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Commentary

Suddenly Structure Mattered: Insights into Recoveries of Defaulted Debt

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(Editor's note: What follows is an updated version of the story that was initially published May 15, 2000.)

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Today's economy is one of the strongest in history. In 1999 alone, the S&P 500 returned nearly 20% and the GDP grew by 5.7%. Despite the idyllic economic environment, companies defaulted on their debt at a record rate in 1999. The RatingsDirect article "Greater Risk Means More Defaults in 1999" reported that a record 75 rated or formerly rated companies in the U.S. defaulted on $32.4 billion of debt, and that the worldwide default rate of 2.15% was nearly twice that of 1998, surpassed only by the default rates of the 1989-1991 junk bond fallout. In the first four months of 2000 alone, more than 25 companies have filed for bankruptcy. Lenders clearly need a well-defined credit model that encompasses the various risk elements of default and recovery.

In an effort to define those elements, Portfolio Management Data, LLC (PMD), with the support of Standard & Poor's, has created a database that tracks the value of public debt instruments' recoveries from default. (On May 3, 2000, Standard & Poor's announced its acquisition of PMD.) The database currently contains over 1,100 publicly defaulted instruments from the period from 1987 to 1996. PMD sources data from publicly filed bankruptcy and SEC filings as well as news reports. PMD appraises recoveries and, after the debt markets have had the opportunity to absorb and evaluate the instruments, adds them to the database. The database prices recoveries by valuing the instruments at three different points in the recovery process: emergence, settlement, and liquidity event:

- Emergence Pricing: Trading prices of prepetition instruments at time of emergence.
- Settlement Pricing: Earliest available trading prices of the instruments received in settlement.
- Liquidity Event Pricing: Value for illiquid settlement instruments at the time of a liquidity event, which is the event that occurs at the first date a price can be determined (such as acquisition of the company subsequent to default, refinancing, subsequent bankruptcy, distressed exchange or significant rating upgrade).

The database provides nominal as well as discounted recoveries (discounted by the prepetition interest rate from last cash payment to emergence). To inquire about PMD's recovery database, please contact David Keisman at (212) 209-6203, or visit www.pmdzone.com, PMD's Web site.

During the past three years, PMD and Standard & Poor's have worked together to analyze the recovery database for insights into recovery valuation. A year ago, this partnership published on RatingsDirect "Recovering Your Money: Insights into Losses from Defaults" which demonstrated the "virtuous

circle” -- the fact that the use of increasing subordination or improved collateral leads to higher recoveries. In light of 1999’s high corporate default rate and recent analysis of the relationship between high-yield bond recoveries and seniority rankings, this update further explores the topic.

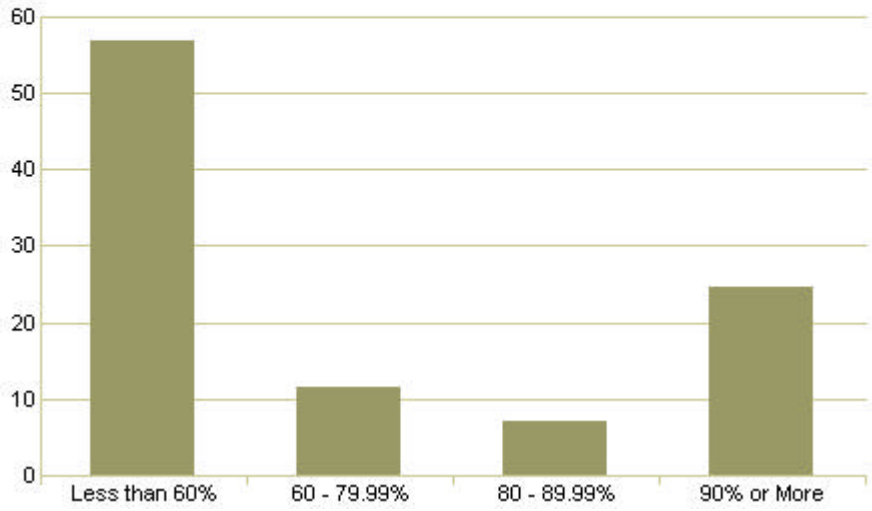
The data set ("WJ Data Set" or "WJDS") underlying this article contains 954 instruments from PMD's database, for the emergence period of 1987 through 1996. For companies that have undergone multiple defaults, the study includes only emergence instruments that did not subsequently default within this 10-year period. Other than those recoveries for which pricing was unavailable, the WJDS excludes only the default and cures, and the "time evaders"-- those defaults for which firm dates of default and emergence could not be pinpointed: distressed purchases and exchanges, and restructurings. As a result of excluding these types of recoveries, the WJDS is more conservative than the loss database as a whole, since all these time-evaders resulted, as would be expected, in a 100% recovery. This update approaches the topics of default and recovery with an expanded data set of defaulted instruments and looks not only at the significance of debt structure, but also the effects of time and adversity

