607
1972	7 106	193.25	2.719
1971	6 643	82.00	1.234
1970	6 996	796.71	11.388
Average Default Rate	1970 to 1986		2.216
	1974 to 1986		1.671
	1978 to 1986		1.463
	1983 to 1986		1.727
	1978 to 1987[2]		1.785

[1] $ 775 million without Texaco, Inc., Texaco Capital and Texaco Capital N.V. The default rate without these is 0.566% as of August 30.

[2] Through August 31, 1987, including Texaco (1.373% without Texaco).

Default Rates

The annual default rate is measured by summing the default amount over the calendar year and dividing that total into the outstanding amount of high yield bonds as of June 30th of that year. In this way, we measure the amount of defaults relative to the amount of eligible securities that could have defaulted. We in-

clude all defaults, both original issue high yield securities as well as 'fallen angels'.

The default rate in 1986 was 3.39%. This rate is somewhat difficult to analyze. On the one hand, the rate is quite high, especially for a non-recession year, reflecting an increased overall vulnerability to distress. And, the rate would have been even higher if exchange issues for distressed firms had not been successful in avoiding some defaults. Defaults were heavily concentrated in steel and energy issues, reflecting the economic realities of the U.S. On the 'positive' side, despite the 3.39% rate, and a somewhat lower loss rate, the total rate of return on a diversified portfolio of high yield debt was a respectable 16.1%. And the default rate was about 1.50% excluding LTV. This is a rate approximating the average annual rate over the 1974–1986 period (1.67%, Table 7). It appears that the combination of a bad recessionary period and two or three really large defaults are the necessary ingredients for default rates to rise to the 5–6% range in the future.

Of course, one must include LTV in default rate calculations and we find that the average annual rate over the 1974–1986 period was 1.67% with a slightly higher 1.73% over the last four years (1983–1986). The default rate on all corporate straight debt – investment and non-investment grade – rose to about 0.20 of one percent for the 1970–1986 period and 0.19 of one percent for the more recent 1978–1986 period.

In 1987, the default rate is 5.12% including Texaco and Texaco Capital. It was just 1% without these unusual defaults.

Default Losses

As in our earlier reports, we adjust the annual default rate to allow for the important option of selling the debt just after default, thereby realizing at least a partial return of capital. Any calculation of default loss should also consider the forgone interest payment on one semi-annual coupon installment. In 1986, the average price at the end of the default month on 56 defaulting issues was 35.5% of par, or a principal loss of 64.5% (assuming purchase at par). The average coupon rate on the 56 issues was 10.4% (11.2% median), resulting in an average net default loss of 2.37%. The calculations are shown in Table 8.

Table 8: Default Loss to Investors: 1986
(based on 56 Defaulting Issues)

Background Data	
Average Default Rate 1986	3.394%
Average Loss of Principal	64.5%
Based on Average Price After Default	(35.5% of Par)
Average Coupon Payment	10.4%
Median Coupon Payment	11.2%
Default Loss Computation	
Default Rate	3.394%
× Loss of Principal	0.645
Loss from Principal	2.189%
+ ½ Coupon Loss	0.176
Default Loss (1986)	2.365

1974–1986 Statistics

	Loss	Years	Wgt.
Default Loss 1974–1985	0.990%	12	92.3%
Default Loss 1986	2.365	1	7.7
Weighted Avg. Default Loss (1974–1986)	1.095%	13	1.00

The average default loss over the period 1974–1986 is 1.095% or about 110 basis points, as indicated at the bottom of Table 8. This calculation weights the 1986 experience equally to any other year and therefore assumes an equal investment in each year. Since 1986 was a relatively high default loss period in dollar amount and number of issues, an average weighted by the number of issues in each period would have been higher.

The default loss in 1987 is 1.4%, including Texaco. It is certainly appropriate to include Texaco at this point since the bonds were classified as non-investment grade and investors did lose on the default announcement.

In summary, the average annual loss on defaults to investors in high yield bonds has been 1.09% over the period 1974–1986, with annual losses ranging up to 2.37%. Even the recent (1986) relatively high default loss is still considerably below expected yield spreads which have been averaging over 4% in recent years. Unless there is a significant change in the relationship between spreads and losses, high yield bonds would seem to continue to provide attractive return-risk opportunities for investors.

