



## *Corporate Bond Defaults and Default Rates 1970-1993*

*January 1994*

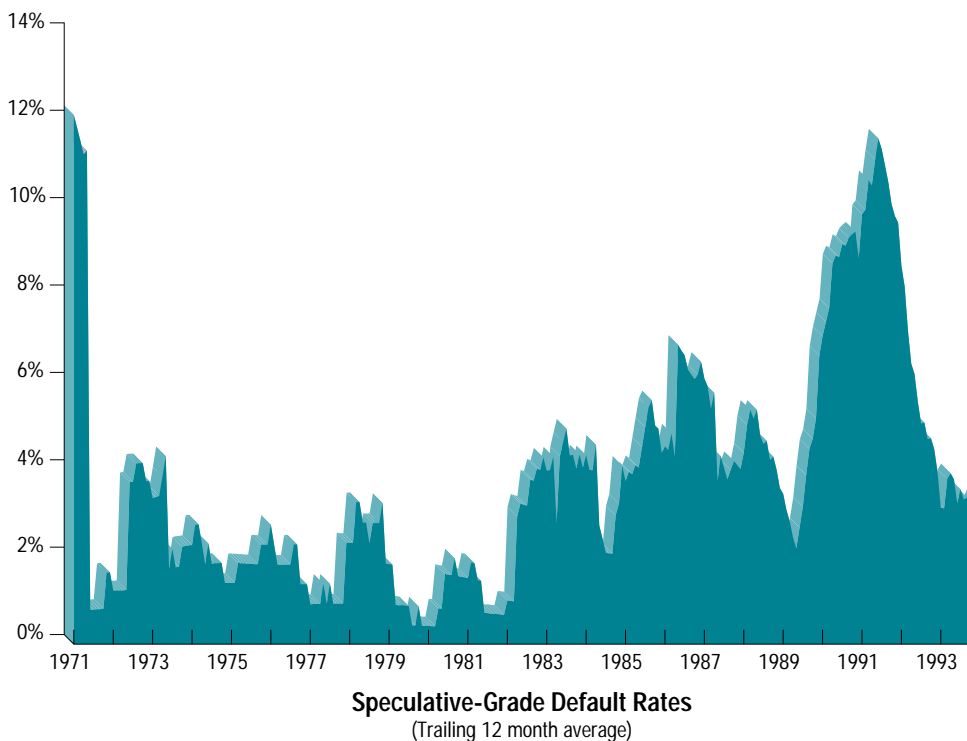
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### **Summary**

Moody's 1994 corporate bond default study extends our default research to cover the 24 years from 1970 through 1993. This period saw 614 issuers default on the dollar equivalent of more than \$93 billion. Various aspects of these defaults, including the industries affected, rating histories of defaulting issuers, and default rates by Moody's rating are presented here. Highlights of the study are:

- The one-year, speculative-grade default rate (defined for Ba-and-lower rated issuers) fell to 3.1 percent in 1993, its lowest level in 11 years.
- Thirty-eight issuers defaulted on long-term, public debt in 1993. This is sharply down from 1992's 49 and 1991's 98 defaulters.
- Default activity in 1993 was characterized by smaller dollar amounts of defaulted debt. The 38 issuer defaults added \$3.6 billion of long-term debt to the defaulted debt market. This stands in contrast to 1992's \$8.3 billion and 1991's \$21.2 billion.
- Moody's forecasts 1994's speculative-grade default rate to be 4.6 percent.



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## DEFAULT HIGHLIGHTS OF 1993

### *1993 Defaults Concentrated Among Smaller Issuers*

In 1993, 38 issuers contributed \$3.6 billion of publicly held, long-term debt to the defaulted debt market. With respect to both the issuer count and the amount of debt affected, these numbers more closely resemble those experienced during the mid-1980s than those of the tumultuous three-year period from 1989 through 1991. Combined with the recent increase in the size of the speculative-grade bond market, these figures helped produce the lowest speculative-grade default rate — 3.1 percent — since 1981 (see Figure 11 on page 12 and Table 2 on page 19).

The year's largest defaulter was the special purpose corporation Olympia & York Water Street Finance Corporation, whose sole business concerns the office building at 55 Water Street in lower Manhattan. The slump in the New York City real estate market and asbestos contamination combined to boost lease expirations, thereby depressing the rental income from which bond payments were derived. In May, the company filed a prepackaged bankruptcy plan to hand the building over to bondholders. The default is a landmark not only because of its size relative to other 1993 defaults (\$548 million or 15% of the year's total), but also because it is a rare example of a structured finance transaction in distress.

The other major defaults of 1993 in descending order of par amount of debt affected are:

- TDII Co., Inc. (\$450 million), a holding company for diversified manufacturing firms. The firm filed for Chapter 11; its predecessor, Thermadyne Industries, Inc., was taken private in a 1987 LBO and is also a 1991 defaulter.
- NH Holding Incorporated (\$355 million), a holding company whose principal source of income is Ampex Inc., the electronic recording and storage concern. Ampex has suffered from slack demand in the high-end analog video tape recorder market.
- Mesa Inc. (\$300 million), a natural gas and oil producer. A slump in natural gas prices that began in the mid-eighties pressured the company and led to a negotiated exchange of the notes.
- Mesa Capital Corp. (\$300 million), a provider of financial services to Mesa Inc.

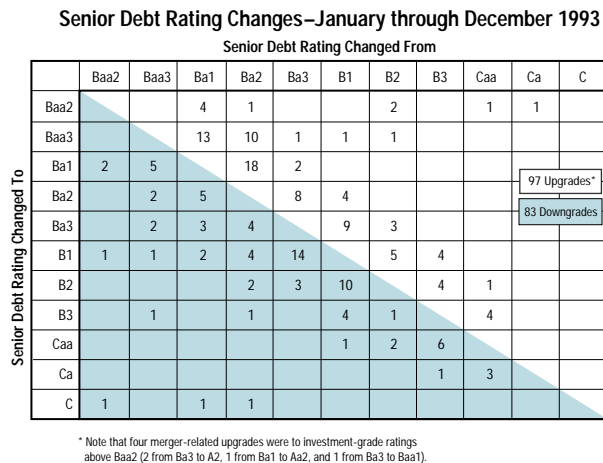
These and other 1993 defaults are described in greater detail in a listing at the end of this report.

Of the remaining defaults, only three involved par amounts of debt equal to or exceeding \$100 million, a sharp break from recent experience. The relatively small size of 1993's defaults explains the plunge in our trailing 12-month dollar-based default rate to 1.30%, a level not seen in six years. (This rate is calculated as the total par amount of debt defaulting in the previous year over the total amount of speculative-grade debt outstanding at the beginning of that year.) The issuer-based trailing 12-month default rate, which is featured on the cover of this report, closed 1993 at 3.06%, a level reminiscent of those of the mid-1980s. (This rate is calculated as the total number of Moody's-rated issuers defaulting in the preceding year over the total number of Moody's-rated, speculative-grade issuers outstanding at the beginning of that year.)

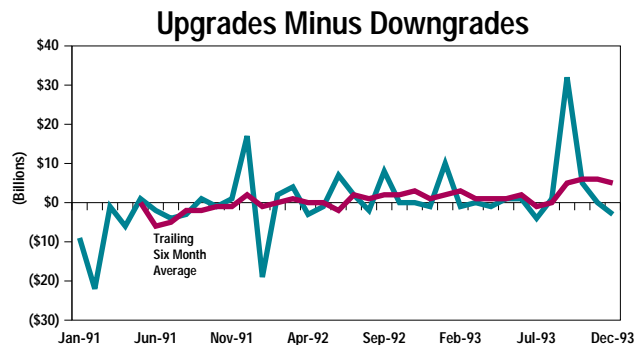
## Market Overview

Accompanying 1993's relatively low speculative-grade default rate was an overall firming of the speculative-grade market's credit worthiness as reflected by 8% fewer rating downgrades and 17% more upgrades than in 1992. Among speculative-grade issuers, 1993's 97 positive rating revisions boosted the credit ratings of \$75.5 billion of bonds, eclipsing the 83 downgrades that affected \$32.6 billion (see Figure 1). Speculative-grade upgrades in 1993 were up from 83 (\$50.8 billion of bonds affected) in 1992, a year which also saw speculative-grade downgrades total 90 (\$44.2 billion of bonds affected).

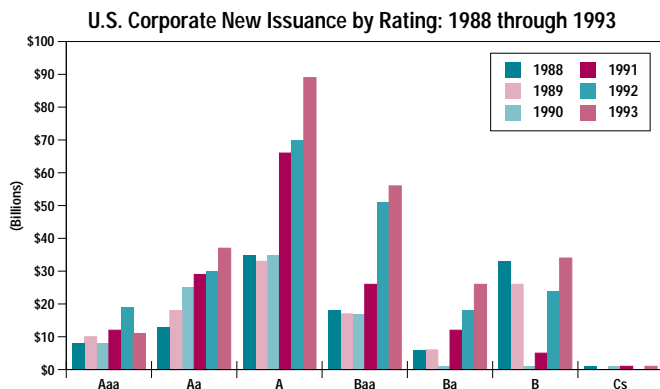
(Figure 1)



(Figure 2)



(Figure 3)



Within the overall U.S. corporate bond market, Moody's upgraded the obligations of 163 companies in 1993 (affecting \$182 billion) while the long-term ratings of 154 corporations were lowered (affecting \$160 billion). In 1992, there had been only 136 upgrades (\$126 billion affected) and 227 U.S. downgrades (\$377 billion affected).

The excess of upgrades over downgrades in 1993 was the largest in recent memory (see Figure 2). Cash flow growth is accompanying the ongoing economic recovery, but seldom have fundamental improvements in an issuer's earnings outlook constituted grounds for an upgrade. Typically, credit improvements are the consequence of balance sheet restructurings, cost reductions, productivity enhancements, and the realization of stronger market positions.

Perhaps 1993's most prominent speculative-grade upgrade was Chrysler Corporation's return to investment-grade status. Noteworthy about this revision was the company's successful development and marketing of new or redesigned products, notwithstanding the financial constraints imposed by earlier cost reduction efforts.

Among financial institutions, speculative-grade upgrades bettered 1992's 18 (\$10 billion of bonds affected) and rose to 32 (\$6.4 billion of bonds affected) in 1993. Reduced exposure to troubled real estate loans abetted credit quality, and the removal of problem assets lessened the uncertainty surrounding the adequacy of future debt protection, despite significant nonperforming loan write-offs.

Nineteen ninety-three was also a

record year for overall corporate bond issuance. Excluding convertible bonds and structured financings, face-value, new issuance totaled \$254.7 billion versus 1992's \$213.7 billion. Issuance of speculative-grade bonds surged by 44.3% to a record \$61.5 billion, including convertible securities (see Figure 3). The amount of newly sold Ba-rated bonds jumped by 44.3% to \$26.1 billion, B-rated bond issuance climbed by 42.2% to \$34.3 billion, and Caa-rated issuance jumped from 1992's \$430 million to \$1.1 billion. The share of total speculative-grade bond issuance consisting of less risky Ba-rated bonds remained at 1992's 42.5%.

The low interest rate environment encouraged firms to replace higher coupon debt with new bonds, thereby increasing supply. At the same time, expectations of near-term economic growth supported investor demand for high-yield, fixed income securities. It is noteworthy that, despite claims that investors were reaching for higher yields at the expense of credit risk, the percentage of newly-sold speculative-grade bonds carrying the "upper tier" rating designation, Ba, compares favorably with the meager 16.5% of total speculative grade issuance for the 1987-89 period. Nevertheless, a lower 26.8% of the \$17 billion of speculative-grade bonds sold during the final quarter of 1993 were rated Ba. Moreover, in a significant departure from the ratings distribution of 1992 corporate issuance, the biggest percentage increase across all rating categories was for bonds rated B3 or lower. About \$11 billion of new bonds were issued in this category, which was up by a whopping 81.8% from 1992's new supply of these extremely risky bonds.

Demand for speculative-grade issues rose in the face of voluminous new issuance, helping to generate a healthy 1993 total return of approximately 17%. Moreover, as reflected by the 65 basis points narrowing of the gap between a widely followed speculative-grade bond yield average and the 10-year Treasury yield, 1993's total return from speculative-grade bonds doubled the 8.3% total return from intermediate term Treasury securities, as well as bettering the estimated returns of 11.8% from 7-year Treasury notes and the 13.3% return from 10-year Treasuries.

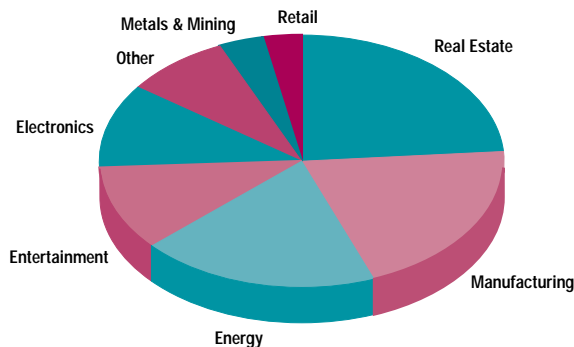
### Characteristics of Defaulting Issuers

As in 1992, the real estate industry claimed the largest share of defaulted debt. Three companies, Angeles Corporation, Olympia & York Water Street Finance Corp., and Trizec Corp. Ltd. defaulted on \$853 million, or 24% of the year's total, reflecting a continuing weakness in North American real estate. Eight issuers in the manufacturing sector felt the weight of dwindling durable goods orders, defaulting on 20% of the year's dollar total (\$733 million). The largest of these manufacturers, TDII, formerly Thermadyne Industries, defaulted on \$450 million of public debt. A familiar story in the aftermath of the last decade's leveraging, TDII's late-eighties LBO precipitated a reorganization in the early nineties that was insufficient to completely relieve the onerous debt burden. Next, the energy sector contributed 19% (\$685 million) of the year's total amount of defaulted debt. The lion's share of this is tied to the distressed exchanges of the oil and natural gas exploration and production firms Mesa Inc. and Mesa Capital Corp. (\$300 million each). This industry last made a significant contribution to our defaulted debt totals when

Columbia Gas Systems and Petrolane Inc. defaulted on \$1.8 billion in 1991.

**(Figure 4)**

Share of Defaulting Debt by Industry, 1993



Other industries defaulting on sizable amounts of debt in 1993 were the entertainment and leisure industry (11%) and electronics (11%). Of note is the relatively minor role retailers played in 1993's defaults. Four retail defaults contributed a total of just \$111 million, or 3%. This is an abrupt aboutface, as retailers led the yearly totals in 1990 and 1991, and took the number two spot in 1992. For more on the industry characteristics of defaults, see the section of this report on default rates by industry group.

## Other Aspects of Defaults

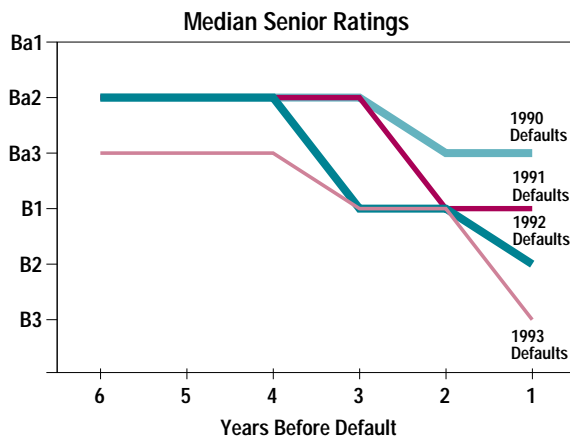
In 1993, protection from creditors was sought by 21 public debt issuers, comprising 55% of this year's defaulting issuers; total debt affected by the filers was \$2.01 billion, or 56% of the year's total. This is an increase over recent experience; as 1991 and 1992 each saw about 40% of defaulters seeking protection. Perhaps this increase stems from the smaller average size of a 1993 defaulter, as smaller issuers have less cushion against business failure. Of the defaulters seeking protection, 19 filed under Chapter 11, one filed under the Canadian Companies Creditors Agreement Act, and one filed under Dutch insolvency laws.

Consistent with the pattern established over the past four years, 10 issuers, or about one-quarter of 1993 defaulters, underwent an LBO or leveraged refinancing. LBO-related defaults affected \$822 million of debt, over half of which was provided by TDII. TDII was the only large, publicly financed, leveraged transaction that faltered in 1993, a sharp departure from the 1990-1992 period.

Non-U.S. issuers accounted for just 11% of the defaulted dollar amount in 1993; down from 1992 when almost 25% of the total came from non-U.S. issuers. The default of truck manufacturer, Daf, perhaps heralds a new era in European corporate financing as the supporting banks failed to rescue the troubled firm from bankruptcy. But numerous rescues continue to leave the impression that in the face of recession, "the freedom to fail" that seemed to be taking hold among European banks in 1992 has again given way to short-term solutions.

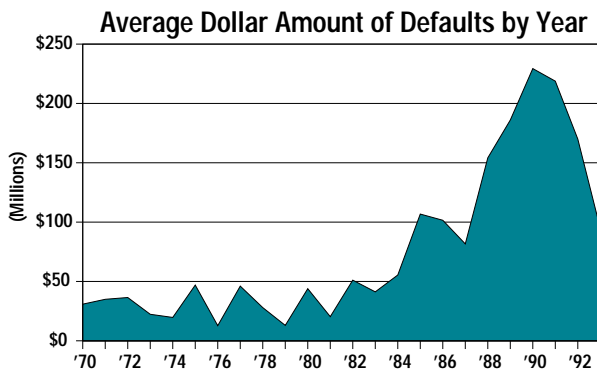
The deterioration in credit quality of defaulting issuers was generally signaled by a lowering of Moody's ratings as the default date approached. Figure 5 shows six years of median senior ratings for issuers defaulting in the last four years.

(Figure 5)



Where a company had only subordinated debt rated, we implied a senior rating of one or, more typically, two rating notches higher than the rating on the subordinated debt. The decline in median ratings prior to default indicates that Moody's ratings, on average, provide ample warning that risk of default has risen. The level of risk indicated by each rating category is discussed further in the following sections.

(Figure 6)



The relatively small average dollar amount of debt affected by 1993's issuer defaults signals a return to pre-1988 patterns. Figure 6 shows the average dollar amount of public defaulted debt per issuer default from 1970 through 1993.<sup>1</sup> It illustrates both the cyclical and structural nature of defaults. First, there is clearly a pattern linking average default size with economic growth. Peaks in average default size occur in the troughs of GDP growth associated with periods 1973-75, the first half of 1980, 1982, the slowdown of 1985-86 and the recession of 1990. Default risk can be broken down into two components: idiosyncratic risk and cyclical risk. Idiosyncratic risk is random in nature and preys on smaller, less diversified compa-

<sup>1</sup> Texaco and its affiliates' 1987 defaults have been omitted from these calculations.

nies. Cyclical risk is associated with the business cycle and affects both small and large firms. Hence, during periods of economic expansion, average default size is small, reflecting the effects of idiosyncratic risk on smaller firms. Periods of economic contraction introduce the cyclical component of default risk that can affect both large and small companies. During these periods, the average size of defaulting firms increases. The peak we are just now completing began in 1988, well before the recession of 1990, and suggests a structural change in the patterns of corporate financing behavior. The LBO- and merger-related financings of the mid-1980s sowed the seeds for this mountain of defaulted debt. But the average size of 1993 defaults (\$95 million), lies below the 1970-93 average (\$149 million) and well above the 1970-87 average of \$60 million. Hence, we may see the trend to smaller company defaults continue in 1994.

### *Severity of Default Loss*

A critical aspect of a corporate bond default is the severity of the loss incurred. Accordingly, a Moody's rating is an opinion as to both default likelihood and severity of loss in the event of default. The Moody's rating system recognizes that, eventually, most bond defaults are resolved in that bondholders receive some form of recovery. What is recovered may take the form of cash or other securities. The recovery rate, defined here as the fraction of par value returned to the bondholder, is a function of several variables. These include the seniority of the issue within the issuer's capital structure, the quality of collateral (if any), the overall state of the economy, and the market for corporate assets.