The Significance of Structure

Default hurts. A lot. Ten percent of the WJDS recovered less than 2% of par, 20% less than 10%, 25% less than 16%, and 50% less than 45%. For lenders, these are daunting recovery statistics. (See Chart 1 for distribution of recoveries for all instruments in WJDS.) Moreover, if certain qualities of credits result in lower-than-average recovery opportunities, lenders to these credits should receive appropriate compensation for that additional risk. So how should lenders identify and manage that risk?

Chart 1

Distribution of Present Value of Recoveries for All Data in the WJ Data Set



Instrument type is the first indicator to lenders of the risk associated with an investment. Bank loans are senior, almost always secured, and therefore less risky than senior notes, which are senior to subordinated debentures. Recovery by instrument type reinforces this industry standard. The WJDS has a mean recovery for all instruments of 51.14%. (See Table 1: Average Recoveries for WJ Data Set.) However, the associated coefficient of variation (CV) is high, reflecting that the variation on the mean recovery is significant.

In contrast, bank debt has a substantially higher mean recovery and a much lower CV; likewise, the statistics associated with senior secured debt show, on a diluted level, the same structural benefit of seniority. The "poor cousins" of debt structure are the senior notes and those ranked below. These instruments have a much lower mean recovery and a much higher CV. What makes these instruments different from the bank and senior secured debt above? Debt cushion, or the percentage of debt below the instrument, and collateral.

Table 1: Average Recoveries for the WJ Data Set

	Mean recovery (%)	Median recovery (%)	Standard deviation (%)	Coefficient of variation* (CV)	Count
All Instruments	51.14	44.94	37.38	73.09	954
Bank debt	83.54	100.00	25.59	30.64	264
Senior secured notes	63.75	70.69	31.06	48.72	141
Senior notes	49.92	42.92	34.72	69.55	125
Senior subordinated notes	28.18	18.29	28.26	100.28	395
Junior subordinated notes	12.81	5.47	18.42	143.83	29

*Coefficient of Variation: Standard Deviation/Average Recovery. Coefficient of Variation (CV) normalizes standard deviation to the mean and reflects how much deviation occurs in the data set for each additional dollar, plus or minus, of the average recovery.

The average debt cushion for the all instruments in the WJDS is 22.96%. Bank and senior secured debt have a higher-than-average debt cushion (48.99% and 23.94% respectively), as would be expected, due to their senior nature. In contrast, the "poor cousins" have much less cushion: Senior notes have an average debt cushion of 20.22%; subordinated, just 7.77%; and junior subordinated, none. While subordination does increase leverage and, therefore, risk, it also provides cushioning for the senior debt. Senior instruments such as bank loans and senior secured debt have strong recoveries--not just because they have senior claims to repayment, but also because there are other interests beneath them to absorb the fallout from default. The borrower has more cash available without affecting the senior debt's claim to payment and collateral.

