

Return Dynamics of Distressed Bonds

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Active management of distressed debt has received comparatively little research attention.¹ Instead, basic sources, such as Moyer [2005] and Owsley and Kaufman [2005], have focused mainly on credit analysis and valuation at the individual security level. One early study of active management, Fridson and Gao [2002], measured the market's accuracy in valuing the difference between a senior position and a subordinated position in a defaulted credit. Altman and Hotchkiss [2006] addressed bankruptcy prediction; recovery rates on defaulted bonds; capital structure arbitrage (i.e., the attempt to exploit temporary relative value anomalies among a single issuer's bonds), and comparative values of distressed bonds and distressed loans. Finally, Fridson, Covey, and Sterling [2008] investigated the wisdom of using a price-based trading rule to limit losses on distressed bonds. With this area of research still in its early stages, many assumptions on which distressed debt managers operate remain to be tested.

The fundamental premise of investing in high-risk bonds is that some issues in the portfolio will default, but that the recoveries on those issues, combined with premium returns on the remainder, will produce a competitive risk-adjusted portfolio return. In the study presented in this article, we stratify the distressed debt universe in various ways to test whether certain subgroups within

this universe constitute lower-risk or higher-return pools than other subgroups or than distressed bonds in aggregate, and thereby representing superior investment opportunities. We utilize subgroup-specific default rates and total returns as proxies for overall risk and return.²

In the first part of this study, we compare default rates and total returns of a small group of distressed bonds rated double-B with those of the distressed universe as a whole and with issues rated single-B or triple-C, respectively, finding statistically significant differences in favor of the double-B contingent for default frequencies as well as bear market returns. In the second part of this study, we test for differences in two groups of approximately equal size—public bonds of private issuers and public bonds of public issuers—and fail to find statistically compelling advantages held by either group.

Limited historical data availability and, in some instances, sample size hampered our ability to conduct more comprehensive research along our paths of inquiry. Nevertheless, we find information content in agency ratings, which are widely viewed as unimportant in the speculative-grade market. Our findings also call into question a preference among distressed debt investors for bond issues of public companies over their private counterparts.

DOUBLE-B DEFAULT RATES AND RETURNS

It is obvious even to casual observers of the speculative-grade debt market that differences in bond ratings do not translate linearly into differences in risk premiums, as measured by option-adjusted spreads (OAS).³ Considerable spread overlap exists between rating categories. In the most extreme instances, a particular double-B issue may be quoted at a wider OAS than a particular triple-C issue.

Note that an observed disparity between spread and rating does not necessarily prove that the market and rating agencies disagree about an issuer's default risk. This is because a bond's spread reflects not only its default risk, but also its recovery expectation in case of default, as well as its secondary market liquidity. A small, infrequently traded issue may carry a liquidity premium large enough to make its total spread greater than the total spread on a larger, more deeply traded issue with higher default risk. Conversely, the spread on a sizable bond issue may widen dramatically in response to a sudden and significant increase in credit risk in response to the market's near-term inability to place such a large volume paper. Under these circumstances, the large issuer's bonds may be offered for a time at spreads wider than the prevailing spreads on bonds rated a few notches lower.

In the first part of our study, we examined whether the double-B subclass of the distressed universe represents a superior investment opportunity compared to the distressed asset class as a whole. We assessed two criteria—historical default rates and total returns—to quantify the relative attractiveness of the two groups.

Defining a Subcategory

On February 29, 2008, the OAS on 27 double-B bonds within the Merrill Lynch High Yield Master II Index (Ticker: H0A0) exceeded +1,000 basis points (bps). According to Fridson, Covey, and Sterling [2008], the mean one-year default probability for bonds above this threshold for defining distress is 21.58%. By contrast, Emery, Ou, and Tennant [2008] reported a mean one-year Ba default rate of only 1.10%.⁴

In light of this seemingly irreconcilable difference in one-year default expectations within the same rating category, we hypothesized that the combination of the highest speculative-grade rating and ultra-wide spreads defines a distinct subcategory that may offer distressed

investors an exploitable opportunity with superior risk–reward opportunities. Specifically, we proposed that double-B issues with distressed spreads are less prone to default than distressed issues in general and provide downside protection for returns in a bear market. If correct, this would mean that ratings stratify default risk and expected return within the broad category of distressed debt.