The most straightforward methodology for calculating recovery rates is not particularly practical. It would track all payments made on a defaulted debt instrument, discount them back to the date of default, and present them as a percentage of the par value of the security. But that approach requires the aging of defaults until final recovery has occurred; by the time such a study could be completed, it already would be out of date. It is impractical also due to the difficulty in valuing certain forms of payment received in place of the original obligation, including various equity and derivative instruments, certain enhancements in the terms of the surviving debt instrument, or sometimes even an asset delivered in lieu of cash payment.

For these reasons, we use the trading price of the defaulted instrument as a proxy for ultimate recovery. While it is at best a rough estimate, it is at any rate a definitive measure of the recovery realized by those debtholders who liquidate a position immediately.

Our survey of recovery prices looks at prices as a percentage of par, not as a percentage of original issue price or accreted value. An investor is entitled to receive face value at maturity, even though he may have paid somewhat less or more for the bond either at issue or in the secondary market. Expressing recoveries as a fraction of some price other than par improperly biases loss rates. The exceptions are deferred interest debt and deep discount bonds, which we removed from the sample.

We collected from several sources prices for bonds that defaulted between January 1, 1974, (the earliest point for which reliable data is available) and December 31, 1993. For each nonconvertible defaulted issue, we looked at the securitization, date of default, price one month after default, and the dollar amount outstanding at default. The entire sample comprised 719 defaulted bonds, aggregating to over \$59.78 billion in face value.

Recovery estimates are calculated as the average of these prices weighted by outstanding par amount at default. These recoveries are broken out by securitization and year in Figure 7. After default, the 102 senior secured bonds in our sample sold, on average, for \$64.59 per \$100 face amount; the 223 senior unsecured bonds sold for \$48.38; the 175 senior subordinated bonds sold for \$39.79; the 211 subordinated bonds sold for \$30.00; and the eight junior subordinated bonds sold for \$16.33. As expected, there is a clear pattern of declining price as priority declines. The recovery estimate for all 719 bonds is \$44.25 per \$100 face value.

Recovery rates, on average, decline as priority of claim declines, lending support to Moody's practice of assigning lower ratings to an issuer's subordinated debt. Generally speaking, a bond

default is an issuer-level event which will, in time, affect all of the issuer's outstanding debt obligations. That is, the probability of an issuer defaulting on a particular debt issue is independent of the seniority of that issue relative to the company's other obligations. However, holding all else constant, severity considerations suggest that, while default likelihood is the same across an issuer's bonds, the greater expected losses for its subordinated issues should be reflected in lower ratings for these issues.

(Figure 7)

<b>Defaulted Bond Recovery Prices as a Percent of Par</b>											
	<b><u>1974-1993</u></b>	<b><u>1993</u></b>	<b><u>1992</u></b>	<b><u>1991</u></b>	<b><u>1990</u></b>	<b><u>1989</u></b>	<b><u>1988</u></b>	<b><u>1987</u></b>	<b><u>1986</u></b>	<b><u>1985</u></b>	<b><u>1984</u></b>
Senior Secured	64.59	46.50	59.17	56.26	31.73	74.51	77.89	88.00	59.63	66.56	66.04
Senior Unsecured	48.38	34.88	59.74	41.06	42.30	45.65	36.85	80.12	52.53	46.04	65.59
Senior Subordinated	39.79	79.61 <sup>2</sup>	47.16	35.84	35.18	40.85	42.22	46.00	45.70	26.94	
Subordinated	30.00	31.66	44.35	20.01	23.11	25.93	31.96	43.00	45.07	39.79	38.66
Junior Subordinated	16.33			6.60	19.37	19.52	37.50				
<b>Weighted Average</b>	<b>44.25</b>	<b>57.25</b>	<b>50.95</b>	<b>33.86</b>	<b>33.52</b>	<b>38.96</b>	<b>42.77</b>	<b>77.20</b>	<b>48.27</b>	<b>37.06</b>	<b>55.14</b>
	<b><u>1983</u></b>	<b><u>1982</u></b>	<b><u>1981</u></b>	<b><u>1980</u></b>	<b><u>1979</u></b>	<b><u>1978</u></b>	<b><u>1977</u></b>	<b><u>1976</u></b>	<b><u>1975</u></b>	<b><u>1974</u></b>	
Senior Secured		72.50					37.00		32.84		
Senior Unsecured	53.38	39.08		53.40		60.00	30.94		32.86		
Senior Subordinated	43.50	44.96					40.50				
Subordinated	40.56	44.71	40.00	40.30	34.50	67.00	35.00			5.81	
Junior Subordinated											
<b>Weighted Average</b>	<b>48.24</b>	<b>40.59</b>	<b>40.00</b>	<b>41.59</b>	<b>34.50</b>	<b>61.73</b>	<b>33.28</b>		<b>32.85</b>	<b>5.81</b>	

<sup>2</sup> The relatively high 1993 recovery rate for senior subordinated issues is due to the high trading price of Mesa Inc.'s and Mesa Capital Corp.'s combined \$600 million of defaulted debt. The market perceived that the company's debt renegotiations substantially decreased credit risk.

## METHODOLOGY

### *Definition of Default*

Moody's defines default as any missed or delayed disbursement of interest and/or principal. This definition includes distressed exchanges where (i) the issuer offered bondholders a new security or package of securities containing a diminished financial obligation (such as preferred or common stock, or debt with a lower coupon or par amount) and (ii) the exchange had the apparent purpose of helping the borrower avoid default. Seven of 1993's defaults were distressed exchanges.

Moody's default definition also includes companies that make a delayed payment within the grace period provided in the indenture. Our rationale for including grace period defaults is straightforward, that a contractual payment was not made when due. Over the course of this year, four issuers missed interest payments on their respective due dates only to make good within the 30-day grace period. These delays amounted to involuntary one-month loans to the companies, a clear abuse of bondholders' legitimate expectations as to payment.

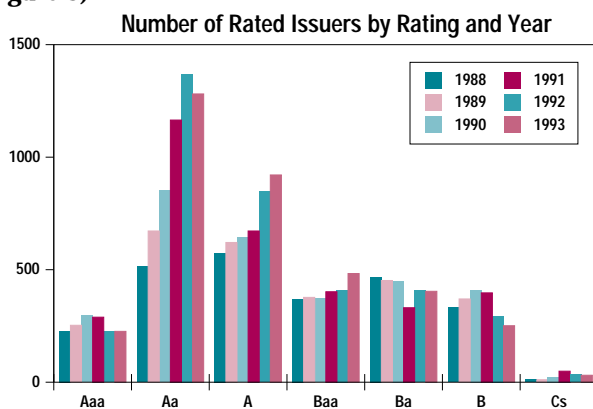
### *Moody's Rating Database*

The default rates and other figures cited in this report are calculated using Moody's proprietary database of public long-term debt ratings on U.S. and non-U.S. industrial companies, utilities, financial institutions, sovereign issuers and structured finance entities. Municipal debt issuers were excluded, as were issuers with short-term debt ratings only. In total, our database includes more than 4,500 issuers that met these criteria over the past 24 years. As of January 1, 1994, the database contained long-term ratings for 3,675 non-defaulted issuers. These issuers account for the bulk of the outstanding dollar amount of U.S. public long-term corporate debt and a substantial

part of public issuance abroad. Moody's default database also contains information about defaults and distressed exchanges of public issuers not rated by Moody's.

Default rates reported in this study are based on the number of debt issuers that default rather than on par amount of defaulted debt and are limited to one count for each legal entity. Separately tabulating additional issues of a single issuer would bias the results toward the default characteristics of issuers with multiple issues. Different issuers within an affiliated group of

**(Figure 8)**



companies were counted separately because not all subsidiaries have cross-default provisions nor are affiliated companies always rated the same.

For purposes of this study, in which only the default probability component of ratings is examined, we have tried to back severity considerations out of the rating.<sup>3</sup> That is done by taking the rating on each company's senior unsecured debt or, if there is none, implying such a rating and using it as a proxy for default probability. In most cases, this will yield an assessment of risk that is relatively unaffected by special considerations of collateral or of position within the capital structure.

Moody's compiled the default histories used in this study from a variety of sources, including our own library of financial reports, press releases, press clippings, internal memoranda, and records of analyst contact with rated issuers. Moody's also examined documents from the Securities and Exchange Commission, The Dun & Bradstreet Corp., the New York Stock Exchange, and the American Stock Exchange.

<sup>3</sup> Moody's ratings are opinions of a bond's expected loss due to credit events. Expected loss is the product of the probability of default and the severity of default.

## CORPORATE DEFAULT RATES

### *Major Defaults and Historical Ratings*

Over the 24-year period covering 1970 through 1993, 614 corporate issuers defaulted on their long-term public debt (see Table 8 of the Appendix). Moreover, at least 20 of these companies defaulted twice over this period (see Figure 9). All defaulting issuers except two — Johns Manville Corporation, which was rated A3, and Columbia Gas System, which was rated Baa1 — had actual or implied speculative-grade ratings at the senior unsecured debt level at the time of default.<sup>4</sup> As expected, other defaulting issuers, though speculative grade at the time of default, were rated investment grade at times prior to default. The 17 defaulting issuers rated investment grade as of January 1 of the year of default are presented along with their ratings up to 20 years before default below in Table 1. Figure 10 traces the rating history of all rated defaulting issuers from one to 20 years prior to default. It shows that at default only two issuers were rated investment grade as mentioned above. However, 17 issuers were rated investment grade on January 1 of the year they defaulted, 40 were rated investment grade at the start of the second year before default, and so on. The ratings of 21 issuers were withdrawn before they defaulted.

Two-Time Defaulters		
Company	Year of First Default	Year of Second Default
AM International, Inc.	82	92
Continental Airlines, Inc.	83	90
Damson Oil Corporation	86	91
Digicon, Inc.	86	90
First City Bancorporation of Texas	87	92
Harvard Industries, Inc.	72	90
John Blair & Company (Telemundo Group, Inc.)	86	92
Kenai Corporation	84	86
Lionel Corporation	82	91
Pathe Communications Corp. (Canon Group)	87	92
Peninsula Resources Corp.	83	85
Rusco Industries	77	82
Savin Corporation	86	92
Seaman Furniture Company, Inc.	89	92
Texas Air Corp. (Continental Airlines Holdings,	83	90
Texas International Company	85	88
Thermadyne Industries, Inc. (TDII Co., Inc.)	91	93
Thousand Trails Inc.	87	92
United Merchants & Manufacturers Inc.	77	90
Western Union Telegraph Company	87	90

(Figure 10)

### Rating History of 473 Defaulting Issuers

		Rating at Default	Calendar Years Prior to Default							
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	
Invest.	Aaa	0	0	0	0	1	2	2	2	1
Grade	Aa	0	2	1	3	6	5	2	1	2
	A	1	1	8	19	15	13	19	11	8
Spec.	Baa	1	14	31	33	44	39	37	32	20
	Ba	43	118	176	163	151	138	61	36	32
Grade	B	289	280	213	166	118	86	28	19	7
	Caa/Ca/C	136	58	17	12	11	11	9	7	3

Still looking at Figure 10, the company with the Aaa rating as of the fourth January prior to default was Getty Oil, a subsidiary of Texaco. The default of Texaco and its affiliates stemmed from the parent's litigation with Pennzoil over the purchase of Getty Oil. As of the fifth January prior to default, both Texaco and Getty Oil were rated Aaa. Texaco and Federated Department Stores (which had completed a leveraged buyout two years prior to default) were the two companies with Aaa ratings 10 and 15 years prior to default.

<sup>4</sup> The implied issuer rating is the rating statistically most likely to have been assigned on an issuer's senior unsecured debt had the issuer had such debt outstanding.

**Table 1**

**Senior Rating Histories of Defaulting Issuers Rated Investment Grade at January 1 of Year of Default**

	<b>Default date</b>	<b>Rating at default</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>
Arlan's Department Stores Inc.	05/13/73	Ba	Baa	Baa	Baa	Baa				
Columbia Gas System, Inc.	06/20/91	Baa1	Baa1	Baa1	Baa2	Baa2	Baa1	A		
DFC Financial (Overseas) Ltd.	10/03/89	Ba1	Aa3	Aa3						
DFC Overseas Investment Ltd.	10/03/89	Ba1	Aa3	Aa3						
Equitable Lomas Leasing	09/01/89	B1	Baa2	Baa1	A2	A2	A2			
Kaneb Services/Moran Brothers Inc.	11/01/86	Ba3	Baa3	Baa3	Ba3	Ba3	Ba			
Kaneb Services/ Moran Energy Inc.	11/01/86	Ba3	Baa3	Baa3						
Kaneb Services/ Moran Energy Int'l	11/01/86	Ba3	Baa3	Baa3						
Lomas Financial Corporation	09/01/89	B2	Baa3	A3	A3	A3	A3			
Johns Manville Corporation	08/26/82	A3	A	A	A	Aa	Aa	A	A	A
Parkview-Gem Inc.	11/01/73	B	Baa	Baa	Baa	Baa	Baa			
Penn Central/Phil. Balt. & Wash. Railroad	06/21/70	Ba	Baa	Baa	Baa	Baa	Baa	Baa	Baa	Baa
Revere Copper & Brass Company	10/27/82	Ba1	Baa	Baa	Baa	Baa	Baa	Baa		
Smith International Inc.	03/07/86	Caa	Baa3	A3	A1	A	A			
Storage Technology Corp.	10/31/84	B2	Baa3	Baa3	Baa					
Storage Technology/Documentation Inc.	10/31/84	B1	Baa3	Baa2	Baa	B	Ba			
United Merchants & Manufacturers Inc.	07/12/77	B	Baa	Baa	Baa	Baa	Baa			

## Defining Default Rates

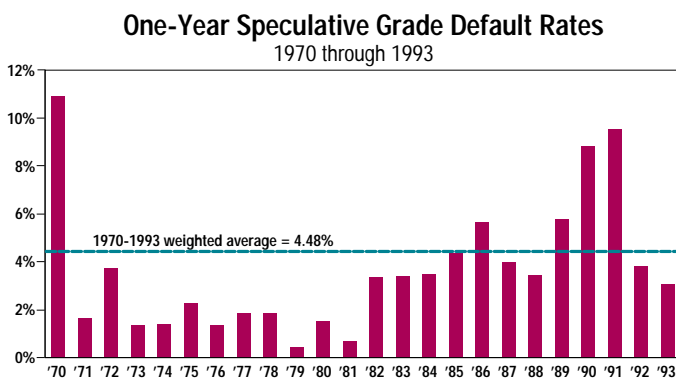
In Table 8 of the appendix, we present a list of corporate issuers that have defaulted on public debt since 1970, arranged by year of default. While this list will be of interest to many investors, it cannot by itself reveal the likelihood of default associated with each rating category. Default rates, based on the experience of the entire rated corporate and sovereign bond markets, have been constructed with this in mind. They may serve investors as a guide to the risks of default associated with Moody's ratings and as indicators of market stress.

The default rates presented here and in the appendix are calculated with the issuer as the unit of study, rather than on the basis of outstanding dollar amounts. The numerator consists of the number of rated-issuer defaults in a given time period. The denominator used is the number of rated issuers at the start of the time period. This approach places equal weight on large and small issuers, under the rationale that the number of rating decisions (or in the case of an investor, buy/sell decisions) does not rise with the size of the issuer.

## One-Year Default Rates

A widely reported default statistic is the one-year speculative-grade default rate. Moody's calculates this rate by dividing the number of rated issuers defaulting over a calendar year by the number of (non-defaulted) speculative-grade rated issuers outstanding at the beginning of the year. Figure 11

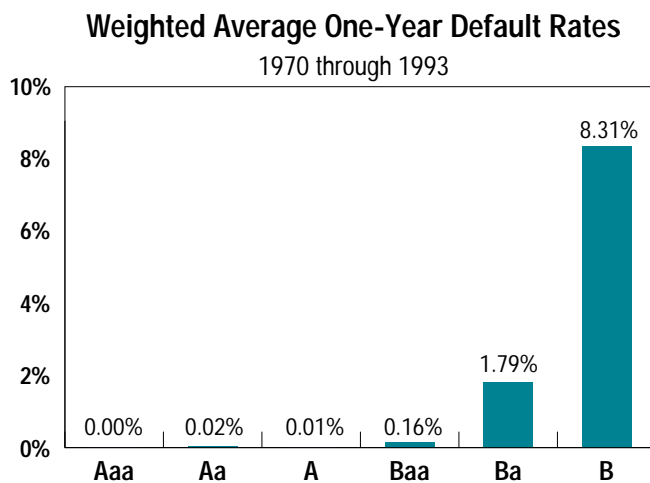
(Figure 11)



plots one-year speculative-grade default rates from 1970 through 1993. The peak in 1970, at 10.9 percent, corresponds to the then market-shaking default of Penn Central Railroad and its 30 affiliates. The most recent peaks, 1990's 8.8 percent and 1991's 9.5 percent, reflect the effects of a recession and a shake-out of the eight-year borrowing binge that began in 1982.

Table 2 presents one-year default rates for each broad rating category from 1970 through 1993. To arrive at these default rates, we compute the number of defaulting issuers with a given rating at the beginning of that year and divide this by the number of outstanding issuers with the same rating on January 1. The last two rows of Table 2 give the one-year issuer default rates for investment-grade issuers and speculative-grade issuers, respectively. Note that for all but eight of the past 24 years, the one-year issuer default rate for investment-grade sector was zero.

(Figure 12)



Our weighted average default rates provide point estimates of the probability of default for a particular rating class. For example, the average one-year default rates displayed in Figure 12 climb from 0.00 percent for issuers rated Aaa to 8.31 percent for issuers rated single B. To calculate these statistics, we take the sum across years of defaulting issuers that held a particular rating at the beginning of each year and divide this by the sum across years of outstanding

issuers with the same rating on January 1. By this methodology, an average of 4.48 percent of speculative-grade issuers defaulted within one year over the last 24 years, compared with 0.05 percent of investment-grade issuers.

Moody's refined its rating categories in 1982 by adding numerical modifiers. Table 3 and Figure 13 suggest that the relationship between ratings and default likelihood also holds generally for issuers ranked by numerical-rating category. Default rates climb from 0.00 percent for Aaa-rated issuers to 16.24 percent for issuers rated B3.

(Figure 13)



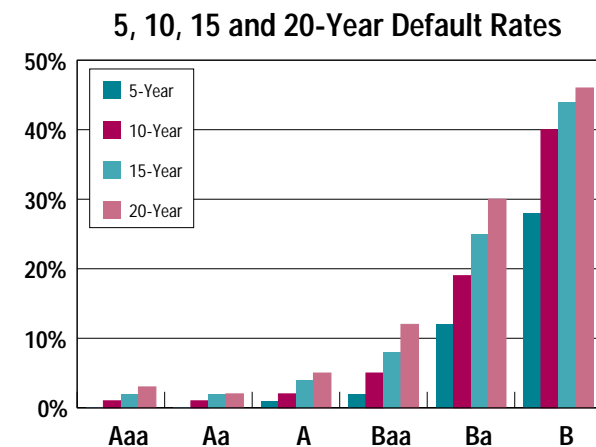
### Multi-Year Default Rates

One-year issuer default rates are the most commonly reported. But some corporate bond investors find more relevant summaries of issuer experience in cumulative default rates over representative time horizons. The construction of multi-year default rates parallels that for one-year default rates, except that we follow the members of cohorts for longer periods. Thus, an average cumulative default rate indicates the share of a portfolio of bonds formed at a given date that can be expected to subsequently default.

Table 5 traces annually for up to 20 years the cumulative default rates of cohorts of Moody's-rated issuers formed at the beginning of each year from 1970 through 1993. Cohort groups are separated by Moody's rating categories to answer, for example, the question "What percent of B-rated issuers with bonds outstanding as of January 1, 1983 defaulted by 1993?" The answer is found in the last row and last column of the section labeled "Cohort Formed January 1, 1983": 45.7 percent. The first column of each subsection, by definition, is the one-year issuer default rate and corresponds to that year's entry in Table 2.