Collateral influences the quality of recoveries as much as instrument. (See Table 2: Average Recoveries for Collateral Classes for WJDS.) As would be expected, a strong correlation exists between instrument and collateral. However the correlation coefficient is not strong enough to degrade the precision of estimation and, therefore, it is unnecessary to discard either of these variables. For the purposes of this analysis, collateral was separated into five classes. Since collateral types are descriptive in nature, a multivariate regression analysis using dummy variables grouped the 17 collateral types into five classes. Then, using those five collateral classes as the dummy variables, a second regression line was created to establish, based on the degree of influence upon recovery value, ordinal ranks.

- Class 1 contains the highest quality--all assets, inventories, and receivables;
- Class 5 represents no assets; and
- Classes 2, 3, and 4 (the intermediate classes) reflect declining quality, liquidity, and coverage.

As would be expected, as the quality of the collateral supporting the security diminishes, the recovery declines. Furthermore, a significant difference in recovery value exists between instruments secured with any type of collateral and those without collateral. The mean recovery for collateral type Class 4, which encompasses collateral with extremely low potential for significant liquidation value, is 61.93%, nearly twice that of Class 5, which is unsecured.

The analysis makes it clear that some collateral--any collateral--is better than no collateral.

Table 2: Average Recoveries for Collateral Classes for WJ Data Set

	Mean Recovery (%)	Median Recovery (%)	Standard Deviation (%)	Coefficient of Variation (CV)	Count
All Instruments	51.14	44.94	37.38	73.09	954
Class 1: All Assets, Inventory & Receivables	85.13	100.00	24.85	29.19	160
Class 5: Unsecured	33.78	24.65	32.08	94.95	569

The combined impact on structure, of debt cushion and collateral quality, is equally apparent. (See Table 3: Value of Structuring for WJ Data Set.) Not only do greater debt cushions increase mean recoveries and decrease corresponding CVs, but excluding unsecured instruments from a cohort further reduces the potential for loss.

Table 3: Value of Structuring for WJ Data Set

	Mean Recovery (%)	Median Recovery (%)	Standard Deviation (%)	Coefficient of Variation (CV)	Count
All Instruments	51.14	44.94	37.38	73.09	954
50% or Greater Debt Cushion	82.55	100.00	28.22	34.18	184
50% or Greater Debt Cushion and Any Type of Collateral	89.84	100.00	18.62	20.72	151

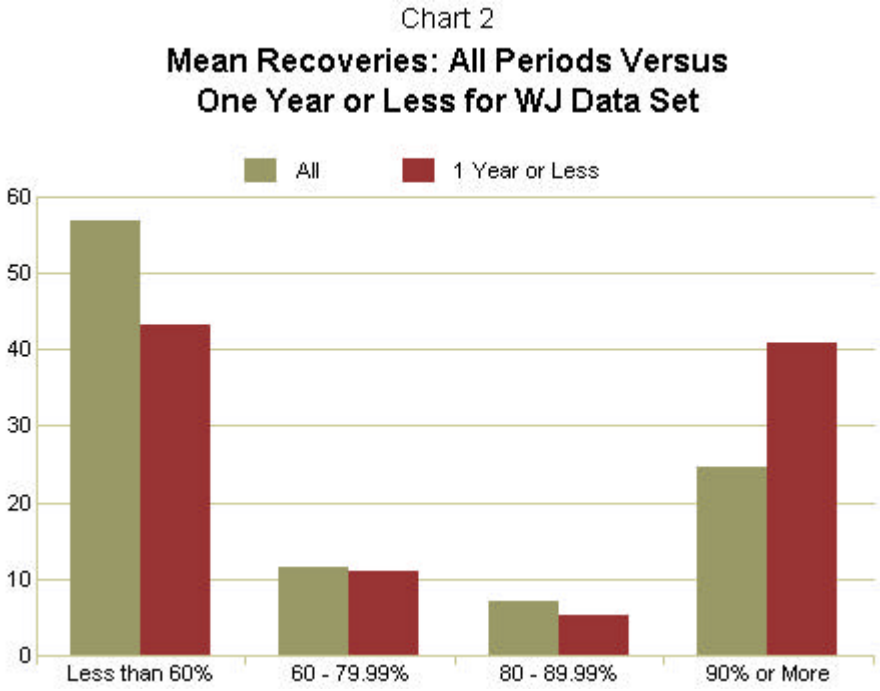
The improvement of mean recoveries with increased debt cushion and collateral quality clearly reinforces the importance of what seems obvious: the "virtuous circle." However, is this an age-old theorem or a lesson of time?