Methodology

For the default portion of this study, we calculated default rates for the double-B subsector of the distressed universe and for the distressed universe as a whole. For the return portion, we compared the year-by-year returns of double-B distressed issues with issues matched by OAS, but rated lower than double-B.

Analysis. Exhibit 1 shows a clear relationship between ratings and the incidence of distress. While 55% of triple-C bonds were in distress as of February 29, 2008, the comparable figure was 20% in the single-B category and only 5% in the double-B category.

Distressed default rates. To test our hypothesis that double-B issues with distressed spreads are less prone to default than distressed issues in general, we examined a sample consisting of all issuers represented by one or more bonds in the Merrill Lynch High Yield Distressed Index (H0DI) on December 31 of any year from 1996, the year of the index's inception, through 2006.⁵ The count varies from year to year, with a maximum of 37 (2002) and a minimum of 1 (1996, 1997, 2004, and 2005). Our total sample includes 73 issuers.⁶ Five issuers appeared in the distressed index in two different years; initial and repeat appearances by a single issuer were treated as separate observations.

Eight double-B issuers defaulted in the year following their December 31 appearance in the index, which

EXHIBIT 1

Percentage of Issues in Distress, February 29, 2008

Rating Group	Issues	
	Total	OAS > 1,000 bps (%)
Ba	577	4.68
B	714	19.89
Caa–C	414	54.59
Total	1705	23.17

Source: Merrill Lynch & Co.

represents a one-year default rate of 10.96%, as shown in Exhibit 2. In issue terms, the rate is an almost identical 10.76%. To put the double-B distressed default rate into context, it falls between the default rates for all issuers rated B (4.48%) and all issuers rated Caa (14.67%), as reported by Emery, Ou, and Tennant [2008]. (The Ba rate, as noted previously, is 1.10%.)

At 10.96%, the default rate on double-B distressed issuers is just over half the 21.58% rate on all distressed issuers reported by Fridson, Covey, and Sterling [2008]. Notwithstanding the modest size of the double-B distressed sample, its default rate is statistically lower than the overall distressed default rate at the 97% confidence level.

Distressed returns. Having shown a reduced historical default rate for double-B issuers within the distressed universe compared to all distressed issuers, we proceeded to ask whether distressed debt managers could improve their performance by strategically underweighting or overweighting double-Bs under differing market conditions. In addition, we explored whether the difference in total return between double-B distressed and all distressed issues, if any, is attributable to the double-B rating, per se, or whether it is a function of the “market rating” (i.e., the OAS), which can be ascertained without reference to agency ratings. To answer this question, we compared the year-by-year returns of double-B distressed issues with issues matched by OAS, but rated lower than double-B.

Constructing a sample of matched pairs. For our initial double-B distressed sample, we considered all bonds included in both the Merrill Lynch U.S. High Yield Double-B Index (H0A1) and the Merrill Lynch U.S. High Yield Distressed Index (H0DI) on December 31 of a year from 1996 to 2006, inclusive.⁷ In addition, we required that pricing information for each bond was available in the performance observation year (i.e., the January 1–December 31 period following an issue’s selection for the sample).

It is possible for a bond to appear in the sample in more than one year and, consequently, to account for more than one observation. Furthermore, an issuer may be represented by more than one issue in a given year. In total, 155 bonds satisfied all of our double-B distressed selection criteria and accordingly were matched with issues rated single-B or triple-C with approximately the same OAS. An examination confirmed that the portfolio of matched samples closely resembles its equivalently sized, corresponding-year double-B distressed portfolio in terms of median OAS and standard deviation of OAS.

Return comparison. To investigate how the 155 double-B distressed issues in our sample performed against the distressed index in their respective performance-observation years, we calculated each individual issue’s percentage total return according to one of the following two formulas:

1) Nondefaulted bonds

$$\frac{(\text{Price at Terminal Date} - \text{Price on Initial Date} + \text{Coupon Income})}{\text{Price on Initial Date}}$$

where *Initial Date* is December 31 preceding the performance observation year; *Terminal Date* is December 31 of the performance observation year or, if the bond ceases to be priced prior to December 31, the price on the last day on which the bond is quoted;⁸ and *Coupon Income* is one times the annual coupon rate if the bond does not default.