Defaults by Original Bond Rating

Table 9 updates our prior compilations of defaults broken down by their rating distribution at various times prior to defaults. The proportion of 'broken' fallen angel defaulting debt is 23.3% (based on 189 issues, not including Texaco and its affiliates). If Texaco is included, that proportion swells to 29.7% (Table 9, top). When we shift to one year prior to default, the proportion of investment grade debt naturally decreases. That proportion is now 5.7%, down from 9.1% prior to 1986. At the six-month prior mark, the proportion is now 2.17% versus 2.8% in our earlier compilation.

We also indicate the statistics through 1987 (August) and, as you can, see the Texaco bankruptcy involving both triple and double A original issue ratings changes the look of the table. Still, 70.3% of the defaulting issues were originally lower rated 'junk' securities.

Original Issue Ratings of Defaults

Table 9 shows the original rating of almost 200 defaulting issues representing the vast majority of the $ 14.2 billion of defaulting dollars since 1970. As indicated above, almost 30% of the *issues* were originally rated as investment grade if you include Texaco. The proportion of *dollars* represented by original issue investment grade, however, was about 55%. If Texaco is not included, the issue proportion falls to 23% and the dollar proportion to 22%, i.e., 77% and 78% respectively for non-investment grade.

Liquidity Risk

Liquidity risk involves the ability to buy and sell securities at value-warranted prices, regardless of the size of the order. It is fairly well accepted that high yield debt securities have

Table 9: Rating Distribution of Defaulting Issues at Various Points Prior to Default

Including Texaco's default								
Original Rating	AAA	AA	A	BBB	BB	B	CCC	CC
Number	4	13	15	30	27	85	34	1
Percentage	1.91%	6.22%	7.18%	14.35%	12.92%	40.67%	16.27%	0.48%
Rating One Year Prior	AAA	AA	A	BBB	BB	B	CCC	CC
Number	0	0	2	11	29	108	68	9
Percentage	0.00%	0.00%	0.88%	4.85%	12.78%	47.58%	29.96%	3.96%
Rating 6 Months Prior	AAA	AA	A	BBB	BB	B	CCC	CC
	0	0	2	3	11	104	96	15
	0.00%	0.00%	0.87%	1.30%	4.76%	45.02%	41.56%	6.49%
Excluding Texaco's default								
Original Rating	AAA	AA	A	BBB	BB	B	CCC	CC
Number	0	3	11	30	27	83	34	1
Percentage	0.00%	1.59%	5.82%	15.87%	14.29%	43.92%	17.99%	0.53%
Rating One Year Prior	AAA	AA	A	BBB	BB	B	CCC	CC
Number	0	0	2	11	29	88	68	9
Percentage	0.00%	0.00%	0.97%	5.31%	14.01%	42.51%	32.85%	4.35%
Rating 6 Months Prior	AAA	AA	A	BBB	BB	B	CCC	CC
	0	0	2	3	11	84	96	15
	0.00%	0.00%	0.95%	1.42%	5.21%	39.81%	45.50%	7.11%

significantly higher liquidity risk than do investment grade and government bonds. This is probably due to the typically smaller size of the high yield issue, fewer potential buyers in down markets, and/or the relatively few dealers making markets in specific securities.

It is difficult to measure liquidity differences accurately, and we have not rigorously analyzed this risk aspect. Still, the most recent evidence points to increasing issue size and a more competitive dealer market in the high yield area. If these two factors are indeed critical to liquidity (or marketability) risk measurement and actual results, then the high yield market is becoming less risky in this area. To be fair to market critics, however, we need to point to the fact that in times of severe market pressure and negative information arrival, liquidity is a real concern to investors in high yield securities. The evidence thus far is that the market has remained fairly liquid during such events as the Boesky insider-trading scandal and the aftermath of the giant LTV bankruptcy.