Some other studies look at cohorts of bonds issued during a given year and track the bonds' subsequent performance. In contrast, Moody's approach, which forms cohorts of all Moody's-rated issuers with debt outstanding at January 1 of each year, provides an indicator of the experience of a portfolio of both seasoned and new-issue bonds purchased in a given year. Table 4 described in detail in the Appendix, presents default rates by rating category for investment horizons spanning one to twenty years. It shows that the higher default risk for lower rating categories remains evident as one considers investment periods exceeding one year. For example, as seen in Figure 14, average default rates for five-year holding periods climb from 0.1 percent for issuers rated Aaa to 28.4 percent for issuers rated B. Figure 14 also shows that the pattern recurs for average default rates for 10-year, 15-year, and 20-year holding periods.

(Figure 14)



Throughout the study period, there is a sharp distinction between companies in the low-investment-grade Baa category and companies in the upper-speculative-grade Ba category. In the past 24 years, Ba companies have been two to ten times more prone to default than Baa-rated

companies, over any time horizon. And with a one year investment horizon, B-rated companies have been over four times more prone to default than Ba-rated companies.

### Default Rate Volatility

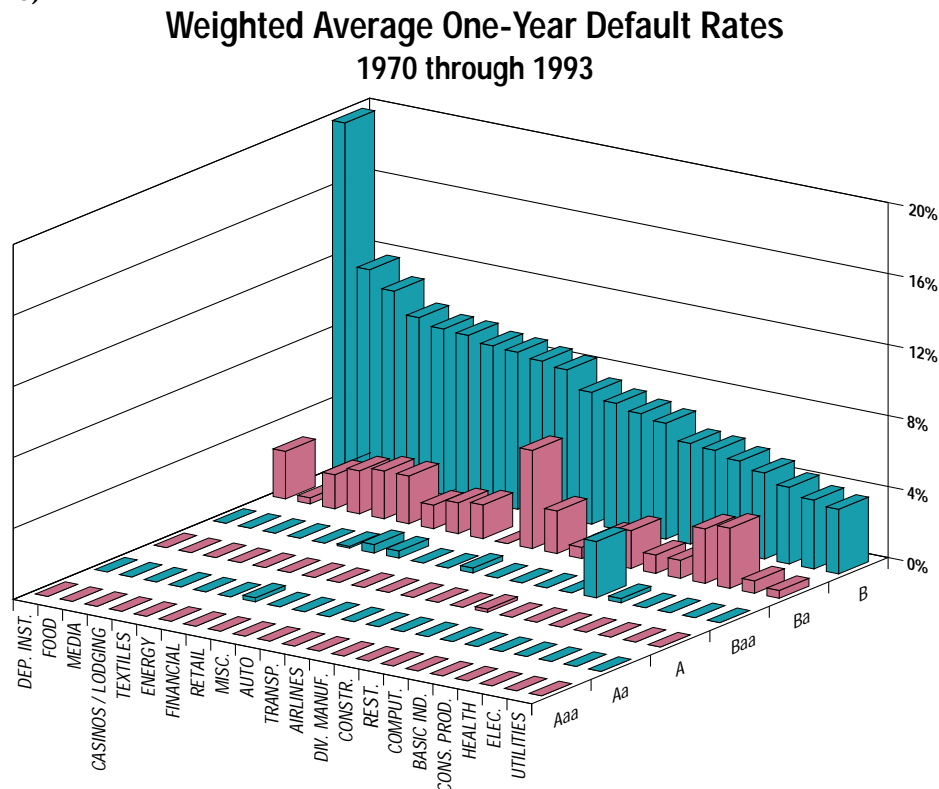
The default rates highlighted in this report represent point estimates of default likelihood over varying time horizons. Because realized default rates are themselves random draws from the “true” population of default rates, our default rate averages approximate the true mean default rates associated with each rating category and time horizon. A parameter designed to help characterize the shape of the distribution generating actual default experience is the sample standard deviation. We present in Table 6 standard deviations of default rates by rating category and time horizon, up to 20 years. Each point in this figure represents the standard deviation of cumulative default rates across those cohorts with histories spanning the indicated time horizon.

The results demonstrate a greater default rate volatility at lower rating categories. That is, not only are default rates higher on average at the low end of the rating scale, but realizations of default rates are more volatile and less predictable over any given investment horizon. For example, standard deviations of one-year default rates for the investment-grade categories run as low as 0.00 percent for the Aaa category and as high as 0.29 percent for the Baa rating. The Baa standard deviation peaks at 2.05 percent for the 11-year investment horizon. But at the Ba level, standard deviations range as low as 1.89 percent at one year and as high as 7.59 percent at year eight. Standard deviations for single-B rated issuers peak at 9.5 percent at year nine.

### Default Rates by Industry Group

Moody’s ongoing default research documents the high correlation between rating and default risk. As the database expands, patterns of defaulting issuer characteristics emerge and invite new comparisons. Yet database limitations, classification difficulties, and small sample sizes make some statistical comparisons hazardous. With this in mind, we carefully approach the concept of industry-specific default rates.

(Figure 15)



Ideally, default rates for a given rating category over any time period, investment horizon and sector will be equal in magnitude. But the reality of the ratings process is that short-term shocks affect some sectors more than others. Moreover, such a shock may affect one geographic region with a heavy concentration of a particular industry more than another. The situation is further complicated by the fact that, even if short-term weakness is anticipated for a particular industry, wholesale downgradings would be confusing and disruptive. By design, the rating time horizon is often longer than many business cycles.

Figure 15 presents weighted average one-year default rates for selected industries. At the start of each year, 1970 through 1993, we formed cohorts by industry group and rating category and followed them for one year. Each bar is found as the sum across cohorts of issuer defaults for a particular industry and rating, divided by the sum of issuers from all cohorts for that industry and rating. The results are sorted in order of increasing B default rate.

With few exceptions, one-year default rates rise as rating level drops. For example, within each industry the default rate for issuers rated B exceeds that for all other rating categories. Moreover, inter-industry comparisons reveal a consistency in the level of risk associated with a particular rating across sectors. Excluding deposit institutions, the single-B default rates vary surprisingly little as one moves from industry to industry.<sup>5</sup>

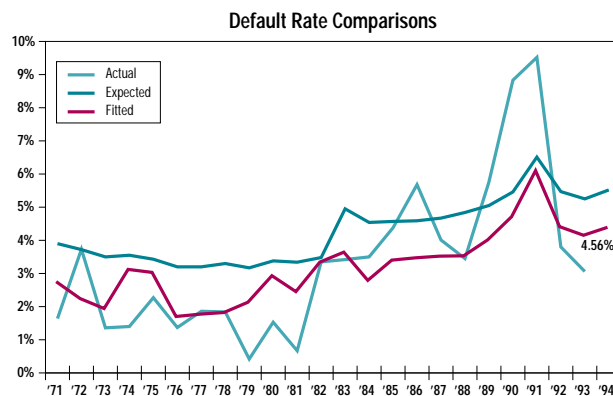
### Forecasting Default Rates

In this section, we will demonstrate how to use historical default rates to derive a forecast for 1994 speculative-grade default rates. We will assume that the default risk attributed to a particular rating category tends toward its historical average value.

The forecast starts with an expected default rate — the default rate that one would expect if the set of issuers currently rated within each grade were to default at the historical average rate for that rating class. For example, as of January 1, 1994, there were 336 non-defaulted issuers rated B at the senior level. Based on our historical statistics, we expect 8.31 percent, or 28 of these 336 issuers, to default during 1994. Repeating this process for each rating category and summing the results, we expect 46 rated issuers to default in 1994, amounting to 5.5 percent of all speculative-grade issuers.

Next we adjust this expectation to reflect a median real economic growth forecast for the year 1994, compiled by Blue Chip Economic Indicators as of January 10, 1994. The survey respondents forecast 1994 real GDP growth at 3.0 percent. To factor this into our model, we constructed a simple regression model with actual default rates as the dependent variable and expected default rates and economic growth as the independent variables, where the coefficient on the expected default rate was constrained to be unity. The model was estimated for the period 1971 through 1993, omitting the highly unusual performance of 1970 and incorporating early estimates of actual 1993 full year economic growth. Using the coefficients of the model and the above information, we forecast a 1994 speculative grade default rate of 4.56 percent. Although this would mark an increase from 1993's 3.1 percent default rate, it is very much in line with the 1970-

(Figure 16)



<sup>5</sup> Deposit institution defaults consisted principally of thrifts. The single-B default rate is relatively high in part because we present it as a weighted average. The weighting places most importance on the past several years as the number of rated thrifts grew explosively in the eighties. This combined with three years of trouble with the S&Ls produced the abnormally high default rate presented.

1993 weighted-average speculative grade default rate of 4.6 percent.<sup>6</sup>

Figure 16 presents plots of the actual one-year speculative-grade default rate, the calculated expected default rate and the fitted default rate. The fitted value for the year 1994 includes the GDP forecast and shows a slight increase for 1994 over 1993. This is mainly due to the increase in the share of speculative-grade issuers holding the single-B rating to 40 percent from January 1, 1993's 37 percent. Issuers rated Ba saw their share fall from 59 percent at the start of 1993 to 55 percent. A greater concentration of lower-rated speculative grade companies, all else equal, raises the expected default rate and the default forecast.

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<sup>6</sup> We use the following equation to generate this forecast:

$$\text{Forecast Default Rate} = -0.003867 + \text{Expected Default Rate} + (-0.1923 * \text{GDP Growth Forecast})$$

## APPENDIX

### *Weighted-Average Cumulative Default Rates*

In this appendix we outline the methodology used to calculate corporate bond default rates. Let  $m_t^Y(R)$  be the number of issuers from the cohort composed of all outstanding issuers with rating  $R$  at the start of year  $Y$  ( $Y=1970, 1971, \dots$ ), that defaulted in the  $t^{\text{th}}$  year after cohort  $Y$  was formed. And let  $n_t^Y(R)$  be the number of issuers from the same cohort that have not defaulted by year  $t$ .<sup>7</sup> The weighted-average marginal default rate,  $d_t(R)$ , is the average issuer-weighted probability of default for  $R$ -rated issuers in their  $t^{\text{th}}$  year, given no prior default.<sup>8</sup> Formally,  $d_t(R)$  can be expressed as

$$d_t(R) = \frac{\sum_{Y=1970}^T m_t^Y(R)}{\sum_{Y=1970}^T n_t^Y(R)}, \text{ where } T = 1994 - t.$$

Here,  $T$  restricts the summations to only those cohorts for which  $t$  years of history are available. The weighted-average marginal survival rate,  $(1 - d_t(R))$ , is the probability of survival past the  $t^{\text{th}}$  year, given survival past year  $t-1$ .

The  $t^{\text{th}}$  year average cumulative survival rate for rating  $R$ , denoted here by  $S_t(R)$ , is the probability that an issuer does not default by year  $t$ . It is found by taking the product of the intervening average marginal survival rates:

$$S_t(R) = \prod_{i=1}^t (1 - d_i(R)).$$

We denote the weighted-average cumulative default rate, for a given rating category  $R$  and a given number of years  $t$ , by  $D_t(R)$ . It estimates the fraction of an initial population of issuers that has historically defaulted within  $t$  years of having the rating  $R$ . As the average cumulative survival rate is the probability that an issuer has not defaulted in each year leading up to  $t$ , the average cumulative default rate is its complement:

$$D_t(R) = 1 - S_t(R).$$

Specifically,  $D_t(R)$  summarizes historical default experience through the  $t^{\text{th}}$  year as a function of marginal default rates. In particular, the one-year average cumulative default rate equals the one year average marginal default rate:  $D_1(R) = d_1(R)$ .

The above specification suggests a simple means to convert a  $T$ -year cumulative default rate into an "average" one-year default rate. That is, in the special case where the marginal default rate is assumed to be the same year over year, ( $d_j(R) = d_k(R)$  for every  $j$  and  $k$ ), we have

$$d(R) = 1 - [1 - D_T(R)]^{1/T}.$$

### *Cumulative Default Rates*

The cumulative default rates, shown in Table 5, are not weighted by cohort size. For the cohort formed in year  $Y$ , the  $t^{\text{th}}$  year cumulative default rate for rating category  $R$ , denoted by  $C_t^Y(R)$ , is the fraction of all issuers rated  $R$  when cohort  $Y$  was formed that defaulted by year  $t$ . Using the notation introduced above,

$$C_t^Y(R) = \frac{\sum_{i=1}^t m_i^Y(R)}{n_0^Y(R)}.$$

Note that  $n_0^Y(R)$  is the total number of issuers with rating  $R$  at the start of year  $Y$ .

### *Average Cumulative Loss Rates*

The methods used to calculate average marginal and average cumulative default rates generalize to loss rates. Loss rates factor in the severity of default in addition to the likelihood of default. We indicate the expected recovery rate, in the event of default, by the symbol  $\mu$  and note that the expected severity rate is simply  $(1-\mu)$ . Algebraically, the expected loss is the product of the probability of default and the expected severity of default. In particular, the average marginal loss rate  $l_t(R)$  for any period  $t$  is the product

$$l_t(R) = d_t(R) (1 - \mu).$$

Extending our definition of the average cumulative default rate, we define the average cumulative loss rate  $L_t(R)$

$$L_t(R) = 1 - \prod_{i=1}^t (1 - l_i(R)).$$

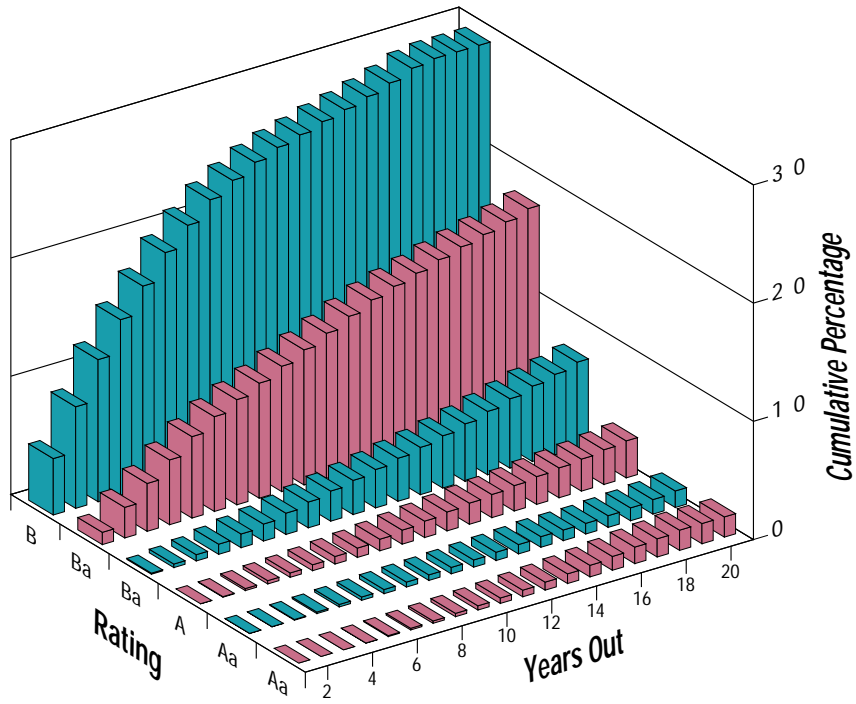
Note that  $L_t(R)$  represents the expected loss of principal and coupon (as a fraction of par) by period  $t$ . It is not, however, an estimate of the present value of future losses. A forthcoming Special Report, *Default Rates and the Term Structure of Credit Risk*, presents an approach to bond pricing that uses the default and recovery rates presented in this report and takes into account the time value of money. Figure 17 below depicts the behavior of average cumulative loss rates, by rating category, for investment horizons spanning 1 to 20 years, assuming a fixed recovery rate of 44¢ on the dollar.

<sup>7</sup> Previously, we did not exclude issuers defaulting in the intervening years.

<sup>8</sup> Since these default rates (and all default rates derived from them) will be, in some sense, averages, we will simply denote them by "average" rather than the more cumbersome "weighted average".

(Figure 17)

Average Cumulative Loss Rates by Rating Category



**Table 2**

**One-Year Default Rates by Year and Rating 1970-1993 (Percent)**

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Wtd Avg	
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.02
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
Baa	0.3	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.6	0.0	1.1	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.16
Ba	8.4	1.5	0.5	0.5	0.0	1.6	1.1	0.6	1.1	0.5	0.0	0.0	2.6	1.0	0.5	2.0	1.9	2.6	1.5	2.7	3.3	5.1	0.2	0.5	1.79	
B	21.6	0.0	11.8	3.4	6.9	3.0	0.0	8.8	5.3	0.0	4.4	4.1	2.2	6.0	7.3	8.7	11.6	5.3	5.7	8.6	12.9	13.1	6.4	5.2	8.31	
Investment Grade	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.05	
Speculative Grade	10.9	1.6	3.7	1.4	1.4	2.3	1.4	1.9	1.8	0.4	1.5	0.7	3.4	3.4	3.4	4.4	5.7	4.0	3.4	5.8	8.8	9.5	3.8	3.1	4.48	

**Table 3**

**One-Year Default Rates By Year and Modified Rating 1983-1993 (Percent)**

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Wtd Avg
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Aa1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Aa2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Aa3	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.09
A1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
A2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
A3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Baa1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.07
Baa2	0.0	0.0	0.0	2.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.27
Baa3	0.0	1.8	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.33
Ba1	0.0	0.0	0.0	1.2	5.1	0.0	1.0	3.2	1.3	0.0	0.8	1.20
Ba2	0.0	1.5	4.6	1.1	0.8	0.0	1.7	3.3	0.0	0.0	0.0	1.11
Ba3	2.4	0.0	1.8	2.6	2.4	2.9	3.8	3.4	9.6	0.6	0.7	3.00
B1	1.3	9.5	4.4	9.8	4.2	5.0	7.3	9.5	8.7	1.2	3.8	6.19
B2	18.5	3.7	17.9	7.0	6.8	7.0	11.7	12.4	16.8	9.5	3.6	11.13
B3	11.1	0.0	5.0	26.9	8.7	8.3	11.8	41.2	21.1	14.9	9.2	16.24

**Table 4**

**Average Cumulative Default Rates 1 to 20 Years (Percent)**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.1	1.3	1.6	1.8	2.2	2.4	2.6	2.6	2.6
Aa	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.1	1.3	1.5	1.8	1.8	1.8	1.9	2.0	2.2	2.5
A	0.0	0.1	0.3	0.5	0.6	0.8	1.1	1.3	1.6	2.0	2.3	2.7	3.0	3.3	3.6	4.0	4.3	4.6	5.0	5.2
Baa	0.2	0.5	0.9	1.5	2.0	2.5	3.1	3.7	4.4	5.0	5.6	6.2	6.8	7.4	8.2	8.9	9.7	10.5	11.1	11.7
Ba	1.8	4.4	6.9	9.4	11.8	13.8	15.3	16.7	18.1	19.5	20.8	22.2	23.5	24.5	25.5	26.4	27.3	28.1	28.9	29.8
B	8.3	14.8	20.4	24.8	28.4	31.9	34.3	36.7	38.4	40.0	41.1	41.7	42.5	43.0	43.7	44.4	45.3	45.6	45.6	45.6
Investment Grade	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.9	2.3	2.6	3.0	3.5	3.9	4.3	4.8	5.3	5.7	6.2	6.7	7.1
Speculative Grade	4.5	8.5	12.0	15.1	17.9	20.2	22.0	23.6	25.0	26.4	27.7	28.9	30.1	30.9	31.8	32.7	33.5	34.1	34.8	35.5