2) Defaulted bonds

$$\frac{\text{Value at Terminal Date} - \text{Price on Initial Date}}{\text{Price on Initial Date}}$$

EXHIBIT 2

Distressed Default Rates

	All Distressed Issuers ¹	BB Distressed Issuers ²
Count	783	73
Defaults within One Year	169	8
Percent	21.58%	10.96%

Sources: Edward I. Altman, Merrill Lynch & Co.

Notes: ¹Fridson, Covey, and Sterling [2008], alternating years from 1997 to 2005. ²Distressed issuers as of year-end 1996 through year-end 2006.

where *Initial Date* is December 31 preceding the performance-observation year; *Terminal Date* is December 31 of the performance observation year; and *Value at Terminal Date* is the sum of

- 1) semiannual coupon, if any, scheduled for a date earlier than the default date;
- 2) price at default; and
- 3) interest on the preceding Items 1 and 2, through December 31 of the performance-observation year, calculated at the six-month T-bill rate as of the default date.

Results

The 155 double-B distressed issues in our final sample are distributed annually as shown in Exhibit 3. Reflecting large year-to-year swings in the total number of distressed issues, the size of the double-B subset varies widely over the 11-year observation period, from 0 in 2007 to 83 in 2003.

Aside from 2003, the only year in which the sample of double-B distressed issues was sufficiently large for valid statistical analysis was 2001, with 37 bonds. In those two years (2001 and 2003), the relative performance of the

double-B segment appears to be highly dependent on the return of the Distressed Index as a whole. In the negative total return year 2001, 36 of 37 double-B issues (97.3%) outperformed the index. But 75 of 83 double-B issues (90.4%) *underperformed* when the Distressed Index posted a highly positive return in 2003.

Without further reflection on the context, our finding that double-B distressed issues outperformed the Distressed Index in bear markets and underperformed in bull markets is unsurprising. As less default-prone, comparatively low-risk issues, they *should be* less volatile than the distressed universe.

To determine if distressed managers can identify a low-risk set of bonds by considering ratings rather than by relying on yield spread as an indicator of risk, we calculated total returns of double-B distressed issues and their matched samples for the bear market performance-observation year of 2001 and the bull market year of 2003.⁹

As shown in Exhibit 4, the double-B distressed issues outperformed the Distressed Index far more dramatically in the bear market year of 2001 than did the matched sample. Against a return of -17.42% for H0DI, the matched sample posted a modestly positive return, 6.01%,

EXHIBIT 3

Performance of Double-B Distressed Issues versus the Distressed Index 1997–2007, annually

Performance Observation Year	Double-B Distressed Issues			Distressed Index	
	Outperform	Underperform	Total	Number of Issues	Total Return (%)
1997	0	1	1	30	-5.02%
1998	0	1	1	27	-26.23%
1999	2	0	2	146	-6.59%
2000	4	2	6	135	-24.52%
2001	36	1	37	508	-17.42%
2002	11	7	18	375	-22.46%
2003	8	75	83	563	78.71%
2004	1	3	4	154	24.78%
2005	1	0	1	85	-15.95%
2006	0	2	2	100	42.80%
2007	0	0	0	33	-12.07%
Total	63	92	155	2,156	

Sources: Bloomberg, Merrill Lynch & Co.

EXHIBIT 4

Total Return, Selected Years

Year	Total Return (%)		
	Double-B Distressed	Matched Sample	Distressed Index
2001	54.38%	6.01%	-17.42%
2003	42.68%	43.87%*	78.71%

Note: *Excludes one outlier that would raise the total return to 59.47%.

Sources: Bloomberg, Merrill Lynch & Co.

while the double-B distressed sample generated a staggering 54.38% return. That figure exceeds the return posted by the Distressed Index in all but one of the 11 years in the observation period.

Reversing the strategy in the bull market year of 2003 does not produce a comparable benefit. In 2003, the double-B distressed sample only negligibly underperformed the matched sample, 42.68% versus 43.87%, excluding one highly distorting outlier in the matched sample.

Investment Implications

Much can be gained by identifying and purchasing ultra-high-yielding bonds that carry a significantly lower probability of default than the distressed asset class overall.¹⁰ In 8 of the past 11 years, if a bond out-yielded Treasuries by 1,000 bps and held its price for a year, its total return advantage over Treasuries exceeded the return premium achieved by the Merrill Lynch High Yield Distressed Index.