Credit Quality – 1986/87

Much has been made about the dramatic increase in corporate debt in the United States and a major share of that concern involves corporate restructuring and junk bond financing. In particular, radical shifts in capital structures due to LBO and leverage recapitalizations have prompted concern from thoughtful analysts. No doubt, the specter of the impact of a serious recession on highly leveraged companies has heightened emotions.

We have always tried to take an objective view of the credit quality in the high yield market by observing individual firm as well as average and median Zeta scores of new issues. Zeta is a measure of the overall financial profile of companies encompassing such measures as corporate profitability, leverage, interest coverage, liquidity, size, cumulative profits, and earnings volatility[2]. A Zeta score less than zero indicates some degree of financial distress and the more negative the score the greater the similarity of that particular firm to companies that have gone bankrupt in the past. The average Zeta score for bankrupt companies has been about −4.0 based on data from the annual financial statement just prior to bankruptcy.

Table 10 lists the average Zeta score for each of the Moody's and Standard & Poor's Bond Ratings. Note that the average score gets worse consistent with lower ratings. Average Zeta scores by bond rating seem to be fairly stable over time with a fairly consistent interval between adjacent bond ratings.

Table 10: Average Zeta Scores by Rating Agency and by Rating Category *(Senior Debt Bond Rating)*

	(Sept.) 1987	1986	1985	1984	1983	1982	1981	1980	1979	1978
Moody's										
AAA	9.34	9.54	10.75	11.55	10.90	10.54	9.87	9.80	9.34	9.16
AA	7.36	7.36	8.03	7.77	7.74	7.57	7.61	7.48	7.56	7.49
A	5.33	5.05	5.32	5.48	5.35	5.42	5.60	5.62	5.23	5.28
BAA	2.77	2.97	3.30	3.42	2.96	2.88	3.43	3.44	3.08	2.93
BA	0.90	1.47	0.66	0.75	0.81	1.29	1.00	0.87	0.89	1.06
B	−2.01	−1.25	−1.50	−1.62	−2.18	−1.62	−0.69	−0.24	−1.80	−2.56
CCC	−4.62	−6.32	−7.63	−6.95	−4.50	−4.97	−3.69	−6.08	−5.45	−5.50
NR	−0.52	−0.22	0.35	1.33	1.09	1.36	–	–	–	–
S&P										
AAA	8.95	8.78	9.95	11.01	10.80	10.34	10.03	10.00	9.49	9.33
AA	7.02	6.82	7.55	7.48	7.58	7.29	7.58	7.48	7.32	7.30
A	5.29	5.19	5.34	5.47	5.20	5.39	5.65	5.62	5.30	5.29
BBB	2.94	2.87	3.26	3.51	2.83	2.71	3.61	3.75	3.51	3.31
BB	0.59	1.47	1.08	0.86	0.78	1.09	1.38	1.03	1.20	1.73
B	−1.70	−0.59	−1.88	−2.08	−1.56	−1.43	−0.79	−0.52	−1.42	−1.60
CCC	−6.27	−8.36	−5.24	−4.35	−4.23	−4.23	−2.59	−2.45	−4.29	−5.35
NR	2.40	2.83	4.20	4.52	0.82	0.64	–	–	–	–

Source: Zeta Services Corp's, Bond Rating Analysis section, in the quarterly *Analysis Book*, Winter/Spring 1987 (Hoboken, N.J.).

The average and median Zeta scores of new high yield bond issuers is shown in Table 11 and Figure 1. Note that the trend is, for the most part, positive over the period 1978–1987 with a drop in 1985. In the last one and a half years, however, new issue average Zeta scores have improved and the median score of those new issuers that we were able to calculate Zeta scores for has been even more impressive. We have only been able to get scores on about 40–50% of new issuers due to reporting differences or data problems. We try to get scores based on the post-new financing financials but this is not always possible (e.g., for 1987 so far). In most years, the average on new BB/B issuers is higher than the existing BB/B companies, again indicating a modest increase in new issuer quality.