**Table 5**

**Cumulative Default Rates for Cohorts Formed 1970 through 1993 (Percent)**

Years:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Cohort Formed January 1, 1970</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.7	0.7	1.1	1.4	1.4	1.4	1.8	1.8	2.5	2.5	2.5
Baa	0.3	0.3	0.6	1.2	1.5	1.5	1.8	2.4	2.7	2.7	3.0	3.0	3.9	4.2	4.5	5.2	6.1	7.0	7.3	7.6
Ba	8.4	9.9	10.3	11.3	11.8	12.8	13.3	13.8	15.3	15.3	15.3	16.3	16.7	17.2	17.2	17.7	19.7	19.7	19.7	20.2
B	21.6	21.6	27.5	27.5	29.4	29.4	29.4	33.3	33.3	33.3	33.3	33.3	37.3	37.3	37.3	39.2	39.2	39.2	39.2	39.2
<b>Cohort Formed January 1, 1971</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.7	0.7	1.1	1.4	1.4	1.4	1.8	1.8	2.5	2.5	2.5
Baa	0.0	0.3	0.9	1.1	1.1	1.4	2.0	2.6	2.6	2.8	2.8	3.7	4.0	4.3	4.8	5.7	6.6	6.8	7.1	8.3
Ba	1.5	2.0	3.0	3.6	5.1	5.6	6.1	7.1	7.1	8.1	8.1	8.6	9.1	9.1	9.6	12.2	12.2	12.2	12.7	12.7
B	0.0	8.3	8.3	11.1	11.1	11.1	16.7	16.7	16.7	16.7	16.7	22.2	22.2	22.2	25.0	25.0	25.0	25.0	25.0	25.0
<b>Cohort Formed January 1, 1972</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	1.0	1.0	1.0	1.3	1.3	1.9	1.9	2.3	2.9
Baa	0.0	0.5	0.8	0.8	1.1	1.6	2.2	2.2	2.7	2.7	3.3	3.5	3.8	4.3	5.1	6.0	6.2	6.8	8.1	10.0
Ba	0.5	1.5	2.0	3.5	4.0	4.5	5.6	5.6	5.6	6.6	7.6	8.1	9.1	10.1	12.6	12.6	12.6	13.1	13.1	16.2
B	11.8	11.8	14.7	14.7	14.7	20.6	20.6	20.6	20.6	20.6	26.5	26.5	26.5	29.4	29.4	29.4	29.4	29.4	29.4	29.4
<b>Cohort Formed January 1, 1973</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.9	0.9	1.3	1.3	1.3	1.9	1.9	2.2	2.8	3.5
Baa	0.5	0.8	1.0	1.3	1.8	2.3	2.3	2.8	2.8	3.3	3.8	4.6	5.1	5.8	6.6	6.8	7.3	8.9	10.6	10.6
Ba	0.5	1.1	2.2	2.7	3.2	4.3	4.3	4.3	5.4	7.0	7.5	7.5	8.6	11.3	11.8	11.8	12.4	13.4	17.2	17.7
B	3.4	6.9	6.9	6.9	13.8	13.8	13.8	13.8	13.8	20.7	20.7	20.7	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
<b>Cohort Formed January 1, 1974</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baa	0.0	0.5	0.8	1.3	1.8	1.8	2.3	2.3	2.8	3.3	3.8	4.6	5.1	5.8	6.6	6.8	7.3	8.9	10.6	10.6
Ba	0.0	1.1	1.7	2.2	3.4	3.4	3.4	3.4	3.9	5.6	6.1	7.8	8.6	11.7	12.3	12.8	14.5	17.9	18.4	19.6
B	6.9	6.9	6.9	6.9	13.8	13.8	13.8	17.2	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	27.6	27.6	27.6
<b>Cohort Formed January 1, 1975</b>																				
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ba	1.6	2.7	3.8	4.4	4.4	4.4	4.9	6.6	7.1	7.1	8.7	12.6	13.7	13.7	14.2	15.3	17.5	18.0	19.1	19.1
B	3.0	3.0	9.1	12.1	12.1	12.1	15.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	30.3	30.3	30.3	30.3

Table 5 (continued)

Cumulative Default Rates for Cohorts Formed 1970 through 1993 (Percent)																		
Years:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>Cohort Formed January 1, 1976</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	2.4	2.4	2.4	2.4
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	1.7	1.7	1.7	1.7	1.7	1.7
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.8	1.6	1.6	2.2	3.5	3.5	3.8
Baa	0.0	0.3	0.6	0.6	0.9	0.9	2.0	2.6	3.5	4.1	4.3	4.9	4.9	5.5	7.2	9.0	9.6	9.6
Ba	1.1	2.2	3.2	3.2	3.8	4.3	5.4	5.9	7.6	11.4	12.4	12.4	13.0	14.1	17.3	17.3	17.8	18.9
B	0.0	6.3	9.4	9.4	9.4	12.5	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	25.0	25.0	25.0
<b>Cohort Formed January 1, 1977</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	2.3	2.3	2.3	2.3	2.3
Aa	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6
A	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.8	0.8	2.1	2.1	2.8	4.1	4.1	4.4	4.4
Baa	0.3	0.6	0.6	0.6	0.6	1.8	2.3	3.2	3.8	4.1	4.7	4.7	5.3	6.7	8.5	9.1	9.1	9.1
Ba	0.6	1.7	1.7	2.2	2.8	3.9	4.4	4.4	6.1	10.0	11.1	11.1	11.7	12.8	16.1	16.7	17.8	17.8
B	8.8	11.8	11.8	14.7	17.6	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	29.4	29.4	29.4	29.4
<b>Cohort Formed January 1, 1978</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Aa	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
A	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.8	0.8	1.9	1.9	2.9	4.0	4.0	4.2	4.2	4.2
Baa	0.0	0.0	0.0	0.0	1.2	1.5	2.4	3.2	3.2	3.8	4.1	4.7	6.2	8.3	8.8	8.8	8.8	8.8
Ba	1.1	1.1	1.1	1.7	2.8	3.9	3.9	6.7	11.8	13.5	13.5	14.0	15.7	19.1	19.7	21.3	21.3	21.3
B	5.3	5.3	10.5	13.2	18.4	18.4	21.1	21.1	23.7	23.7	23.7	23.7	23.7	28.9	28.9	28.9	28.9	28.9
<b>Cohort Formed January 1, 1979</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Aa	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
A	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.8	0.8	1.9	1.9	2.7	3.7	3.7	4.0	4.0	4.0	4.0
Baa	0.0	0.3	0.3	1.5	1.8	2.1	3.2	3.2	3.8	4.1	4.7	6.8	8.8	9.4	9.4	9.4	9.4	9.4
Ba	0.5	0.5	1.0	2.0	4.0	6.6	9.6	14.6	16.2	16.2	16.7	18.7	22.7	23.7	25.3	25.3	25.3	25.3
B	0.0	5.3	7.9	13.2	13.2	15.8	18.4	23.7	23.7	23.7	23.7	23.7	26.3	26.3	26.3	26.3	26.3	26.3
<b>Cohort Formed January 1, 1980</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	1.4	1.4	1.4	1.4	1.4	1.4
A	0.0	0.0	0.3	0.5	0.5	0.5	1.3	1.6	2.3	2.3	3.1	4.2	4.2	4.4	4.4	4.4	4.4	4.4
Baa	0.0	0.0	0.9	1.2	1.8	2.9	2.9	3.2	3.8	4.7	6.7	8.5	8.8	8.8	8.8	8.8	8.8	8.8
Ba	0.0	0.5	2.8	3.8	6.6	9.9	14.6	16.0	16.4	17.8	19.7	24.4	26.3	27.7	27.7	27.7	27.7	27.7
B	4.4	6.7	13.3	17.8	22.2	24.4	31.1	31.1	31.1	31.1	33.3	37.8	37.8	37.8	37.8	37.8	37.8	37.8
<b>Cohort Formed January 1, 1981</b>																		
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Aa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.0	2.0	2.6	2.6	2.6	2.6	2.6
A	0.0	0.3	0.3	0.3	0.3	1.0	1.3	1.8	1.8	2.5	3.5	4.2	4.2	3.8	3.8	3.8	3.8	3.8
Baa	0.0	0.6	1.1	1.7	2.5	2.5	2.8	3.4	4.5	6.5	7.9	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Ba	0.0	2.9	4.1	6.1	9.8	15.5	16.7	17.1	18.4	21.2	26.5	28.6	29.8	29.8	29.8	29.8	29.8	29.8
B	4.1	10.2	14.3	20.4	22.4	30.6	30.6	30.6	30.6	32.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7

Table 5 (continued)

Cumulative Default Rates for Cohorts Formed 1970 through 1993 (Percent)

Years:	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
<b>Cohort Formed January 1, 1982</b>												
Aaa	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	1.6	1.6	1.6	1.6
Aa	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.8	2.4
A	0.2	0.2	0.2	0.2	1.0	1.0	1.5	1.5	2.4	3.6	3.6	3.9
Baa	0.3	0.3	1.5	2.4	2.7	3.3	3.9	5.0	6.8	8.0	8.6	8.6
Ba	2.6	4.8	6.6	10.6	16.1	17.2	17.6	18.7	21.6	25.6	27.1	28.2
B	2.2	8.9	13.3	15.6	24.4	24.4	24.4	24.4	28.9	37.8	40.0	40.0
<b>Cohort Formed January 1, 1983</b>												
Aaa	0.0	0.0	0.0	0.0	1.4	1.4	1.4	2.0	2.0	2.0	2.0	2.0
Aa	0.0	0.0	0.0	0.0	0.4	1.7	1.7	1.7	1.7	2.1	2.5	2.5
A	0.0	0.0	0.0	0.2	0.2	0.7	0.7	1.5	2.4	2.9	3.1	3.1
Baa	0.0	1.3	1.6	2.5	2.8	3.1	4.4	6.0	8.5	8.8	8.8	8.8
Ba	1.0	2.6	6.1	11.7	12.8	14.3	15.8	17.3	21.9	22.4	23.5	23.5
B	6.0	10.3	17.2	25.0	26.7	28.4	29.3	36.2	41.4	44.0	45.7	45.7
<b>Cohort Formed January 1, 1984</b>												
Aaa	0.0	0.0	0.0	0.8	0.8	0.8	1.5	1.5	1.5	1.5	1.5	1.5
Aa	0.0	0.0	0.0	0.8	1.5	1.5	1.5	1.5	1.5	1.9	1.9	1.9
A	0.0	0.2	0.4	0.6	1.3	1.3	2.3	3.1	3.8	3.8	3.8	3.8
Baa	0.6	0.6	0.6	0.9	1.2	2.2	2.8	5.3	5.6	5.9	5.9	5.9
Ba	0.5	3.7	11.1	12.5	14.8	17.6	20.8	25.9	26.4	27.3	27.3	27.3
B	7.3	15.4	22.8	25.2	28.5	32.5	39.0	43.9	45.5	48.0	48.0	48.0
<b>Cohort Formed January 1, 1985</b>												
Aaa	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Aa	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.9	0.9
A	0.0	0.2	1.1	1.9	1.9	3.0	3.7	4.1	4.1	4.1	4.1	4.1
Baa	0.0	1.2	1.2	1.5	2.5	2.8	4.9	5.2	5.6	5.6	5.6	5.6
Ba	2.0	6.3	8.2	10.9	15.2	18.0	22.3	23.8	24.6	24.6	24.6	24.6
B	8.7	17.3	21.3	24.7	28.0	35.3	40.0	41.3	43.3	43.3	43.3	43.3
<b>Cohort Formed January 1, 1986</b>												
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.6	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
A	0.0	0.2	0.7	0.8	1.3	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Baa	1.1	1.1	2.3	3.4	3.9	5.1	5.6	5.9	5.9	5.9	5.9	5.9
Ba	1.9	5.6	7.8	11.5	15.3	19.9	21.8	23.4	23.4	23.4	23.4	23.4
B	11.6	15.5	19.3	22.7	29.3	35.9	38.1	40.3	40.3	40.3	40.3	40.3
<b>Cohort Formed January 1, 1987</b>												
Aaa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
A	0.0	0.0	0.2	1.1	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Baa	0.0	0.8	1.8	2.6	4.6	5.4	5.9	5.9	5.9	5.9	5.9	5.9
Ba	2.6	4.5	8.5	13.2	19.3	21.2	23.3	23.3	23.3	23.3	23.3	23.3
B	5.3	11.4	17.1	24.0	30.0	33.1	34.6	34.6	34.6	34.6	34.6	34.6

**Table 5 (continued)** Cumulative Default Rates for Cohorts Formed 1970 through 1993 (Percent)

Years:	1	2	3	4	5	6
<b>Cohort Formed January 1, 1988</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.2	0.4	0.4	0.4	0.4
A	0.0	0.2	0.9	1.2	1.2	1.2
Baa	0.0	0.3	0.8	2.7	3.5	4.1
Ba	1.5	6.6	11.5	17.7	19.7	21.6
B	5.7	11.4	19.3	27.4	30.4	33.7
<b>Cohort Formed January 1, 1989</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.3	0.3	0.3	0.3	0.3	0.3
A	0.0	0.3	0.8	0.8	0.8	0.8
Baa	0.5	1.3	2.1	3.2	3.2	3.2
Ba	2.7	8.6	15.3	17.5	19.7	19.7
B	8.6	18.9	27.8	31.1	34.3	34.3
<b>Cohort Formed January 1, 1990</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.2	0.2	0.2	0.2	0.2
Baa	0.0	0.8	0.8	0.8	0.8	0.8
Ba	3.3	10.5	12.5	14.9	14.9	14.9
B	12.9	22.2	26.8	30.0	30.0	30.0
<b>Cohort Formed January 1, 1991</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.0
Baa	0.2	0.2	0.2	0.2	0.2	0.2
Ba	5.1	6.3	8.2	8.2	8.2	8.2
B	13.1	19.1	23.2	23.2	23.2	23.2
<b>Cohort Formed January 1, 1992</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.0
Baa	0.0	0.0	0.0	0.0	0.0	0.0
Ba	0.2	0.7	0.7	0.7	0.7	0.7
B	6.4	12.5	12.5	12.5	12.5	12.5
<b>Cohort Formed January 1, 1993</b>						
Aaa	0.0	0.0	0.0	0.0	0.0	0.0
Aa	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	0.0	0.0	0.0	0.0	0.0
Baa	0.0	0.0	0.0	0.0	0.0	0.0
Ba	0.5	0.5	0.5	0.5	0.5	0.5
B	5.2	5.2	5.2	5.2	5.2	5.2

**Table 6**

**Standard Deviations Across Cohorts for 1- to 20-Year Cumulative Default Rates (Percent)**

	<u>1yr</u>	<u>2yr</u>	<u>3yr</u>	<u>4yr</u>	<u>5yr</u>	<u>6yr</u>	<u>7yr</u>	<u>8yr</u>	<u>9yr</u>	<u>10yr</u>	<u>11yr</u>	<u>12yr</u>	<u>13yr</u>	<u>14yr</u>	<u>15yr</u>	<u>16yr</u>	<u>17yr</u>	<u>18yr</u>	<u>19yr</u>	<u>20yr</u>
Aaa	0.00	0.00	0.00	0.17	0.34	0.40	0.51	0.63	0.70	0.76	0.80	0.80	0.86	0.94	0.99	1.04	0.88	0.44	0.47	0.16
Aa	0.06	0.07	0.15	0.27	0.41	0.53	0.56	0.57	0.54	0.67	0.75	0.80	0.85	0.78	0.75	0.78	0.93	0.87	0.75	0.41
A	0.05	0.11	0.34	0.51	0.59	0.77	1.00	1.17	1.32	1.26	1.22	1.30	1.31	1.36	1.32	1.30	1.06	0.80	0.59	0.72
Baa	0.29	0.41	0.60	0.92	1.12	1.25	1.34	1.35	1.71	1.90	2.05	1.98	1.90	1.87	1.77	1.51	1.38	1.31	1.37	1.25
Ba	1.89	3.03	4.22	5.48	6.37	6.85	7.34	7.59	7.56	7.45	7.23	7.56	7.04	5.89	4.54	3.23	2.98	3.14	3.07	3.01
B	4.94	5.47	6.86	7.24	7.85	8.72	8.83	9.38	9.50	9.45	8.67	7.23	6.61	6.19	5.16	5.26	5.10	5.21	5.43	6.04

**Table 7**

**Average Cumulative Default Rates by Modified Rating: 1 to 5 Years (Percent)**

<u>Years:</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Aaa	0.0	0.0	0.0	0.0	0.0
Aa1	0.0	0.0	0.0	0.0	0.0
Aa2	0.0	0.0	0.1	0.2	0.3
Aa3	0.1	0.1	0.1	0.1	0.1
A1	0.0	0.0	0.2	0.4	0.6
A2	0.0	0.1	0.2	0.4	0.7
A3	0.0	0.0	0.1	0.2	0.3
Baa1	0.1	0.2	0.2	0.6	1.1
Baa2	0.3	1.0	1.5	2.6	3.4
Baa3	0.3	0.7	1.1	1.9	2.6
Ba1	1.2	3.3	5.6	9.1	11.7
Ba2	1.1	4.3	8.0	11.2	13.8
Ba3	3.0	7.7	12.5	16.7	20.6
B1	6.2	13.1	19.6	24.7	29.0
B2	11.1	17.3	21.0	24.7	27.0
B3	16.2	26.9	37.2	42.9	49.4

**Table 8**  
**Long-Term Corporate Bond Defaults Since 1970**

**1970**

AIRLIFT INTERNATIONAL  
 BOSTON & ALBANY RAILROAD  
 BOSTON & MAINE RAILROAD  
 CARTHAGE & ADIORN RAILWAY  
 CLEVELAND, CHICAGO & ST. LOUIS RAILWAY CO.  
 CONNECTING RAILWAY CO.  
 ELCOR CHEMICAL  
 FARRINGTON MANUFACTURING COMPANY  
 FOTOCHROME INC.  
 KANAWHA & MICHIGAN RAILWAY  
 LAKE SHORE & MICHIGAN RAILWAY  
 LEHIGH & LAKE ERIE RAILROAD  
 LEHIGH VALLEY HARBOR TERMINAL RAILWAY  
 LEHIGH VALLEY RAILROAD  
 MICHIGAN CENTRAL RAILROAD  
 MOHAWK & MALONE RAILWAY  
 NEW JERSEY JUNCTION RAILROAD  
 NEW YORK & HARLEM RAILROAD CO.  
 NEW YORK & PUTNAM RAILROAD  
 NEW YORK CENTRAL & HUDSON RAILROAD CO.  
 NEW YORK CENTRAL RAILROAD CO.  
 NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO.  
 NORTHERN CENTRAL RAILWAY  
 PENN CENTRAL CO.  
 PEORIA & EASTERN RAILWAY CO.  
 PHILADELPHIA, BALTIMORE & WASHINGTON  
 RAILROAD CO.  
 PITTSBURGH, CINCINNATI & ST. LOUIS RAILROAD  
 PITTSBURGH, YOUNGSTOWN & ASHTABULA  
 RAILWAY  
 ST. LAWRENCE & ADIRONDACK RAILWAY CO.  
 UNITED NEW JERSEY RAILROAD  
 WEST SHORE RAILROAD

**1971**

CENTRAL RAILROAD OF NEW JERSEY  
 MOHAWK AIRLINES  
 OZARK HOLDINGS INC.  
 READING CO.