In addition, our study shows that from a return perspective, selecting distressed issues on the basis of a double-B rating is a more effective means of cushioning downside price moves in a bear market than by relying on spreads as indicators of risk. Our analysis does not support the corresponding bull market strategy of underweighting the double-B component of the distressed universe as the distressed double-B portfolio only negligibly underperformed its matched sample in 2003.

Taken together, our findings demonstrate that double-B bonds constitute a low-risk subgroup within the distressed universe that outperforms the sector as a whole in bear markets, performs in line with the sector in bull markets, and carries only about half the default risk of the average distressed issue. In the present market environment of rising default rates, which implies a poor

return for the Distressed Index, overweighting the double-B distressed segment could constitute an attractive defensive play for distressed debt managers.

PRIVATE VERSUS PUBLIC DEFAULT RATES AND RETURNS

U.S. securities laws permit a privately owned company to issue public bonds. The situation arises frequently in the high-yield category as a result of issuance to finance leveraged buyouts. While a public debt offering imposes certain disclosure requirements, the offsetting advantage is access to a larger, less-restricted market, generally with less-restrictive covenants, than the private debt market offers.

From the investor's standpoint, public bonds of private issuers (*public/privates*) may entail an information disadvantage relative to public bonds of public issuers (*public/publics*). Rating agencies also treat private status as a negative, qualitative factor based on the view that private companies, compared to public companies, have less financial flexibility and investor familiarity.

Reflecting concerns about access to capital, high-yield investors traditionally have preferred public/publics to public/privates, all else being equal. Over the years, this preference has become less acute as the major leveraged buyout sponsors have demonstrated a capital-raising prowess that rivals the funding capability of the public equity market. Still, nondistressed high-yield investors indicate that they would give up at least a few basis points of yield for the advantage of holding the bonds of a public company.

A risk premium to hold public/privates is justified, however, only if the documented performance of public/privates indicates higher risk. In the nondistressed sector, a recent study of total returns over a reasonably wide range of market environments did not demonstrate greater risk in public/privates than in public/publics. Focusing on default risk and on returns, the next section examines the question of whether private versus public ownership of an issuer is a genuinely useful criterion for security selection in a distressed context.

Sample

To obtain a satisfactorily large sample, we focused on the most recent market cycle's peak default year, 2001, which featured a global, issuer-based default rate of 10.60%

EXHIBIT 5

Description of Sample

	Bond Type		
	Public/Public	Public/Private	Total
Count	134	140	274
Option-Adjusted Spread (bps)			
Median	–	–	1,823
Mean	–	–	2,631
Percentage Above-Median	50.00	50.00	–
Percentage Below-Median	50.00	50.00	–
Median Maturity			7/8/2007 (6.52 Years)

Source: Merrill Lynch & Co.

for the speculative-grade category and a distressed issue count on December 31, 2000, of 508. Of the 508 issues, we eliminated all issues of non-U.S.-domiciled issuers. For the remaining issuers, we selected one bond each, using the criterion of option-adjusted spread closest to the sample's median of 1,917 bp.¹¹

Presented in Exhibit 5, the final sample for the default risk portion of our study consists of 274 issues, almost evenly divided between public/publics (134) and public/privates (140). The final sample's median OAS is 1,823 bps, indicating a market-estimated default risk similar to that of the initial sample. No material skewing within the subsamples is evident at the beginning of the test period, as both the public/publics and the public/privates are split exactly 50/50 between above-median OAS and below-median OAS.

Analysis

This subsection discusses the default rates and returns of the subsample.

EXHIBIT 6

Distressed Default Rate, 2001

	Bond Type		
	Public/Public	Public/Private	Total
Count	134	140	274
Defaults (Number)	34	44	78
Default Rate (%)	25.37	31.43	28.47

Sources: Bloomberg, Merrill Lynch & Co.

Subsample default rates. For each class of bonds in our sample, we counted the number of defaults that occurred during 2001, as identified by a Bloomberg indication (DEFAULT CORP ACTION) on the issue page under Corporate Actions.

Exhibit 6 shows an overall default rate of 28.47% for the entire sample, calculated as a weighted average of a 25.37% default rate for public/publics and a 31.43% default rate for public/privates. This figure is reasonably consistent with the long-run median one-year default rate on distressed issues of 23.53%, previously reported by Fridson, Covey, and Sterling [2008]. The difference between the public/public and public/private default rates, however, is statistically significant with only 73.15% confidence, too low a level to discount chance as a probable determinant. Our results imply that systematically favoring public/publics over public/privates is unlikely to give distressed debt managers a robust performance edge, particularly in light of the fact that they tend to hold somewhat concentrated portfolios.