Table 11: High Yield New Issuer Zeta Scores 1978–1987 *(Straight Debt only)*[1]

Year	Number of New Issues	Number of Companies with Zeta Scores	Median Zeta	Average Zeta
1978	52	27	−1.05	−0.96
1979	45	33	−0.84	−0.54
1980	43	24	−0.65	−0.40
1981	32	15	−0.03	−0.52
1982	48	20	0.30	0.29
1983	86	46	−0.15	−0.30
1984	124	53	0.35	0.31
1985	188	46	−0.24	−0.86
1986	234	91	0.24	0.18
1987[2]	116	38	0.91	0.53

[1] Does not include convertible or exchange offers.
[2] Through September 1987.

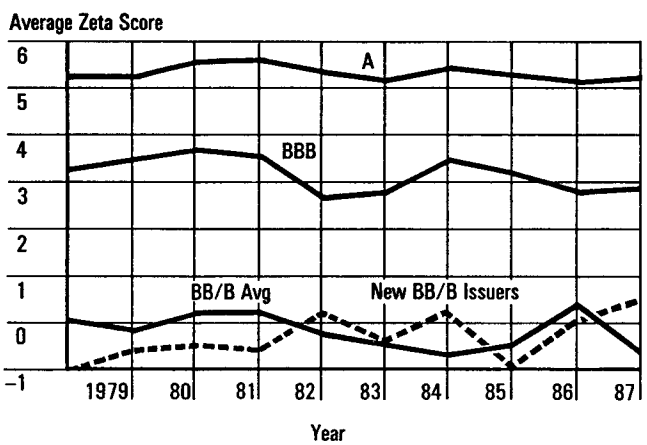

Figure 1: Zeta Scores: New versus existing issuers by Standard & Poor's rating (from Zeta Services Inc.).

Table 12: Most Recent Zeta Scores for High Yield New Issues January–September 1987 (from Spring 1987 Zeta Credit Reports)[1]

Issue Date	Issuer	Zeta	Date
07-23-87	Borg-Warner Holdings	9.65	12-86
04-21-87	Circus Circus Enterprises	5.90	01-87
09-10-87	Comdata Network	5.17	12-86
09-01-87	Supermarket General Corp.	4.67	01-87
07-08-87	Tyler	4.05	03-87
03-10-87	Allied Stores	3.46	10-86
01-26-87	Charter Medical	3.04	12-86
06-01-87	Gillette Holdings	2.90	12-86
03-05-87	Holiday Inns	2.82	12-86
03-18-87	Hyponex	2.79	12-86
01-28-87	Curtis Industries	2.50	12-86
01-27-87	Mitchell Energy & Development	2.35	01-87
02-11-87	Amstar	2.06	09-86
08-21-87	Carter Harley Hale Store	1.80	01-87
06-12-87	Kay Jewellers	1.63	12-86
05-05-87	Southdown	1.56	12-86
03-19-87	Union Carbide	1.53	12-86
07-16-87	Triangle Industries	1.20	12-86
07-09-87	Toro	1.00	01-87
05-27-87	Rule Industries	0.81	02-87
02-19-87	Lorimar-Telepictures	0.75	12-85
02-05-87	Masco Industries	0.62	12-86

[1] By descending Zeta score and Zeta scores greater than zero.

Of particular interest are those new issuers that have above zero Zeta scores. For example, Table 12 indicates a sample of 1987 new issuer Zeta scores that appear to exhibit impressive profiles. Again, the data for these scores was derived primarily from the year-end 1986 financials and does not represent how the firm looks after the financing (most importantly in terms of leverage and profitability changes). In summary, the new issuer Zeta score evidence contradicts those who claim that the recent increase in new issue volume has caused a deterioration in credit quality.

Concluding Comments

This report has presented evidence to indicate both the dynamic growth and favorable return-risk aspects of the high yield debt market. This market is to date essentially a corporate debt market phenomenon involving U.S. security markets. There is some evidence that the market is expanding, involving municipal debt and the enormous country debt universe. Understanding the dynamics of this evolving market would seem to be an important step to successful analysis and investment performance.

Footnotes

[1] For the original discussion of duration, see MACAULEY (1938). ALTMAN and NAMMACHER (1987) present more recent discussion and empirical results.

[2] See E. ALTMAN (1983), Chapter 4, for more details.

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