**1972**

AMERICAN EXPORT INDUSTRIES  
 CHICAGO & ERIE RAILROAD  
 DELAWARE, LACKAWANNA & WESTERN RAILROAD  
 CO., (NEW YORK DIVISION)  
 DELAWARE, LACKAWANNA & WESTERN RAILROAD  
 CO.  
 ERIE RAILROAD  
 FAS INTERNATIONAL  
 HARVARD INDUSTRIES, INC.  
 MORRIS & ESSEX RAILROAD  
 WARREN RAILROAD COMPANY

**1973**

ANN ARBOR RAILROAD CO.  
 ARLAN'S DEPARTMENT STORES INC.  
 EQUITY FUNDING CORPORATION OF AMERICA  
 ESGRO, INC.  
 LYNTEX CORPORATION  
 MISSOURI-KANSAS-TEXAS RAILROAD  
 PARKVIEW-GEM INC.  
 SHERWOOD LEASING CORPORATION

**1974**

BOOTHE COMPUTER  
 CONTINENTAL INVESTMENT  
 ELECTROSPACE CORPORATION  
 INTERSTATE STORES  
 NATIONAL BELLAS HESS INC.  
 OMEGA-ALPHA INC.  
 WESTGATE-CALIFORNIA CORPORATION  
 WOLF CORPORATION

**1975**

CHICAGO, ROCK ISLAND & PACIFIC RAILROAD  
 CUNEO PRESS, INC.  
 DAYLIN INC.  
 GAC PROPER CREDIT  
 GRANT (W.T.) CO.  
 GRAY MANUFACTURING CO.  
 HALLCRAFT HOMES INC.  
 SANITAS SERVICE CORPORATION

**1976**

DUPLAN CORPORATION  
 MIDLAND RESOURCES INC.  
 NEW YORK, SUSQUEHANNA & WEST RAILROAD  
 OPTICAL SCANNING CORPORATION  
 PERMANEER CORPORATION

**1977**

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC  
 RAILROAD CO.  
 CHICAGO, TERRA HAUTE & SOUTHEASTERN  
 RAILWAY  
 FIRST MORTGAGE INVESTORS  
 GROLIER INC.  
 GUARDIAN MORTGAGE INVESTORS  
 RUSCO INDUSTRIES  
 SOUTHERN INDIANA RAILWAY CO.  
 UNITED MERCHANTS AND MANUFACTURERS, INC.

**1978**

ALLIED SUPERMARKETS, INC.  
 COMMONWEALTH OIL REFINING CO., INC.  
 FOOD FAIR, INC.  
 FRIGITEMP CORPORATION  
 LUNDY ELECTRONICS & SYSTEMS

**1979**

AMERICAN RESERVE CORPORATION  
 INFOREX INC.

**1980**

DASA CORPORATION  
 ITEL COMPUTER LEASING  
 ITEL CORPORATION  
 ITEL FINANCIAL INTERNATIONAL N.V.  
 PENN-DIXIE INDUSTRIES, INC.  
 WHITE MOTOR CORPORATION

**1981**

AMERICAN COMMUNICATIONS  
 FSC CORPORATION  
 GATEWAY SPORTING GOODS CO.  
 SEATRAN LINES INC.

**Table 8 (continued)****1982**

AM INTERNATIONAL INC.  
AMAREX INC.  
BRANIFF AIRWAYS, INC.  
CALIFORNIA LIFE CORPORATION  
CURTIS PUBLISHING CO.  
ELECTRO-AUDIO DYNAMICS INC.  
GAMBLES CREDIT  
JOHNS MANVILLE CORPORATION  
LIONEL CORPORATION  
MEGO INTERNATIONAL INC.  
MORTON SHOES COMPANIES, INC.  
NUCORP INC.  
REVERE COPPER & BRASS CO.  
RUSCO INDUSTRIES  
SAXON INDUSTRIES, INC.  
SHELTER RESOURCES CORPORATION  
SOUTH ATLANTIC FINANCIAL  
SPECTOR INDUSTRIES, INC.  
TELECOM CORPORATION  
TRIDEX CORPORATION  
WICKES COMPANIES, INC.  
WICKES/GAMBLE SKOGMO

**1983**

ALTEC CORPORATION  
ANGLO CO. INC.  
BALDWIN-UNITED CORP.  
CONTINENTAL AIRLINES, INC.  
ENERGY MANAGEMENT CORPORATION  
FLIGHT TRANSPORTATION CORPORATION  
HARDWICKE COMPANIES INC.  
INTERNATIONAL HARVESTER CO.  
MARION INTERNATIONAL FINANCE N.V.  
MGF INTERNATIONAL FINANCE  
MGF OIL CORPORATION  
PENINSULA RESOURCES CORPORATION  
TEXAS AIR CORPORATION  
TEXAS GENERAL RESOURCES  
TEXAS INTERNATIONAL AIR  
TEXAS INTERNATIONAL AIRLINES CAPITAL N.V.  
TEXAS INTERNATIONAL AIRLINES FINANCE N.V.  
WILSON FOODS CORPORATION

**1984**

ANACOMP, INC.  
CHARTER COMPANY  
CHARTER INTERNATIONAL FINANCE  
CUSTOM ENERGY SERVICES INC.  
DELMED CORPORATION  
DOCUMATION INC.  
EMONS INDUSTRIES INC.  
GREAT WESTERN UNITED CORPORATION  
KENAI CORPORATION  
LAND RESOURCES CORPORATION  
NORTH AMERICAN CAR CORPORATION  
PAGE PETROLEUM LTD  
PIZZA TIME THEATRE INC.  
STORAGE TECHNOLOGY CORPORATION  
TOMLINSON OIL CORPORATION  
TRANSCONTINENTAL ENERGY CORPORATION  
WORLD AIRWAYS, INC.

**1985**

BEKER INDUSTRIES CORPORATION  
BROCK HOTEL CORPORATION  
BUTTES GAS & OIL CO.  
CASTLE & COOKE, INC.  
CLC OF AMERICA, INC.  
CRYSTAL OIL CO.  
ELSINORE CORPORATION  
GLOBAL MARINE, INC.  
HUNT INTERNATIONAL  
MACRODYNE INDUSTRIES INC.  
MISSION INSURANCE GROUP, INC.  
OAK INDUSTRIES INC.  
OXOCO, INC.  
PENINSULA RESOURCES CORPORATION  
PETTIBONE CORPORATION  
PUNTA GORDA ISLES  
SHARON STEEL CORPORATION  
TACOMA BOATBUILDING CO.  
TEXAS INTERNATIONAL COMPANY  
TEXFI INDUSTRIES INC.  
TEXSCAN CORPORATION  
UV INDUSTRIES, INC.  
WOLVERINE EXPLORATION COMPANY

**1986**

AMERICAN ADVENTURE INC.  
ARGO PETROLEUM CORPORATION  
CHAPMAN ENERGY INC.  
CONSOLIDATED OIL & GAS  
DAMSON OIL CORPORATION  
DIGICON, INC.  
FRONTIER AIRLINES INC.  
GEARHART INDUSTRIES, INC.  
ICO, INC.  
IDEAL BASIC INDUSTRIES, INC.  
INFLIGHT SERVICES INC.  
JOHN BLAIR & COMPANY  
JONES & LAUGHLIN INDUSTRIES  
JONES & LAUGHLIN STEEL  
KENAI CORPORATION  
LABARGE INC.  
LTV AEROSPACE & DEFENSE CO.  
LTV CORPORATION  
LTV INTERNATIONAL N.V.  
LYKES CORPORATION  
MACLEOD-STEDMAN INC.  
MCLEAN INDUSTRIES INC.  
MORAN BROS. INC.  
MORAN ENERGY INTERNATIONAL  
NA-CHURS, INC.  
PETRO-LEWIS CORPORATION  
REPUBLIC STEEL CORPORATION  
REPUBLIC STEEL OVERSEAS FINANCE  
SAVIN CORPORATION  
SMITH INTERNATIONAL INC.  
SUNSHINE MINING COMPANY  
TEXAS AMERICAN ENERGY CORPORATION  
TOWLE MANUFACTURING CO.  
WEDTECH CORPORATION  
WESTERN COMPANY OF NORTH AMERICA  
WESTWORLD COMMUNITY HEALTHCARE, INC.  
YOUNGSTOWN SHEET & TUBE  
ZAPATA CORPORATION

**Table 8 (continued)****1987**

ALLIS-CHALMERS CORPORATION  
AMERICAN HEALTHCARE MANAGEMENT, INC.  
CANNON GROUP, INC.  
CARDIS CORPORATION  
CARE ENTERPRISES, INC.  
CHARLES P. YOUNG CO.  
CONDEC CORPORATION  
DART DRUG STORES, INC.  
FIRST CITY BANCORPORATION OF TEXAS, INC  
GETTY OIL INTERNATIONAL N.V.  
GREATER S. W. FUNDING  
HEALTH RESOURCES  
LAS COLINAS CORPORATION  
MELRIDGE INC.  
MICHIGAN GENERAL CORPORATION  
MORAN ENERGY INC.  
NATIONAL HEALTHCARE INC.  
PENRIL CORPORATION  
RADICE CORPORATION  
READING & BATES ENERGY CORPORATION N.V.  
SPENDTHRIFT FARM  
TEXACO CAPITAL INC.  
TEXACO CAPITAL N.V.  
TEXACO INC.  
TEXACO OPERATIONS EUROPE  
THOUSAND TRAILS, INC.  
TODD SHIPYARDS CORPORATION  
WESTERN UNION CORPORATION  
WESTERN UNION TELEGRAPH CO.  
WORLDS OF WONDER, INC.  
YANKEE COMPANIES, INC.  
YFC INTERNATIONAL FINANCE N.V.

**1988**

ALC COMMUNICATIONS CORPORATION  
ALLEGHENY INTERNATIONAL, INC.  
BASIX CORPORATION  
CAMPANELLI INDUSTRIES INC.  
CHEMETRON CORPORATION  
CLABIR CORPORATION  
COLECO INDUSTRIES, INC.  
CRAZY EDDIE, INC.  
DE LAURENTIIS ENTERTAINMENT GROUP INC.  
FIRST REPUBLICBANK CORPORATION  
GENERAL DEFENSE CORPORATION  
GENERAL HOMES CORPORATION  
GEOTHERMAL RESOURCES INTERNATIONAL INC.  
HAMILTON TECHNOLOGY INC.  
HEALTHCARE USA, INC.  
IFRB CORPORATION  
IFRB TEXAS FINANCE N.V.  
INTERFIRST TEXAS FINANCE  
MAXICARE HEALTH PLANS INC.  
MCCORP  
NELSON ENTERTAINMENT, INC.  
NEW WORLD PICTURES, INC.  
PO FOLKS, INC.  
POPE, EVANS & ROBBINS, INC.  
PREWAY INC.  
PUBLIC SERVICE CO. OF NEW HAMPSHIRE  
REVCO D.S., INC.  
ROBERT BRUCE INDUSTRIES INC.  
SOUTHWEST BANCSHARES, INC.

SUNBEAM CORPORATION  
TEXAS AMERICAN BANCSHARES, INC.  
TEXAS INTERNATIONAL COMPANY  
TIPCO FINANCE N.V.  
TPA OF AMERICA, INC.

**1989**

AFTER SIX INC.  
ALPINE GROUP, INC.  
AMERICAN BUILDING CO.  
AMERICAN CAPITAL CORPORATION  
AMERICAN CONTINENTAL CORPORATION  
AP INDUSTRIES, INC.  
AUDIOTRONICS CORPORATION  
BASTIAN INDUSTRIES INC.  
BENJAMIN FRANKLIN FEDERAL SAVINGS  
ASSOCIATION  
BIO RESPONSE, INC.  
BIO-TECHNOLOGY GENERAL CORPORATION  
BOND BREWING HOLDINGS, LTD.  
CHARTWELL GROUP, LTD.  
CIRCLE EXPRESS, INC.  
COLUMBIA SAVINGS & LOAN OF COLORADO  
COMMONWEALTH SAVINGS & LOAN OF FLORIDA  
CONSOLIDATED COMPANIES  
CONTINENTAL INFORMATION SYSTEMS  
CORPORATION  
DAISY SYSTEMS CORPORATION  
DFC FINANCIAL (OVERSEAS) LTD.  
DFC OVERSEAS INVESTMENT LTD.  
DRUM FINANCIAL CORPORATION  
EASTERN AIRLINES INC.  
EQUITABLE LOMAS LEASING CORPORATION  
ERTY INDUSTRIES  
ESKEY INC.  
FINANCIAL CORPORATION OF AMERICA  
FINANCIAL TRUSTCO CAPITAL LTD.  
FIRST TEXAS SAVINGS ASSOCIATION  
FPA CORPORATION  
G-ACQUISITIONS  
GIBRALTAR FINANCIAL CORPORATION  
GIBRALTAR SAVINGS & LOAN ASSOCIATION  
GRIFFIN RESORTS, INC.  
HEALTHCARE INTERNATIONAL INC.  
HILLSBOROUGH HOLDINGS CORPORATION  
INTEGRATED RESOURCES, INC.  
KANE INDUSTRIES, INC.  
KELSEY-HAYES CO.  
KOOR INDUSTRIES LTD.  
L.F. ROTHSCHILD HOLDINGS, INC.  
LEASEWAY TRANSPORTATION CORPORATION  
LOMAS FINANCIAL CORPORATION  
MERABANK FEDERAL, FSB  
METROPOLITAN BROADCASTING CORPORATION  
MINISCRIBE CORPORATION  
MIRAMAR MARINE CORPORATION  
NEW VISIONS ENTERTAINMENT CORPORATION  
NORTHVIEW CORPORATION  
OLYMPIA BROADCASTING CORPORATION  
PONDEROSA, INC.  
QINTEX (HAL ROACH)  
QINTEX PRODUCTIONS, INC.  
REPUBLIC HEALTH  
RESORTS INTERNATIONAL FINANCING INC.  
RESORTS INTERNATIONAL, INC.  
SAN ANTONIO SAVINGS

**Table 8 (continued)**

SANTA BARBARA SAVINGS & LOAN ASSOCIATION  
SCI TELEVISION, INC.  
SEAMAN FURNITURE COMPANY, INC.  
SERVICE CONTROL CORPORATION  
SIMPLICITY HOLDINGS  
SOUTHMARK CORPORATION  
SWAN BREWERY  
THORTEC INTERNATIONAL, INC.  
VESTRON, INC.  
VYQUEST INC.  
WALTER (JIM) CORPORATION  
WEBCRAFT TECHNOLOGIES  
WESTERN SAVINGS & LOAN ASSOCIATION

**1990**

AIRCOA HOSPITALITY SERVICES, INC.  
ALLIED STORES CORPORATION  
AMDURA CORPORATION  
AMERICAN PIONEER SAVINGS BANK  
AMES DEPARTMENT STORES, INC.  
APL CORPORATION  
ASTREX INC.  
BALFOUR MACLAINE CORPORATION  
BALLY MANUFACTURING CORPORATION  
BALLY'S GRAND, INC.  
BCE DEVELOPMENT CORPORATION  
BLACK BOX, INC.  
C-U FUNDING CORPORATION  
CALTON, INC.  
CENTRUST FEDERAL SAVINGS BANK  
CIRCLE K CORPORATION  
COLORADO-UTE ELECTRIC ASSOCIATION  
COLUMBIA SAVINGS & LOAN ASSOCIATION  
COMMUNITY NEWSPAPERS, INC.  
CONCURRENT COMPUTER CORPORATION  
CONTINENTAL AIRLINES HOLDINGS, INC.  
CONTINENTAL AIRLINES, INC.  
COUNTY BANK, FSB  
CPT CORPORATION  
DARLING-DELAWARE CORPORATION INC.  
DAYS INNS OF AMERICA, INC.  
DIGICON FINANCE N.V.  
DIGICON, INC.  
DIVI HOTELS N.V.  
DOSKOCIL COMPANIES INC.  
EDGCOMB METALS COMPANY  
EDGEELL COMMUNICATIONS, INC.  
EQUITEC FINANCIAL GROUP, INC.  
FAIRFAX (JOHN) GROUP PTY, LTD.  
FAIRFIELD ACCEPTANCE CORPORATION  
FAIRFIELD COMMUNITIES, INC.  
FAR WEST SAVINGS & LOAN ASSOCIATION  
FARLEY, INC.  
FEDERATED DEPARTMENT STORES, INC.  
FEDERATED GROUP INC.  
FIRSTCORP, INC.  
FORSTMANN & COMPANY, INC.  
FORUM GROUP, INC.  
FRANKLIN SAVINGS ASSOCIATION  
GENERAL DEVELOPMENT CORPORATION  
GILLETT HOLDINGS, INC.  
GOLDRIVER FINANCE CORPORATION  
GREYHOUND LINES, INC.  
HALL-MARK ELECTRONICS CORPORATION

HARVARD INDUSTRIES, INC.  
IMPERIAL CORPORATION OF AMERICA  
IMPERIAL SAVINGS ASSOCIATION  
INTERCO, INC.  
INTERNATIONAL CONTROLS  
IROQUOIS BRANDS LTD.  
KINBURN TECHNOLOGY CORPORATION  
KINDER-CARE LEARNING CENTERS INC.  
KURZWEIL MUSIC SYSTEMS, INC.  
LEISURE TECHNOLOGY, INC.  
LINTER TEXTILE CORPORATION  
LVI GROUP, INC.  
MANAGEMENT COMPANY ENTERTAINMENT  
GROUP, INC.  
MGM-PATHE COMMUNICATIONS CO.  
MMR HOLDING CORPORATION  
MORNINGSTAR GROUP, INC.  
MORSE SHOES, INC.  
MORTGAGE & REALTY TRUST  
MOTOR WHEEL CORPORATION  
MUNSINGWEAR INC.  
NATIONAL ENTERPRISES, INC.  
NATIONAL GYPSUM COMPANY  
NICHOLS (SE), INC.  
NVR, L.P.  
ONE BANCORP, THE  
PGI, INC.  
POLLY PECK INTERNATIONAL FINANCE LTD.  
PRIME MOTOR INNS, INC.  
SALANT CORPORATION  
SEMICON INC.  
SERVICE AMERICA CORPORATION  
SERVICO, INC.  
SILICONIX INC.  
SOUTHLAND CORPORATION  
SPECIALTY EQUIPMENT COMPANIES, INC.  
STARCRAFT CORPORATION  
STOTLER GROUP, INC.  
TGX CORPORATION  
TRACOR, INC.  
TRADITIONAL INDUSTRIES, INC.  
TRUMP TAJ MAHAL FUNDING, INC.  
TRUMP'S CASTLE FUNDING, INC.  
TRUVEL CORPORATION  
UNION VALLEY CORPORATION  
UNITED MERCHANTS AND MANUFACTURERS, INC.  
UNIVISION HOLDINGS, INC.  
USG CORPORATION  
WESTERN UNION TELEGRAPH CO.

**1991**

ALLECO, INC.  
AMALGAMATED INVESTMENT CORPORATION  
AMBASE CORPORATION  
AMERICA WEST AIRLINES INC.  
AMERICAN SHARED HOSPITAL SERVICES  
APPLETREE MARKETS, INC.  
AUTODIE CORPORATION  
BALLY'S HEALTH & TENNIS CORPORATION  
BANK OF NEW ENGLAND CORPORATION  
BARRY'S JEWELERS, INC.  
BEST PRODUCTS INC.  
BONNEVILLE PACIFIC CORPORATION  
BURNHAM BROADCASTING COMPANY L.P.  
C.R. ANTHONY COMPANY  
CARTER HAWLEY HALE STORES, INC.