Lesson in a Bottle

The defaults of 1999 necessitate the continuation of the search for new insights into recovery values and for a model to predict a lender's potential loss given default of an instrument. In particular, what is the influence of time in default--the period between the last cash payment and emergence? Furthermore, have changes in debt structuring occurred over time, from 1987 through 1996? Results indicate that not only is time in default significantly correlated with the value of recovery (See Table 4: The Price of Time for WJDS), but that emergence within the first year of default is the most rewarding. Chart 2 contrasts the recovery dispersion data for all default time lengths with those that lasted a year or less. The chart shows clear evidence of the benefits of a short recovery period. Evidence also indicates, however, that emergence after the first year of default is much more expensive today than it was 10 years ago.

Table 4: The Price of Time for WJ Data Set					
	Mean Recovery (%)	**Median Recovery (%)**	**Standard Deviation (%)**	**Coefficient of Variation (CV)**	**Count**
All Instruments	51.14	44.94	37.38	73.09	954
One Year or Less	64.87	77.34	36.68	56.54	241
More than a Year	46.49	39.67	36.48	78.47	713

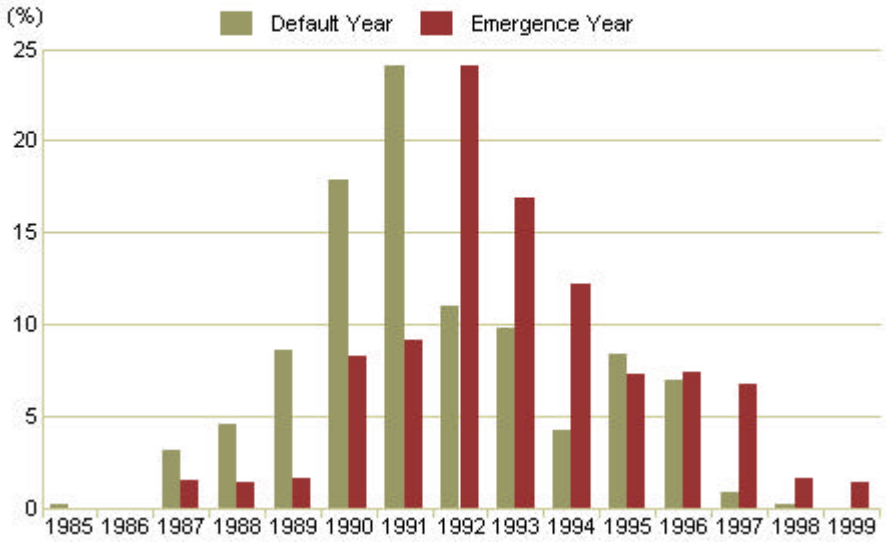
Chart 2



Lending as an institution and loans as financial instruments have changed dramatically since 1980. The innovative mechanics of the junk bond kingdom, which created and financed the excesses of LBO frenzy, awed the financial markets of the early 1980s. Debt financing occurred on a scale the size of which had never been seen before. Twenty-five billion dollars of debt was issued to finance the LBO of one company--RJR Nabisco. The subsequent collapse, however, of Drexel Burnham's house of cards, in conjunction with some precipitous downturns in the stock market, caused many companies, mostly highly leveraged, to default on their debt at an unprecedented rate during 1990 and 1991. (See Chart 3: Timing of Defaults and Emergences for WJDS.)