Subsample returns. Although default rates contain useful information about bond performance, the bottom line for distressed investors is total return. This portion of our study compares total returns on distressed public/privates and distressed public/publics, focusing on the peak default year of 2001, a market environment particularly prone to produce quality-related differences in return.

The final sample for the total return portion of our study consists of only 136 public/privates and 134 public/publics, for a total of 270 issues,

EXHIBIT 7

Total Return Comparison, 2001

	Bond Type		
	Public/Public	Public/Private	Total
Count	134	136	270
Mean Total Return (%)	3.99	8.39	

Sources: Bloomberg, Merrill Lynch & Co.

because prices for 4 public/privates were unavailable after December 31, 2000.

We calculated each individual issue's percentage total return according to one of the following two formulas:

1) Nondefaulted bonds

Annual Coupon Rate + Price Change
from December 31, 2000, to December 31,
2001.

Our calculation does not include the minor amount of reinvestment income on semiannual coupons during our 12-month observation period.

2) Defaulted bonds

Coupon Paid Prior to Default (if any) +
Price Change from December 31, 2000, to Ter-
minal Price + Reinvestment of Terminal Price
at Six-Month T-Bill Rate in Month of Default.

where *Terminal Price* is the end-of-month price in the month of default.

Exhibit 7 summarizes total return performance for our sample of 270 bonds. Contrary to our hypothesis, the public/private subsample delivered a total return of 8.39% compared to 3.99% for the public/public subsample. Despite this comparatively large absolute difference in returns, however, the result is statistically significant only at the 47.7% confidence level due to a large variance in the underlying data.

Investment Implications

The distribution of option-adjusted spreads within our test sample does not indicate discrimination in the distressed debt market between public/publics and

public/privates. Based on our analysis, however, we cannot conclude that this represents an exploitable market imperfection. While we found a higher default rate on public/privates than on public/publics in 2001, the difference is not compelling in statistical terms.

We also observed no statistically significant difference in total returns between public/publics and public/privates, even under conditions that should have magnified the impact of any bona fide differences in risk between the two types of issues. In conclusion, our analysis provides no support for favoring public/publics over public/privates within the distressed universe.

ENDNOTES

¹The distressed debt asset class consists of bonds, loans, and other claims that are either in default or at substantial risk of default, as indicated by market risk premiums. For nondefaulted issues, a yield spread over Treasuries greater than 1,000 bps is a commonly used threshold for defining distress.

²For the present discussion, the default rate is defined as the trailing-twelve-month global issuer-based rate reported by Moody's Investors Service.

³Option-adjusted spread (OAS) is a measure of a security's extra yield over the yield of a comparable Treasury security after accounting for any options (calls or puts) or sinking funds.

⁴For the period 1970 to 2007.

⁵This subset of the Merrill Lynch Master II Index consists of all issues with option-adjusted spreads greater than +1,000 bps. It contains no defaulted bonds because such issues have no yields or spreads and, therefore, do not qualify for inclusion in the Master II.

⁶One double-B bond in the initial sample, which ultimately defaulted, was a subordinated obligation of a triple-B company. We eliminated that issuer from our analysis to maximize the comparability of our results with other reported default rates.

⁷The inception date of both indices is December 31, 1996.

⁸In the absence of a better alternative, this procedure implicitly assumes that the bond's value did not change further during the remainder of the year. Our overall results are not highly sensitive to this measurement imperfection.

⁹Median option-adjusted spread for the 37 issues in the 2001 double-B distressed sample was 1,486 bps, with a standard deviation of 698 bps, compared to a median OAS of 1,472 bps and a standard deviation of 692 bps for the matched sample. For 2003, the corresponding numbers were 1,426 bps and 830 bps, respectively, for the double-B distressed sample and 1,428 bps and 835 bps, respectively, for the matched sample.

¹⁰We leave aside the occasional case in which the price is so low that the investor's downside is covered whether the issuer remains current or defaults.

¹¹For the total return portion of this study, in the instance where an issuer had multiple issues outstanding and the issue with the option-adjusted spread closest to the median dropped out of the index during 2001, we substituted the issue with the spread next closest to the median.

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