**Table 8 (continued)**

CHARTER MEDICAL CORPORATION  
CNC HOLDING CORPORATION  
COLUMBIA GAS SYSTEM, INC.  
COMMUNITY NATIONAL BANKCORP, INC.  
CONTINENTAL HEALTH AFFILIATES, INC  
CROSSLAND SAVINGS, FSB  
DAMSON OIL CORPORATION  
DIVERSIFIED INDUSTRIES INC.  
DSC COMMUNICATION CORPORATION  
E-II HOLDINGS, INC.  
EAGLE PICHER INDUSTRIES INC.  
ENSTAR GROUP INC.  
ENTERTAINMENT MARKETING, INC.  
ENZO BIOCHEM INC.  
EUA POWER CORPORATION  
EXECUTIVE LIFE INSURANCE CO.  
EZ COMMUNICATIONS, INC.  
FIRST CAPITAL HOLDINGS CORPORATION  
FIRST CITY INDUSTRIES INC.  
FIRST EXECUTIVE CORPORATION  
FRIES ENTERTAINMENT, INC.  
GAYLORD CONTAINER CORPORATION  
GILBERT/ROBINSON, INC.  
GORDON JEWELRY CORPORATION  
GREAT AMERICAN BANK, FSB  
GREAT AMERICAN INDUSTRIES INC.  
HILLS DEPARTMENT STORES, INC.  
HILLS STORES COMPANY  
HOMESTEAD SAVINGS FS & LA  
HQ OFFICE SUPPLIES WAREHOUSE INC.  
INSILCO CORPORATION  
JOURNAL COMPANY INC.  
JPS TEXTILE GROUP, INC.  
KOGER PROPERTIES INC.  
LAVALIN  
LEXINGTON PRECISION CORPORATION  
LIONEL CORPORATION  
MARCADÉ GROUP INC.  
MAXWELL COMMUNICATIONS CORPORATION PLC.  
MAXWELL COMMUNICATIONS FINANCE CANADA,  
LTD.  
MAXWELL FINANCE (JERSEY) LTD.  
MAYFLOWER GROUP, INC.  
MCCRORY-PARENT CORPORATION  
MEMOREX TELEX CORPORATION  
MERITOR SAVINGS BANK  
METRO AIRLINES, INC.  
MIDWAY AIRLINES, INC.  
MUTUAL BENEFIT LIFE INSURANCE CO.  
NACO FINANCE CORPORATION  
NATIONAL CONVENIENCE STORES INC.  
NORTEK INC.  
NU-MED INC.  
ORION PICTURES CORPORATION  
P.A. BERGNER & CO.  
PACIFIC INTERNATIONAL SERVICES CORPORATION  
PAN AM CORPORATION  
PAN AMERICAN WORLD AIRWAYS, INC.  
PATHE COMMUNICATIONS CORPORATION  
PAY 'N' PAK STORES, INC.  
PEEBLES, INC.  
PETROLANE GAS SERVICE, L.P.  
REXENE CORPORATION  
RULE INDUSTRIES, INC.

SCOVILL INC.  
SOUTHEAST BANKING CORPORATION  
SOUTHEASTERN PUBLIC SERVICE CO.  
STERLING OPTICAL CORPORATION  
SUDBURY INC.  
SUN CARRIERS, INC.  
SUNSHINE PRECIOUS METALS INC.  
TALLEY INDUSTRIES, INC.  
TELEX CORPORATION  
THERMADYNE INDUSTRIES, INC.  
TRANS WORLD AIRLINES  
TRANSCISCO INDUSTRIES, INC.  
TRIANGLE PACIFIC CORPORATION  
TRITON GROUP LTD.  
U.S. HOME CORPORATION  
ULTRASYSTEMS, INC.  
WORK WEAR CORPORATION INC.  
WTD INDUSTRIES, INC.  
ZALE CORPORATION  
ZALE CREDIT CORPORATION

**1992**

ADIENCE EQUITIES, INC.  
ALLIANT COMPUTER SYSTEMS CORPORATION  
AM INTERNATIONAL INC.  
AMERICAN EAGLE PETROLEUMS LTD.  
BRAMALEA LIMITED  
CAROLCO PICTURES INC.  
CHEROKEE GROUP INC.  
CONTROL SECURITIES FINANCE B.V.  
COOK INLET COMMUNICATIONS CORPORATION  
DEL NORTE FUNDING CORPORATION  
DR HOLDINGS, INC.  
EL PASO ELECTRIC COMPANY  
EL PASO FUNDING CORPORATION  
ENVIRODYNE INDUSTRIES, INC.  
FIRST CITY BANCORPORATION OF TEXAS, INC  
FLORIDA STEEL CORPORATION  
GALACTIC RESOURCES, LTD.  
HERON INTERNATIONAL FINANCE N.V.  
HOMEFED CORPORATION  
HORN & HARDART CO.  
ILIO INC.  
INTERMARK INC.  
LADISH CO., INC.  
LIVE ENTERTAINMENT, INC.  
LOMAS & NETTLETON MORTGAGE INVESTORS  
LONDON & PROVINCIAL SHOP CENTRES (HOLD-  
INGS) LTD.  
MAI SYSTEMS CORPORATION  
MARQUEST MEDICAL PRODUCTS INC.  
MCCRORY CORPORATION  
MOUNTLEIGH GROUP PLC  
NRM ENERGY COMPANY, L.P.  
PATHE COMMUNICATIONS CORPORATION  
PERPETUAL FINANCIAL CORPORATION  
R. H. MACY & CO., INC.  
R. N. KOCH  
RESTAURANT ENTERPRISES GROUP, INC.  
ROBERTSON-CECO CORPORATION  
ROPS TEXTILES, INC.  
RYMER FOODS, INC.  
SAVIN CORPORATION  
SEAMAN FURNITURE COMPANY, INC.  
SPAULDING COMPOSITES COMPANY  
SPI HOLDINGS, INC.

**Table 8 (continued)**

SPRECKELS INDUSTRIES, INC.  
TELEMUNDO GROUP, INC.  
THOUSAND TRAILS, INC.  
TOWN & COUNTRY CORPORATION  
WANG LABORATORIES INC.  
WOODWARD'S LTD.

**1993**

ALMAC'S INC.  
ANGELES CORPORATION  
B-E HOLDINGS INC.  
BROOKE GROUP LTD.  
BUCYRUS-ERIE COMPANY  
CHEROKEE INC.  
COOPER COMPANIES, INC.  
DAF N.V.  
ERLY INDUSTRIES, INC.  
GACC HOLDING COMPANY  
GLENDALE FEDERAL BANK, FSB  
GLENFED, INC.  
GREAT AMERICAN COMMUNICATIONS CO.  
GULF USA CORPORATION  
HEALTHCO INTERNATIONAL, INC.

HEXCEL CORPORATION  
IVERSON TECHNOLOGY CORPORATION  
JAMESWAY CORPORATION  
JWP, INC.  
KETTLE RESTAURANTS, INC.  
MARTECH USA, INC.  
MEI DIVERSIFIED, INC.  
MESA CAPITAL CORPORATION  
MESA, INC.  
MICROSEMI CORPORATION  
MINSTAR INC.  
NH HOLDINGS INC.  
NORSK DATA A/S  
NVF CO.  
OLYMPIA & YORK WATER STREET FINANCE COR-  
PORATION  
PEOPLES JEWELLERS LIMITED  
SYNERGY GROUP, INC.  
TDII CO., INC.  
THE TRIANGLE CORPORATION  
TRIZEC CORP LTD.  
VALUE MERCHANTS, INC.  
WEAN, INC.  
WESTWOOD GROUP, INC.

## Chronological List of 1993 Public Corporate Bond Defaults (Millions)

Company	Defaulted Debt	Not Defaulted	Status
<b>January 1993</b>			
NVF Company	\$59.4		In Chapter 11
Peoples Jewellers Limited	\$18.3		Liquidated
<i>Defaulted Debt (mil):</i>	<i>\$77.7</i>		
<i>Number of Companies:</i>	<i>2</i>		
<b>February 1993</b>			
Daf N.V.	\$81.2		Bankrupt
MEI Diversified Inc.	\$100.0		In Chapter 11
The Triangle Corporation	\$15.0		Exchange offer completed
Westwood Group, Inc.	\$19.6		
<i>Defaulted Debt (mil):</i>	<i>\$215.8</i>		
<i>Number of Companies:</i>	<i>4</i>		
<b>March 1993</b>			
B-E Holdings, Inc.	\$36.8		Negotiating with bondholders
Glendale Federal Bank, FSB	\$35.7		Exchange offer completed
Glenfed Inc.	\$59.9		Exchange offer completed
Gulf USA Corporation	\$67.5		In Chapter 11
Microsemi Corp.	\$33.3		
Synergy Group Incorporated	\$85.0		
Wean Inc.	\$17.7		In Chapter 11
<i>Defaulted Debt (mil):</i>	<i>\$335.8</i>		
<i>Number of Companies:</i>	<i>7</i>		
<b>April 1993</b>			
Cherokee Inc.	\$31.2		In Chapter 11
GACC Holding Company	\$36.7		Completed prepackaged reorganization
Great American Comm. Co.	\$43.5		Completed prepackaged reorganization
<i>Defaulted Debt (mil):</i>	<i>\$111.4</i>		
<i>Number of Companies:</i>	<i>3</i>		
<b>May 1993</b>			
Angeles Corporation	\$49.3		In Chapter 11
Mesa Inc.	\$300.0		Exchange offer completed
Mesa Capital Corp.	\$300.0		Exchange offer completed
NH Holding Incorporated	\$355.0		In Chapter 11
Oly. & York Water St. Fin. Corp.	\$548.3		In Chapter 11
<i>Defaulted Debt (mil):</i>	<i>\$1,552.6</i>		
<i>Number of Companies:</i>	<i>5</i>		

**Chronological List of 1993 Public Corporate Bond Defaults** (cont'd)  
(\$Millions)

Company	Defaulted Debt	Not Defaulted	Status
<b>June 1993</b>			
Bucyrus-Erie Company	\$75.4		Negotiating with bondholders
Healthco Inc.	\$0.3		In Chapter 11
Iverson Technology Corp.	\$9.3		Soliciting for prepack Ch. 11
<i>Defaulted Debt (mil):</i>	<i>\$85.0</i>		
<i>Number of Companies:</i>	<i>3</i>		
<b>July 1993</b>			
Jamesway Corporation	\$25.0		In Chapter 11
Norsk Data A.S.	\$41.2		
<i>Defaulted Debt (mil):</i>	<i>\$66.1</i>		
<i>Number of Companies:</i>	<i>2</i>		
<b>August 1993</b>			
Almac's Inc.	\$50.0		In Chapter 11
<i>Defaulted Debt (mil):</i>	<i>\$50.0</i>		
<i>Number of Companies:</i>	<i>1</i>		
<b>September 1993</b>			
The Cooper Companies, Inc.	\$38.9		Exchange offer outstanding
JWP Inc.	\$7.0		Prepackaged bankruptcy proposed
<i>Defaulted Debt (mil):</i>	<i>\$45.9</i>		
<i>Number of Companies:</i>	<i>2</i>		
<b>October 1993</b>			
Brooke Group Ltd.	\$220.7		Exchange offer completed
Trizec Corp.	\$255.8	\$307.0	Negotiating with bondholders
<i>Defaulted Debt (mil):</i>	<i>\$476.5</i>		
<i>Number of Companies:</i>	<i>2</i>		
<b>November 1993</b>			
Minstar Inc.	\$50.8	\$3.0	Negotiating with bondholders
<i>Defaulted Debt (mil):</i>	<i>\$50.8</i>		
<i>Number of Companies:</i>	<i>1</i>		
<b>December 1993</b>			
Erly Industries	\$8.9		
Hexcel Corp.	\$26.0		In Chapter 11
Kettle Restaurants, Inc.	\$8.8		
Martech USA, Inc.	\$20.3		In Chapter 11
TDII Co., Inc.	\$450.2		In Chapter 11
Value Merchants, Inc.	\$17.5		In Chapter 11
<i>Defaulted Debt (mil):</i>	<i>\$531.7</i>		
<i>Number of Companies:</i>	<i>6</i>		
<b>Yearly Totals</b>			
	<b>1993</b>	<b>1992</b>	<b>1991</b>
<i>Defaulted Debt (mil):</i>	<i>\$3,599.4</i>	<i>\$8,328.8</i>	<i>\$21,222.0</i>
<i>Number of Companies:</i>	<i>38</i>	<i>49</i>	<i>98</i>

## 1993 Corporate Bond Defaults

### **Almac's Inc.**

*Supermarket operator*

#### **\$50 million 13% Senior Secured Notes due 2000**

• Almac's Inc., incorporated in Delaware in 1989, owns and operates 44 full-line supermarkets in Rhode Island and Massachusetts; their 32 Rhode Island stores comprise that state's leading supermarket chain. In 1989, the present Almac's was formed through purchases of assets and the assumption of liabilities of the predecessor company of the same name and the Rhode Island Produce Company. Since then, Almac's has undertaken an extensive remodeling and acquisition program that modernized properties, maximized each stores selling area, and increased the number of stores by 11. Almac's also significantly reduced costs by replacing the predecessor Almac's company-owned warehouse and distribution facilities with a supply agreement with Wetterau Incorporated. Since 1990, when sales grew by 17.4% and gross profit by 27.2% over the predecessor's results, sales have slowly deteriorated—largely due to increased competition and a weak economy. In 1991, sales dropped by \$9.1 million dollars to \$541.7 million, then in 1992 by \$37.2 million to \$504.5 million. Through cost cutting measures, Almac's was able to increase 1991 gross profits from \$127.7 million to \$141.2 million. Despite considerable debt incurred in the 1989 purchase—over \$100 million—in 1991, the new Almac's produced its first positive net income: \$600,000. With the sharp drop in 1992 sales, Almac's saw its gross profits fall back to \$135.6 million and its net income plummet to a \$3.2 million loss. During the first half of 1993, sales fell another 16.3% and operating profit fell to \$1.2 million, 76.3% lower than the comparable 1992 figure. Yet the firm owed \$5.9 million in interest payments over the period.

8/1/93—Missed interest payment on 13% senior notes.

8/6/93—Filed for Chapter 11 protection.

*(Moody's contact: Christian Voss)*

### **Angeles Corporation**

*Real estate developer & management*

#### **\$17.9 mil 12.5% Senior Subordinated Debentures due 1995**

#### **\$31.4 mil 12.5% Subordinated Debentures due 2005**

• Angeles Corporation is a real estate investment concern with 1992 revenues of \$46.6 million. Its primary lines of business are: property management (13% of 1992 revenues), real estate investment advisory services (12% of 1992 revenues), factory outlet shopping malls (23% of 1992 revenues), and congregate-type senior housing (36% of 1992 revenues). These interests are spread throughout the United States with no notable regional concentration. Yet the sour real estate market of the last several years has depressed both prices and rents and, consequently, Angeles' cash flow. Despite this environment, Angeles launched a capital-intensive expansion into the congregate-type senior housing market in 1989. Successful communities of this type usually need to be carried for about four years before they can stand on their own. But the recession of 1990 worsened business conditions and further restrained Angeles' profitability. In 1989, total assets were \$135.2 million while long-term debt stood at \$68.9 million. Through an aggressive debt-financed expansion, the same measures climbed to \$290.9 million and \$242.6 million, respectively, by FY 1992. As earnings declined and long-term debt mounted, the ratio of EBIT to interest expense sagged from 0.99 in 1989 to just 0.18 in 1992. Angeles' balance sheet continued to weaken through the end of 1992 and into the first quarter of 1993. After three years of negative gross cash flow, Angeles launched a renegotiation effort with major creditors in March of 1993. The company voluntarily filed for Chapter 11 on May 3, 1993.

05/03/93—Filed for bankruptcy protection under Chapter 11.

*(Moody's contact: Thierry Perrein)*

### **Brooke Group Ltd.**

*Manufacturer and distributor of cigarettes and trading cards*

#### **\$89.2 mil 16.125% Senior Subordinated Reset Notes due 1997**

#### **\$131.5 mil 14.5% Subordinated Debentures due 1998**

• Brooke Group Ltd. ("Brooke") was incorporated in Delaware in 1980. Principal businesses are the manufacture and distribution of cigarettes and trading cards, though the company conducts a variety of other operations through subsidiaries and investments. Principal subsidiaries are Liggett Group Inc. (tobacco) and Skybox International Inc. (trading cards); a recent spinoff reduced Brooke's ownership in Skybox to a minority stake, yet retained controlling interest through preferred shares. Citing potential synergies, Bennet Lebow led a 1990 merger of Brooke with its parent, privately-owned Brooke Partners, L.P. ("Partners"), in the face of recessionary contractions in its core businesses. Lebow, chairman, CEO, and president of Brooke, controlled an 84% interest in Brooke through Partners via majority interest of one of its general partners. Through creative rearrangement of the Brooke family tree, Partners was now able to meet its interest expense through pre-tax earnings, instead of up-streamed dividends. Lawsuits ensued alleging LeBow to be manipulating Brooke to his gain and the detriment of minority stockholders. Partners controlled a variety of businesses; the two most notable were 69.9%-owned MAI Systems Corp. ("MAI"), a mini-computer manufacturer and software provider, and 43.4%-owned New Valley Corp. ("New Valley", formerly Western Union Corp.), a provider of transaction services and electronic delivery of messages. MAI was an underperforming company that subsequently defaulted on \$40 million of public debt in Feb. 1992. At the time of the merger, New Valley was already laden with over \$570 million of defaulted debt. Partners carried a sizable debt burden of its own, and the merger boosted Brooke's total long-term debt by over 13X from \$33.5 to \$439.4 million. The new businesses failed to contribute to Brooke's cash flow. A healthy FY1990 EBIT/interest expense ratio of 8.69 quickly deteriorated to .93 in the following comparable period; it has since remained below 0.5. With the merger, total debt/EBITDA jumped from .59 to 4.54. Operating profit as a percent of sales fell from a pre-merger 11.4% to a post merger 6.6%. On operating losses, the following year this ratio plummeted to -3.3%, reflecting Brooke's inability to efficiently incorporate the merged businesses.

10/01/93—Missed interest payment on debentures and notes.

10/29/93—Made interest payment on debentures and notes within grace period.

*(Moody's contact: Duncan Sankey)*

## **Bucyrus-Erie Company**

*Mining equipment manufacturer*

**\$74.6 mil 16% Senior Reset Notes due 1996**

**\$0.80 mil 9% Sinking Fund Debentures due 1999**

• The management of Bucyrus-Erie Company formed B-E Holdings in May 1986 in anticipation of the LBO it led in February 1988. B-E Holdings has no other business activities other than as a holding company and certain members of the senior management of Bucyrus-Erie owned all of its common stock prior to their exercise of B-E Holdings warrants in the first quarter of 1992. Bucyrus-Erie is a leading worldwide manufacturer of surface mining machines and their replacements parts. The company's primary markets are: coal mining (70%), hard rock mining (20%), and phosphate production (10%). Despite an industry-wide surge in demand, an accompanying increase in the company's backlogs, and strong market position, Bucyrus-Erie has failed to produce a positive return since the 1988 LBO. The industry's characteristically volatile demand for capital investment, intense competition and the company's own expensive capital structure have combined to restrain profitability. In the wake of the LBO, interest expense quintupled from \$4.9 million in 1987 to \$26.4 million for the 12 months ended September 1992. Despite a 79% increase in sales over the same period, EBITDA/Interest Expense slumped from 1.47 in 1987 to 1.14 in 1992 while Total Debt/Book Capitalization rocketed from 0.12 to 1.34. In February, B-E Holdings and Bucyrus-Erie announced a financial restructuring that included the omission of several of Bucyrus-Erie's June and July 1993 interest payments. Bucyrus-Erie also declared that it would not advance funds to B-E Holdings for payment of its debt obligations.

06/01/93—Missed interest payment on sinking fund debentures.

07/01/93—Missed interest payment on senior reset notes.

*(Moody's contact: Brian Oak)*

## **B-E Holdings, Inc.**

*Holding company — owns Bucyrus-Erie Company*

**\$36.8 mil 12.5% Senior Debentures due 2002**

• See accompanying critique for Bucyrus-Erie Company.

03/15/93—Missed interest payment on senior debentures.

*(Moody's contact: Brian Oak)*

## **Cherokee Inc.**

*Holding company—owns Cherokee Group Inc.*

**\$32.3 mil 16.25% Senior Subordinated Debentures (Pay-in-Kind) due 2001**

• Cherokee Inc. ("Cherokee"), formally known as Green Acquisition Co., was originally formed by Deutschman Clayton in 1989 to acquire the Cherokee Group Inc. ("Group") in a leveraged buyout. The company, engaged in the design and the manufacture of apparel and footwear goods, came out of the acquisition with a high debt burden representing almost 80% of book capitalization. Positioned principally in moderately priced segments of the highly competitive and volatile fashion industry, Group was seriously affected by the soft retail environment. Although sales increased in fiscal 1991, operating margins were under pressure due to intense competition triggered by the economic slowdown. Fiscal 1992 was dramatic for the company. Sales plummeted 18% to \$195 million due to the loss of business in private label markets and a decrease in demand from key customers. Interest coverage tests narrowed, both as a result of the erosion of internal cash flow and a coupon reset on the senior subordinated discount notes to 15.5% from 9% in May 1992, increasing annual interest expense by approximately \$6 million. Faced with a liquidity problem, Group proposed an exchange offer, which, however, had failed by mid-summer. Left undercapitalized, Group announced that it would miss payment on \$8.2 million of interest due in November. Having no access to external credit facilities, Group and consequently Cherokee, filed for protection under bankruptcy law.