Chart 3

Timing of Default and Emergences for WJ Data Set



The 10 largest bankruptcies in the database total $22.03 billion and include Federated Department Stores, R.H. Macy, Southland, and Charter Medical. Eight of those defaults ($17.41 billion) occurred from 1989 to 1991. (R.H. Macy held out until January 1992.) The junk-bond tumult of the 1980s contributed to debt defaulting on an unprecedented scale. Consequently, the fear pervaded the market that all the multimillion-dollar-fee mega-LBOs hovered on the edge of default, and the leveraged loan market nearly shut its doors. Arrangers as well as lenders received a crash course in bankruptcy. As a result, only well-structured deals made it to market. Suddenly structure mattered.

In analyzing the effects of time and economic events, the WJDS was split into two cohorts based upon date of emergence. Utilizing the emergence date of Dec. 31, 1990, as the dividing point allows each cohort to pick up a relatively even number of defaults resulting from the three primary economic shocks of the period: the 1987 stock market crash, the collapse of Drexel Burnham and the junk bond market, and the 1990 stock market crash. The data in table 5 indicate no significant difference between the two time period cohorts. Analysis of the components of structure, however, reveals developments in the relevance of collateral and debt cushion.

Table 5: Mean Recoveries for Time Cohorts for WJ Data Set

	Mean Recovery (%)	Median Recovery (%)	Standard Deviation (%)	Coefficient of Variation (CV)	Count
All Instruments	51.14	44.94	37.38	73.09	954
1990 & Prior Cohort	42.28	33.04	34.20	80.89	124
1991 Plus Cohort	53.49	50.80	37.29	69.71	829

Prior to 1991, lenders primarily received recovery benefit from only one component of structure: instrument type (as indicated by the strong t-Statistic associated with the instrument variable in table 6). Collateral and debt cushion failed to influence structure in any predictable fashion; their corresponding t-Statistics indicate no significant effects on recovery. In contrast, the statistics for the "1991 Plus" analysis reveal an increased importance of subordination and collateral. In this cohort, greater debt cushion improves recoveries; lesser-quality collateral weakens recoveries. It appears that the tremendous bankruptcies of the 1990-1991 period taught the debt markets a brutal lesson on the importance of all elements of structure. In addition, beginning in 1991, time in default had increased significance; each year in default had an obvious price.

Table 6: Multivariate Linear Regression Statistics

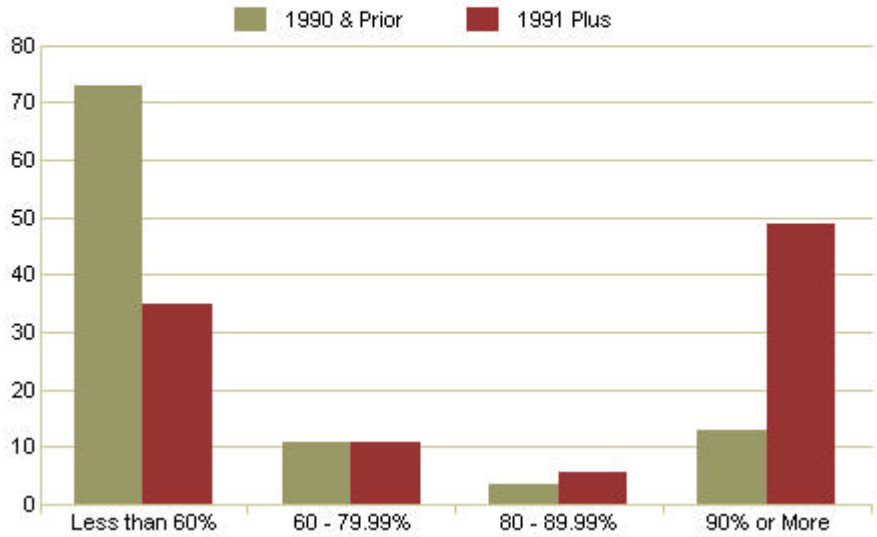
	"1990 & Prior"		**"1991 Plus"**	
	Coefficient	**t-Statistic***	**Coefficient**	**t-Statistic**
Intercept	953.3574	6.2343	961.2794	25.1891
Instrument **	(169.1919)	(5.4116)	(81.4329)	(8.1235)
Collateral	37.0468	1.0886	(39.0237)	(4.2447)
Time in Default	3.8704	0.1403	(43.3961)	(5.7193)
Debt Cushion	(32.6935)	(0.2109)	300.2926	7.1772
Principal Default	(0.0000)	(0.4304)	0.0000	1.5418
R-Squared	0.3919		0.4789	
Adjusted R-Squarted	0.3661		0.4758	
Observations	124		830	
* t-Statistic: ratio of standard error to variable coefficient. A higher t-Statistic reflects less variation to the coefficient. The t-Critical, minimum t-Statistic, for a one-tailed population greater than 120 with a 5% confidence interval is 2.58. ** As noted before, instrument is ranked from most to least senior: bank debt, senior secured, senior notes, subordinated, junior subordinated. The analysis employed dummy variables to verify the ordinal ranking of the instruments.				

Table 7 demonstrates that a short time in default benefits today's lender significantly more than the 1980s' investor: The average recovery for defaults of a year or less is 80% greater and has a tremendously lower variation. Furthermore, chart 4 indicates, in the "1990 & Prior" group, the dispersion of recoveries that spent a year or less in default does not significantly differ from the dispersion for all time periods. However, for the "1991 Plus" set, the dispersion of recoveries of a year or less in default is almost the inversion of the total distribution: 49% of the cohort recovered at least 90%. Time matters much more in today's fast-paced world of debt structure, and the legal and financial players in the bankruptcy world recognize this.

Table 7: Mean Recoveries by Time in Default				
	"1990 & Prior"		"1991 Plus"	
1990 Prior	**Mean Recovery (%)**	**Coefficient of Variation (CV)**	**Mean Recovery (%)**	**Coefficient of Variation (CV)**
One Year or Less	39.65	82.66	71.44	48.65
Between 1 and 2 Years	45.21	80.09	52.32	68.27
Between 2 and 3 Years	47.66	74.45	42.85	81.88
Between 3 and 4 Years	27.37	105.61	34.94	101.78
More than 4 Years	*N/A	N/A	48.36	88.49
More than a Year	44.37	79.76	46.71	78.45
*All members of this cohort had a time in default of less than four years.				

Chart 4

Dispersion of Recoveries on Defaults of A Year or Less



That Was Then; This Is Now

The LBO defaults of the late 1980s--unprecedented in terms of volume and size--sent a shock wave through the system, affecting both arrangers and lenders. On one side, the defaults showed underwriters how sound debt structuring provided protection to potential lenders/investors in the event of default. On the other side, the defaults showed lenders the characteristics of sound structuring. Whereas the defaults of the 1990-1991 period slowed the growth of the debt market, the knowledge gained from cleaning up after these defaults helped lenders regain their confidence. The mid-1990s experienced a return to debt financing, even in light of the seemingly never-ending boom of equity markets. This bull market has provided fuel for the tremendous growth of the debt markets as well as shaped the recoveries from the junk bond debacle of the 1980s.

In the past decade, risk analysts have developed resources to help lenders analyze default triggers and events. Databases and statistical models are available to evaluate past events in a better effort to predict future risks. The methodologies also continually remind lenders not only to analyze new events, but also, in light of the ever-changing present, to revisit the past to develop new perspectives and insights into credit risk. Rising interest rates and shrinking profit margins will not only provide the industry with new default

events to analyze, but also with new frameworks in which to review existing information.

PMD is in the process of adding the recoveries of the past three years to its loss database, providing a wealth of new opportunities to improve our understanding of debt instruments. Just as this examination of PMD's information on the first cycle of defaults has provided significant insight into the relevance and mechanics of structure, continual analysis will only improve the debt market's ability to manage credit risk. With tools such as PMD's loss database, financial institutions can look at the full cycles of companies and examine debt instruments from a number of perspectives including date of credit issue, industry, ratings, and many other variables. These lessons will help lenders to moderate potential losses through improved capital allocation, pricing, and risk management. Today's free flow of information and analytical tools provide lenders with tools for better management of the risks associated with default and recovery.