04/23/93—Filed for protection under Chapter 11.

*(Moody's contact: Christian Voss)*

## **The Cooper Companies, Inc.**

*Provider of health care products and services*

**\$38.9 million 10.625% Convertible Subordinated Reset Debentures due 2005**

• Organized in 1980, The Cooper Companies is involved in a variety of health product and service businesses. Contact lenses have been the company's main product since exiting the surgical and diagnostic equipment market in late 1988. In 1990, TCC began a plan of diversification and debt reduction in order to protect against the changing economic climate. The company acquired various rights to certain ophthalmic and surgical products and processes, increasing the scope of TCC's newly formed operating subsidiaries, CooperVision Pharmaceuticals and CooperSurgical. In May 1992, TCC acquired Hospital Group of America from Nu-Med, Inc., which provides psychiatric and substance abuse treatment; at the same time, TCC entered into an agreement with Nu-Med to manage additional special-care facilities. Until recently, revenues had fallen from 1989's pre-diversification levels; 1989's \$52.8 million in revenues dropped to \$35.5 million by 1991 before picking up to \$63.3 million in 1992, lifted substantially by HGA. SGA expenses have remained insupportably high over these years, annually averaging 95.3% of total revenues, in parts reflecting both lower-than-expected results of the acquired businesses and large legal fees and other litigation costs. By 1991, TCC reduced total debt by over 50% from 1989's \$102.9 million, although the 1992 acquisitions slightly increased indebtedness to \$58.6 million. Despite a steep drop in interest expense, the ratio of EBIT to interest expense remained volatile and unfavorable: -.37, .68, -2.44, and -.88, for the fiscal periods 1989 through 1992, respectively. Stockholders' equity, which buoyed the company over this loss-making period, has been successively depleted from its 1989 peak of \$101.7 million to \$46.3 at year-end 1992; cash and cash equivalents have been used to cover interest payments, as well as to reduce debt and fund acquisitions. In the first half of 1993, TCC has seen results comparable with the period six months earlier, depleting equity an additional 46.9% to \$24.6 million. Litigation alleging this issue's price manipulation hangs over TCC.

7/23/93—Announced would miss payment on 9/01/93.

9/01/93—Missed interest payment on reset debentures.

9/30/93—Made interest payment within grace period.

*(Moody's contact: Randal Gaulke)*

## Daf N.V.

*Commercial vehicle manufacturer*

### **Fl 150 mil 6.75% Debentures due 1996 (US \$81.2 mil)**

• Daf N.V. is western Europe's sixth largest truck producer with total employment of 12,650 as of February 2, 1993 (down from 16,600 in 1987). Major production plants are located in the Netherlands, Belgium, and the United Kingdom and the company's European distribution system is expansive with 1,300 sales and service outlets. A severe recession in European commercial vehicle demand began in 1990 and has continued through the present. Especially hard hit has been the UK wherein sales of trucks (gross vehicle weight above 3.5 tons) have contracted by more than half from their 1989 levels. Despite an ongoing restructuring effort set in motion after the 1987 takeover of British Leyland, sales plummeted along with demand, resulting in 1990 losses of Fl 150 million, 1991 losses of Fl 395 million and 1992 losses of Fl 257 million. During this period, Daf invested nearly £170 million in design and development of a new range of medium-heavy duty trucks, and was struggling with modernizing the aging van manufacturing plant it had acquired in the 1987 takeover. The outlays strained the firm's cash flow and impinged on its ability to service more than Fl 1 billion of long-term debt. 1992 marked the fourth year of declining or flat demand in most of Europe and left Daf scrambling for short-term financing from banks and the Dutch and Belgian governments. When the banks wouldn't lift a freeze on credit, the governments also became reluctant to extend financing. On February 2, 1993, Daf collapsed into receivership.

02/02/93—Filed for protection from creditors.

04/22/93—Officially declared bankrupt.

*(Moody's contact: Meno Stroemer)*

## Erly Industries, Inc.

*Processor and distributor of food products*

### **\$8.9 mil 12.5% Subordinated Sinking Fund Debentures due 1993**

• Erly Industries' principal businesses are the milling and worldwide sale of rice, and the processing, bottling, and sale of juices. The company operates its rice business through subsidiary Comet Rice, one of the largest rice millers in the U.S. Erly's juice operations are conducted via subsidiary Erly Juice, whose market share is far smaller than Tropicana or Minute Maid, their largest competitors. The rice business, which historically has accounted for the largest portion of sales, has been adversely affected by a number of factors. In FY92 higher rough-rice costs and lower domestic and international demand increased competition on both the purchase and sales sides of the business; though sales only contracted by 2%, the increased selling expense contributed to a 57.4% plunge in operating profits. Despite a 6% increase in volume sales in FY93, a 16% decline in average sales price reduced revenues by 21%, resulting in an operating loss. Similar problems in the juice sector were even more injurious as Erly's small market share limited its ability to weather large fluctuations of fruit prices. In the past five years the ratio of EBIT to interest expense has averaged less than 60%, and the company has relied on numerous asset sales to service its interest expenses. In FY93, Erly sold both its Greenville, MS, rice plant and its wholly-owned subsidiary, TreeSweet of Puerto Rico, using proceeds to pay down debt. FY94 has seen more asset sales with the disposition of the Aqaba Packaging Co. in Aqaba, Jordan. Despite these maneuvers, Erly did not have sufficient funds to meet the obligations of its subordinated debentures which matured in Dec. 1993.

11/24/93—Announced details of exchange offer for the subordinated debentures.

12/01/93—Missed interest and principal payments on subordinated debentures.

*(Moody's contact: Brian Oak)*

## Glendale Federal Bank, Federal Savings Bank

*Thrift*

### **\$35.7 mil 14.875% Subordinated Notes due 1997**

• Glendale Federal Bank, Federal Savings Bank ("Glendale"), a wholly owned subsidiary of Glenfed Inc., is the nation's fifth largest saving's bank, with \$17.9 billion in total assets at fiscal year end 1992. The bank was actively involved in the origination of income property & construction loans and, through its commercial finance subsidiaries, commercial loans. By 1990, mounting non-performing commercial loans induced the company to "re-center" its activities about what it considered to be its core business: residential real estate and consumer banking. While Glendale moved ahead aggressively to accomplish its goal, the languishing California real estate market, the concurrent economic slowdown, and a substantial residual commercial loan portfolio united to boost loan delinquencies and led to sizable increases in loan loss reserves. Nonperforming assets leapt from just over \$300 million in 1989 to over \$750 million by mid-1992. For the fiscal year ended June 30, 1992, Glendale registered a \$120.9 million loss and was nearly \$400 million shy of the special regulatory minimum capital requirements established for Glendale. Since March 1992, Glendale has been unable to comply with the risk-based capital requirements specified under the Financial Institutions Reform, Recovery and Enforcement Act of 1989. FIRREA's phase-out schedules excluded \$43.7 million of goodwill, as well as \$11.6 million of investments in subsidiaries, from Glendale's core & risk-based capital by January 1, 1993. Glendale also fell out of compliance with FIRREA's core capital requirement. This brought the bank to within \$42.1 million of the 2% tangible equity requirement, below which the Office of Thrift Supervision is required, with some exceptions, to place a bank in conservatorship or receivership. In an effort to increase its capital, Glendale undertook a restructuring that included an exchange offer of noncumulative preferred stock and warrants for the subordinated notes and amendments to certain indentures of the nontendered notes. This substantially diminished Glendale's financial obligation to the noteholders.

01/27/93—Announced exchanged offer.

03/10/93—Completed exchange offer for subordinated notes.

*(Moody's contact: Meno Stroemer)*

## **Glenfed Inc.**

*Thrift holding company*

### **\$59.9 mil 7.75% Convertible Subordinated Debentures due 2001**

• Glenfed Inc. is a holding company whose principal subsidiary and source of funds is Glendale Federal Bank, Federal Savings Bank. See the accompanying critique.

03/15/93—Missed interest payment on convertible subordinated debentures.

08/26/93—Completed exchange offer.

*(Moody's contact: Meno Stroemer)*

## **Great American Communications Company**

*Holding company*

### **\$40.5 mil 14.375% Senior Subordinated Notes due 1999**

### **\$2.2 mil 11% Senior Notes due 1995**

### **\$0.7 mil 9% Senior Debentures due 1993**

• Great American Communications Company, 40.3% owned by American Financial Corporation, is a holding company engaged primarily in the ownership and operation of television and radio stations and, until December 1991, the production of animated television programs and feature films. During 1987, a year in which sales reached \$95 million, GACC incurred substantial debt when it acquired Taft Broadcasting Corp. for \$1.5 billion. The company's cash flow proved insufficient to meet the additional interest expense, prompting asset sales. The Gulf War (which dampened advertising outlays), the recent recession, and heightened competition for advertising expenditures from cable companies constricted GACC's 1991 earnings, thereby spurring an acceleration of asset sales. 1991 divestitures included Spelling Entertainment (\$108 million), a 13% interest in Black Entertainment Television (\$37 million), and Hanna-Barbera Productions (\$320 million). As a result, total debt decreased from \$1.1 billion at year-end 1990 to \$0.7 billion at year-end 1991. However, the depressed market for media-related properties made asset sales in 1992 less attractive than in previous years while earnings remained sluggish. Though 1992 revenues staged a modest come-back, total debt still totaled 6.8 times EBITDA, which in turn, represented only 1.31 times interest expense. In February 1993, the company announced that it would file a prepackaged plan of reorganization. On April 1, 1993, it missed the interest due on the senior & senior subordinated notes.

04/01/93—Missed interest payment on senior & senior subordinated notes.

05/20/93—Filed prepackaged reorganization plan

*(Moody's contact: Karl Bergqwist)*

## **GACC Holding Company**

*Holding company*

### **\$4.6 mil 20.5% Senior Notes due 1995**

### **\$32.2 mil 14.125% Senior Notes due 1996**

• See accompanying critique of Great American Communications Company.

04/01/93—Missed interest payment on senior notes.

05/20/93—Filed prepackaged reorganization plan.

*(Moody's contact: Karl Bergqwist)*

## **Gulf USA Corporation**

*Diversified company—mining & commercial real estate*

### **\$27.5 mil 10.875% Subordinated Sinking Fund Debentures due 1997**

### **\$40.0 mil 12.5% Subordinated Sinking Fund Debentures due 2004**

• Gulf USA Corporation, formerly Gulf Resources & Chemical Corporation, was organized in 1956 and grew into a diversified natural resource and energy company. Since 1984, however, the company has disposed of nearly all of its original natural resource and energy businesses, keeping just the bituminous coal mining operation. In 1989 Gulf began to invest heavily in international commercial real estate, especially in New Zealand. The combination of commercial real estate and coal mining offered Gulf few synergistic advantages. Sales from coal mining (65% of the 1991 total: \$72.7 million) came under pressure in the 1980s from environmental legislation & liabilities. Tighter clean air statutes stifled demand for higher-sulfur coal while industry production remained stable, driving down coal prices. Also, Gulf has been named a potentially responsible party in the Bunker Hill Superfund Site. The firm took a \$29.5 million charge in 1989 for its estimated liability and has increased reserves for environmental matters to over \$33.0 million. The second blow was dealt by the soft commercial real estate environment that accompanied the global recession underway in 1990. Gulf's aggressive real estate acquisition strategy included sizable debt-financed acquisitions. Over the period 1987 to 1992, total long-term debt more than doubled from \$96.1 million to \$202.4 million while EBIT declined from \$59.5 million in 1987 to (\$0.6) million for the 12 months ending September 1992. Total debt/EBITDA rocketed over the same period from 1.3 to 21.4 at the same time that working capital to long-term debt plunged from 1.72 to -0.08. In March, Gulf announced that it had failed to make interest payments on its 12.5% subordinated sinking fund debentures due in 2004 and that it anticipated missing interest on its 10.875% subordinated sinking fund debentures due in 1997.

03/16/93—Missed interest payment on 12.5% subordinated sinking fund debentures.

04/15/93—Missed interest payment on 10.875% subordinated sinking fund debentures.

*(Moody's contact: Denis Girault)*

## **Healthco International Inc.**

*Dental equipment provider*

### **\$275,000 7% Senior Subordinated Notes due 2011**

• Healthco International has, until recently, been North America's largest supplier of dental care products. Healthco underwent a leveraged buyout in 1991 that burdened the company with considerable debt. Restructurings necessary to lower expenses, primarily through downsizing and inventory control, were never adequately implemented. Subsequently, the company was not able to meet its financing requirements and filed for Chapter 11 on June 10, 1993. It is presently attempting to raise funds through asset sales.

06/10/93—Filed for protection under Chapter 11.

*(Moody's contact: Randal Gaulke)*

## **Hexcel Corporation**

*Manufacturer of structural materials*

### **\$25.6 mil 7% Convertible Subordinated Debentures due 2011**

• Hexcel, founded in 1946, is the leading producer of honeycomb and other lightweight structural materials worldwide. The primary market for Hexcel's products is the aerospace industry. U.S. sales account for more than half the company's revenues. Over the period from 1989 to 1993, the company faced a slew of postponed and canceled orders, first from the U.S. military then from the battered aerospace industry, resulting in plant underutilization and lower margins. In March 1992, on projections of weak sales and depressed earnings, Hexcel sold its U.S. fine chemicals business and used the proceeds to pay down debt. In December of the same year, the company initiated a restructuring program designed to address its overcapacity and took a charge of \$23.5 million. The restructuring continued into April 1993, when the company closed its Graham, Texas plant. However, these measures failed to stem the continuing deterioration of gross margins, which had fallen from 29.6% in 1988 to 17.4% for the first three quarters of 1993, and prompted the company to record an additional \$50 million restructuring charge in the 3rd quarter. As earnings have fallen, Hexcel's interest expense coverage has worsened as exhibited by the plunge in the ratio of EBIT to interest expense from 4.53 at year-end 1988, to .65 in 1992, and to near zero in 1993. Talks with senior lenders of a proposed recapitalization failed late this year.

12/06/93—Filed for bankruptcy protection under Chapter 11.

*(Moody's contact: Denis Girault)*

## **Iverson Technology Corp.**

*Manufacturer and servicer of microcomputers*

### **\$2.9 million 11.75% Subordinated Debentures due 1996**

### **\$6.4 million 8.25% Convertible Subordinated Debentures due 2002**

• Iverson Technology, incorporated in Delaware in 1985, succeeded the predecessor corporation, International Technology Corp., which commenced operations in 1978. Iverson designs, manufactures, services, and supports IBM-standard microcomputers and related products, primarily in the U.S.; the company also adapts systems to the TEMPEST standard used by the U.S. government for security purposes. Historically the firm's income has been almost totally derived from a few large federal government contracts. Revenues have fallen dramatically from a 1989 peak of \$60.3 million due to the reduction of two major government contracts in 1990, and subsequent loss of these contracts in 1991. Foreseeing the end of these contracts, Iverson expanded its commercial product line and embarked on new methods of distribution in 1990. However, these new ventures failed to compensate for the lost government business and in 1992, Iverson began to dispose of non-performing assets. Sales in the first half of 1993 amounted to just \$1.3 million. The ratio of EBIT to interest expense reflected the company's decline; in 1989 this ratio stood at 1.94, but in 1990 plunged to -.29, in 1991 to -4.57, and -5.62 in 1992. On Nov. 8, 1993, the company filed to solicit acceptances from its stockholders and debentureholders for a pre-packaged Chapter 11 bankruptcy.

06/01/93—Missed interest payments on both the debentures of 1996 and of 2002.

*(Moody's contact: Juanita Mayr)*

## **Jamesway Corporation**

*Discount retailer*

### **\$25.0 mil 8% Convertible Subordinated Debentures due 2005**

• Jamesway Corporation operates 108 discount department stores in the Mid-Atlantic region, retailing a wide variety of products, from dresses to drills. The last layer of their burdensome debt structure was added in 1989 at a time when income was as high as \$10 million and expenses were well managed. However, Jamesway saw its income drop to just under \$4 million in 1990, then to losses of over \$17 million in 1991, as selling, general, and administrative expenses grew. In 1992 Jamesway closed 14 stores, 13 due to unprofitability, thus beginning a modest restructuring and remodeling. Provision for this restructuring totaled over \$48 million dollars. Despite the closures, '92 sales stayed about even with the prior year's \$855 million. 1993 sales, however, have been weak. In the first quarter of 1993, sales decreased 14% to \$157.7 million; net loss rose from \$3.4 million to \$8 million. The decreases in number of stores and per store sales were coupled with a rise in seasonal borrowings and higher interest rates. In early July of this year vendors stopped shipping goods amidst concerns over the company's financial viability. Largely to insure the availability of merchandise for the start of the stronger retail seasons, Jamesway filed for Chapter 11 on July 19.

07/19/93—Filed for protection under Chapter 11.

*(Moody's contact: Christian Voss)*

**JWP Inc.***Electrical and mechanical services contractor***\$7.0 mil 7.75% Convertible Subordinated Debentures due 2012**

• JWP Inc. is a multinational corporation providing technical services concerning complex facility and information systems. With over 220 offices and 22,000 employees, JWP offers a broad variety of consulting, construction, and maintenance services. The company also supplies water through two subsidiaries, Jamaica Water Supply and Sea Cliff Water Co., to almost 700,000 New York State residents. Over the last ten years, JWP has enjoyed steady healthy growth; perceptive forecastings of market developments were reflected in profitable expansions. In the late eighties this growth accelerated explosively; revenues grew 88% and 62% in 1989 and 1990, respectively. This sudden expansion compromised JWP's ability to monitor itself and its roles in the international marketplace, and they soon confronted the global recession unprepared. A sharp downturn in worldwide commercial construction in the early nineties contributed to a 27.7% drop in gross margin by third quarter 1992. Thus ended years of consistently rising operating profits with a loss of \$132 million. A healthy EBITDA/interest expense of 3.57 at year end 1991 had plunged to -3.09 by September of the next year. A proposed prepackaged bankruptcy plan calls for no more interest or principal payments on this issue.

09/01/93—Missed interest payment on convertible subordinated debentures.

*(Moody's contact: Juanita Mayr)*

**Kettle Restaurants, Inc.***Family restaurant operator and franchiser***\$8.8 mil 15.875% Subordinated Notes due 1996**

• Kettle Restaurants operates 67 restaurants and franchises 97 others throughout the southern U.S. Under pressure from stockholders searching for a potential buyer, management took Kettle private in a June 1989 leveraged buyout. Improvements in per-store revenues and organizational streamlining associated with the LBO have been offset by the costs of closing numerous unprofitable stores. The ratio of EBIT to interest expense has remained low since even before the buyout, hovering between .86 and 1.25. Kettle has kept afloat through continuous assets sales; in 1993 Kettle breached certain loan covenants with its senior lenders concerning minimum asset requirements but subsequently received waivers of default. In 1993 Kettle faces a working capital deficit with a current ratio of .89.

12/01/93—Missed interest payment on subordinated debentures.

12/29/93—Made interest payment within grace period.

*(Moody's contact: Jeremy Hawes)*

**Martech USA, Inc.***Provider of environmental cleanup services***\$20.3 mil 8% Convertible Subordinated Notes due 2003**

• Martech USA is an environmental cleanup and underwater construction concern operating principally in Alaska, the West Coast, and the Gulf Coast. Recently the company expanded operations to include Eastern Europe and the Persian Gulf. Though the company has enjoyed yearly revenue growth averaging over 16% since FY89, cost overruns in recent years have restrained earnings; operating margins fell from 30.7% in FY89 to 21.3% in FY92. These trends accelerated in the first three quarters of FY93; sales have grown over 45% against the year-earlier period and gross margins have plunged to 10.8%. Reported government investigations, botched cleanup jobs, and late payments to contractors, precipitated a stock price plunge. Covenant violations, combined with inaccurate financial reporting relating to cost-overruns on loss-making projects, induced financing difficulties in late 1993.

12/19/93—Filed for bankruptcy protection under Chapter 11.

*(Moody's contact: Mihoko Manabe)*

**MEI Diversified Inc.***Medical equipment manufacturer & beauty salon operator***\$69.5 mil 12.5% Senior Subordinated Notes due 1996****\$30.5 mil 8% Convertible Debentures due 2006**

• When MEI Diversified Inc. ("MEI") was organized in 1986, its principal operations were in the snack food business. In mid-1990, MEI sold nearly all of the snack food related assets of its subsidiaries, acquired NDM Acquisition Corp. (a manufacturer of medical products) and launched into the beauty salon business by acquiring interests in The Glemby Company, Inc., Essanelle Salon Co., and Maxim's Beauty Salons, Inc. The more than 1,650 salons are operated through the 80% owned subsidiary MEI Salon Corp. The salon buyout put in place an expensive capital structure and strained the already weakened coverage ratios as illustrated by the decline in EBIT/interest from 0.54 in 1989 to 0.06 in 1990. After a year of erratic earnings for MEI Salons, MEI filed an action against the former Glemby shareholders alleging "fraudulent misrepresentation" and "omission of material facts" made in connection with the Glemby acquisition. In May 1992, MEI also filed a suit against Regis Corporation (20% owner of MEI Salons) citing mismanagement, fraud, and more. As the lawsuits dragged on, profits and financial ratios worsened for MEI until September 1992, when operating cash flow could no longer meet interest expense and capital expenditures. This shortage led to asset sales and signaled that a capital infusion was needed. In November 1992, MEI announced that it had received a non-binding letter of intent from IMR Fund, L.P., to acquire a 42% stake in return for \$26.7 million cash and \$40 million of shares in Brown-Minneapolis Tank Company. On February 23, 1993, MEI announced that the IMR fund had rescinded the offer. Due to the bleak outlook and poor liquidity position, it filed for protection under Chapter 11.

02/23/93—Filed for protection under Chapter 11.

*(Moody's contact: Christian Voss)*

## **Mesa Capital Corp.**

*Provides financial services for Mesa Inc.*

### **\$300 mil 12% Senior Subordinated Notes due 1998**

- See critique for Mesa Inc.
  - 04/06/93—Announced 12% notes would trade without accrued interest.
  - 05/03/93—Missed interest payment on subordinated notes.
  - 08/18/93—Exchange offer completed.

*(Moody's contact: Christopher Taylor)*

## **Mesa Inc.**

*Exploration for & production of oil & gas*

### **\$300 mil 13.5% Subordinated Notes due 1999**

- Mesa Inc. is one of the largest independent oil and gas companies in the United States. It explores for and extracts natural gas (67% of 1992's total revenue) and oil primarily from on-shore, domestic fields. A prolonged slump in natural gas prices has adversely affected Mesa's balance sheet. Since 1983, when Mesa sold gas for an average price of \$2.92 per thousand cubic feet, its average sale prices have fallen 42% to \$1.70 per thousand cubic feet. The consequent decline in earnings compelled Mesa, in 1991, to undergo a restructuring of \$914 million in bank debt through the sale of assets and secured notes. Deflated gas prices continued to weaken Mesa's balance sheet throughout 1992. From FY 1987 through FY 1992, operating profit sank from \$68.5 million to \$26.2 million. Over the same time period, Total Debt/EBITDA doubled from 3.7 to 7.6. In 1992, production and price forecasts indicated that operating cash flow would be insufficient to fund both operations and the company's \$1.24 billion of long-term debt through 1996. This led Mesa to launch an effort to restructure its \$600 million of subordinated notes later that year. While a tentative agreement with a majority of bondholders has been reached, negotiations are ongoing.

04/06/93—Announced 13.5% notes would trade without accrued interest.

05/03/93—Missed interest payment on subordinated notes.

08/18/93—Exchange offer completed.

*(Moody's contact: Christopher Taylor)*

## **Microsemi Corporation**

*Manufacturer of semiconductors & assemblies*

### **\$33.3 mil 5.875% Convertible Subordinated Debentures due 2012**

- Microsemi Corporation is a leading supplier of high-reliability power semiconductor products and surface mount assemblies. Historically, Microsemi has derived the majority of its income from sales to aeronautics and defense related companies. The subordination of defense industry profits to transient government policies motivated the company to attempt to diversify into commercially-oriented sales. To achieve this goal, Microsemi adopted a strategy based on the acquisition of smaller, underperforming niche companies in the semiconductor sector. In order to fund this expansion, Microsemi issued \$40.3 million of convertible subordinated debentures in February 1987. By early 1989, 17 such acquisitions had been effected and nearly all of them needed a turnaround. At many of these companies, the desired turnaround never materialized while at the same time, defense industry orders began to fall off. Subsequently, the company's liquidity tightened, compelling it to adopt a "plan of disposition" in 1989 that was expanded in 1990 to target 10 of the subsidiaries. In partial fulfillment of the plan, five subsidiaries were sold or closed, imposing \$8.97 million, \$11.0 million and \$0.651 million charges for the years 1989, 1990, and 1991 respectively. Over the same period, debt as a percentage of total capitalization surged from 61% to 83%. The remaining companies named in the plan continued to hobble Microsemi with losses close to \$4 million in 1992. On February 23, 1993, Microsemi announced that it was experiencing cash shortages as a result of certain non-recurring payments and that it was severely curtailing cash outflows. On March 1, 1993, it announced that it would omit interest payments due on its 5.875% convertible subordinated debentures.

03/01/93—Missed interest payment on convertible subordinated debentures.

04/01/93—Made interest payment within grace period.

*(Moody's contact: Jaunita Mayr)*

## **Minstar Inc.**

*Holding company for boat manufacturer*

### **\$50.8 mil 16.5% Variable Rate Subordinated Debentures due 2000**

#### **\$3.0 mil aggregate amount IRBs of various rates and maturities**

- Minstar, originally incorporated in Minnesota in 1962 and then reincorporated in Delaware in 1985, manufactures and distributes recreational power boats through its wholly owned subsidiary, Genmar Industries, Inc. Genmar, Minstar's principal source of revenues, produces one of the largest lines of boats in the U.S. with approximately 250 models, distributed under trademarks Wellcraft, Hatteras, Larson, and others. In 1988, IJ Holdings, a privately held corporation, completed a friendly LBO of Minstar acquiring 84% of Minstar's outstanding common stock in exchange for the debentures. Since 1988, when sales hit a record high, boat manufacturers have seen industry-wide sales fall by 50%. The market's contraction is attributable to a number of causes, including the luxury tax of 1990, but the greatest drain has been the weak economy and the associated lack of consumer demand for big ticket luxury items. Sales began a rapid decline in 1989 that only modestly rebounded in 1992; by this time sales were less than half their 1988 level. EBIT/interest expense, which stood at 1.8 at year-end 1988, dropped each successive year, to 1 in 1989, then to .1 in 1990; in 1991 this ratio fell below zero, and has stayed there since. Minstar is currently negotiating a comprehensive financial restructuring.

11/01/93—Missed interest payment on debentures.

11/04/93—Made interest payment within grace period.

*(Moody's contact: Duncan Sankey)*

## **NH Holding Incorporated**

*Holding company — owns 80% of Ampex Inc.*

**\$130.0 mil 13.25% Senior Subordinated Debentures due 1999**

**\$225.0 mil 13.25% Senior Notes due 1996**

• NH Holding Incorporated, formerly Ampex Group Inc., is a privately held holding company whose principal assets consist of an 80% equity stake in another holding company, Ampex Inc. Ampex, through its operating subsidiaries, is a leading worldwide producer of high-performance scanning recording systems and associated magnetic tape media for television, data storage, and government markets. Throughout Ampex's nearly 50-year history, it has amassed more than 1,700 patents. Historically, NH has relied on dividend payments from Ampex to service its debt. Hence, a turn in the profitability of Ampex induced the financing difficulties at NH. Since Ampex's 1992 IPO, sales have plummeted from \$526 million in FY 1991 to \$429 million in FY 1992; first quarter 1993 revenues are equally low, amounting to just 81% of the comparable 1992 figure. These poor results reflect, in part, the continuing decline in the high performance analog video tape recorder market; in the first quarter of 1992 such sales accounted for 22.5% of revenues, while in the same period of 1993, video recorders portioned only 14.2% of revenues. Net loss in the first quarter of 1992 was \$10 million; in the same quarter 1993 net loss was \$20.7 million. In response to the company's performance problems, Ampex undertook an operational and financial restructuring that has reorganized and consolidated the operating subsidiaries and, among other maneuvers, eliminated dividends on the companies' common stock. Consequently, NH's cash flow decreased materially.

05/15/93—Missed interest payment on senior notes.

08/01/93—Missed interest payment on senior subordinated debentures.

*(Moody's contact: Juanita Mayr)*

## **Norsk Data A.S**

*Computer manufacturer and provider of data services*

**DM 70.0 mil 3% Debenture Bearer Bonds due 1993 [US\$ 41.2 mil]**

• Norsk Data A.S is a Norwegian holding company with over fifty wholly and partly owned subsidiaries and minority interests located throughout Northern Europe. These holdings produce and service computers, supply service products, sell and maintain large data systems, and perform a variety of related functions. Norsk derives approximately half of its revenues from its domestic operations. For the fifteen years 1973 to 1988, Norsk enjoyed an average compounded revenue growth rate of over 38%. Such rapid growth, though, left Norsk unable to implement the changes that were necessary to exploit the rapid developments in the computer industry of the late eighties; though service and support income continued to rise, decreasing computer sales and reorganization costs took a heavy toll. Over the past five years the company has continually restructured operations in an attempt to regain profitability, repeatedly downsizing through the sale of operations and subsidiaries. Over the years 1988 through 1992, total assets fell from Nkr5.2 billion to Nkr740 million, with the greatest relative fall of almost 55% from 1991 to 1992. Over the same period, revenues too dropped from Nkr2.93 billion to Nkr1.17 billion, with a plummet of 37% at the end of the period. The restructurings have been accompanied by fluctuating, yet consistently negative operating income. For the years 1988 through 1992, EBIT has been (in millions of Nkr) (333), (345), (103), (783), and (509), respectively. In 1992, for the first time, Norsk recorded negative shareholder equity of Nkr390 million. In late 1992 and early 1993 further losses and bankruptcies of holdings continued to strain finances. A failed repurchase of this German bearer bond issue in December 1992 diminished Norsk's opportunities for alternative financing. On May 6, 1993 the Board of Directors of Norsk decided to open public debt renegotiation proceedings.

07/11/93—Missed principal and interest payments on 3% Debentures.

*(Moody's contact: Juanita Mayr)*

## **NVF Company**

*Manufacturer of industrial materials*

**\$48.1 mil 5% Debentures due 1994**

**\$11.4 mil 10% Debentures due 2003**

• NVF Company, incorporated in 1904, is engaged in the manufacture and sale of industrial laminated plastics and vulcanized fiber. Through its largest subsidiary, APL Corporation (68.1% owned), NVF also manufactures and sells metal products for select industrial markets, sells housewares and containers made of plastic, and designs, produces, and sells wood cabinets for residential use. NVF is not the leading producer of any of its products and a slow economy has restrained its ability to generate revenues. The years 1990 through 1992 saw a steady decline in operating revenues from \$236.4 million to \$205.4 million to \$162.7 million. Over this same period EBITDA remained steady at approximately -\$19.3 million. During this time cash flow insufficiencies adversely affected NVF's operations. Limited credit terms, high prices for raw materials, and plant inefficiencies due to a lack of said materials, contributed to the decreases in sales. APL's wood cabinets segment substantially contracted in 1992 with the suspension of operations at their Lancaster, Ohio plant. An already strained current assets to current liabilities of .54 in 1991, sank to .26 in 1992. In 1993 NVF was confronted with over \$70 million in maturing long-term debt. With access to additional financing hurt by years of negative cash flow, the company was unable to meet its obligations.

01/01/93—Missed interest and sinking fund payment on 5% debentures.

05/15/93—Missed interest payment on 10% debentures.

06/11/93—Made interest payments on 5% and 10% debentures.

08/27/93—Filed for protection under Chapter 11.

*(Moody's contact: Duncan Sankey)*

## **Olympia & York Water Street Finance Corp.**

*Property manager & developer*

**\$435 mil 8.25% Secured Euronotes due 1996**

**\$113.3 mil Zero Coupon Euronotes due 1996**

• Olympia & York Water Street Finance Corp. is a special purpose corporation whose sole business concerns the office building located at 55 Water Street in lower Manhattan. It is an indirect, wholly owned subsidiary of Olympia & York Developments Limited, a privately held real estate and investment holding company based in Toronto which is now operating under Canadian bankruptcy protection. Fifty-Five Water Street is among the largest office buildings in New York City with 3.6 million square feet of rentable space and its own postal zip-code. The company has been hit hard by a depressed New York City real estate market and significant lease expirations. In addition, the property has an asbestos problem that is estimated to cost at least \$20 per square foot to correct. The asbestos problem renders the office space more difficult to sell while the sluggish real estate market ensures that any tenants that do rent space can demand lower rent. Exacerbating the situation are the financial problems of the parent company as it undergoes a restructuring under the Canadian Companies' Creditors Arrangement Act. In May of 1992, the company announced that it would no longer be able to make debt payments and that it would not provide any of the money needed to improve the building. In August 1992, Water Street began negotiations with bondholders that led to the May 1993 filing of a prepackaged Chapter 11.

05/07/93—Filed a prepackaged plan for reorganization under Chapter 11.

*(Moody's contact: Ted Philipps)*

## **Peoples Jewellers Limited**

*Retail jeweler*

**CS\$17.9 mil 14.25% Senior Unsecured Debentures due 1995 (US \$14.0 mil)**

**CS\$5.5 mil 12.5% Senior Unsecured Debentures due 1996 (US \$4.4 mil)**

• Peoples Jewellers is a leading jewelry retailer in Canada with 1992 sales totaling \$196.9 million. The company operated 276 stores throughout the 10 provinces of Canada under the Peoples Division (198 stores) and the Mappings Division (78 stores). In October 1986, Peoples and Swarovski International Holding, A.G. acquired Zale Corporation ("Zale") — then the largest jewelry retailer in the United States — in a \$551 million leveraged buyout. Zale subsequently filed for Chapter 11 protection from creditors in January 1992 (see the January 1992 Moody's Corporate Bond Default Study). The filing ended People's influence over Zale's affairs and cast serious doubt over its ability to recover the investment. During the quarter ending in March 1992, Peoples wrote off the Zale investment as a \$149.6 million loss. Concurrently, the same poor economic conditions that plagued Zale's sales dogged People's. The recently ended recession and ensuing slow-growth environment have curbed the discretionary spending that People's sales depend on and engendered a competitive pricing environment in the industry. Over the period from FY1990 to FY1992, sales slumped 9%, and for the first 9 months of FY 1993 sales were off another 14% from the previous year. As cash flow diminished and bank debt matured, Peoples could no longer function as a going concern. In December 1992, Peoples filed for protection under Canada's Company's Creditors Arrangement Act, and subsequently entered receivership.

01/02/93—Missed Interest Payment.

*(Moody's contact: Christian Voss)*

## **Synergy Group Incorporated**

*Propane distributor*

**\$85.0 mil 11.625% Senior Subordinated Notes due 1997**

• Synergy Group Incorporated is a privately held company whose principal business is retail propane distribution. Synergy sells its products through retail branches located in the Southeast, South-central, Mid-Atlantic, and Northeastern regions of the United States. In terms of gallonage, points of distribution, and size of customer base, the company is among the 10 or so largest multi-state retail propane distributors in the United States. Proceeds from the 1987 sale of the above listed notes served to reduce existing bank debt and finance a propane distribution business acquisitions campaign. The expansion strategy did not materially boost operating income but did increase interest expense, exacerbating Synergy's poor profitability. Synergy's interest expense coverage deteriorated as evidenced by the plunge in EBITDA/Interest Expense from 4.9 in 1987 to just 0.4 in 1990. A spate of unusually warm winters in the early '90s weakened business conditions for the entire industry. The accompanying slack demand depressed propane prices, further restraining Synergy's profitability. The ratio of EBITDA to Interest Expense remained at 0.4 through FY 1992, increasing financial stress.

03/15/93—Missed interest payment on 11.625% notes.

*(Moody's contact: Mihoko Manabe)*

## **TDII Co., Inc.**

*Manufacturer of metal cutting and welding products and floor cleaning equipment*

**\$283.39 mil 15% Senior Subordinated Notes due 1999**

**\$161.6 mil 12.75% Subordinated Notes due 1999**

**\$5.1 mil 18% Senior Subordinated Notes due 2000**

**\$90,000 15% Subordinated Notes due 2001**

• TDII, formerly known as Thermadyne Industries Inc., is a Clayton, Missouri, holding company which, through nine holding subsidiaries, owns numerous manufacturing companies. The burdensome debt structure acquired in the 1987 LBO of PALCO Industries forced TDII to restructure debts in 1991. Though no interest payments have been missed since the last recapitalization, on Dec. 2, 1993, the company filed a prepackaged plan of reorganization under Ch.11 protection in order to take advantage of low interest rates. More information is contained in the Corporate Bond Default Study dated January 1992.

12/02/93—Filed for bankruptcy protection under Chapter 11.

*(Moody's contact: Duncan Sankey)*

## The Triangle Corporation

*Manufacturer and distributor of mechanics' & farrier tools*

### **\$15.0 mil 13.75% Senior Subordinated Debentures due 1996**

• The Triangle Corporation, incorporated in 1967 in Delaware, is a leading manufacturer of hand tools which it sells under the UTICA, BONNY, DIAMOND and UTICA-SWISS brand names in the United States and under EREM in Europe and in other parts of the world. The company also believes itself to be the largest provider of farrier (horseshoer) tools in the United States. The 1991 recession heightened the stiff competition already existing in the hand tool market (85% of Triangle's income). The accompanying sluggishness of orders strained the company's cash flow which was further adversely affected by a work stoppage at the company's Duluth Minnesota manufacturing facility. In order to improve the company's worsening margin, an operational restructuring and refinancing was undertaken in early 1991. Triangle sold its special tools business to reduce outstanding bank debt. Covenants in the 13.75% senior subordinated debentures prohibited a refinancing which would have breached the minimum fixed charge coverage ratio. So the company purchased \$10 million of the \$25 million outstanding and simultaneously amended certain covenants of the debentures to allow for extra refinancing. In addition, the company rescheduled notes payable to the former shareholders of EREM and in March 1992 paid off the balance of its industrial revenue bonds. Tool sales remained slow throughout the lethargic recovery of 1992 and the restructuring measures proved not to be sufficient to improve margins or deleverage the firm.

02/01/93—Missed interest payment on senior subordinated debentures.

07/29/93—Exchange offer completed.

*(Moody's contact: Brian Oak)*

## Trizec Corporation Ltd.

*Real estate developer and manager*

**CS124.1 mil 10.25% Senior Debentures due 1999 [US\$ 93.2 mil]**

**CS115.0 mil 11.125% Senior Debentures due 1996 [US\$ 86.4 mil]**

**SFr100.0 mil 5% Senior Debentures due 1999 [US\$ 70.0 mil]**

**SFr100.0 mil 5.625% Senior Debentures due 1995 [US\$ 70.0 mil]**

**SFr100.0 mil 6.125% Senior Debentures due 1993 [US\$ 70.0 mil]**

**ECU56.0 mil 9.25% Senior Debentures due 1995 [US\$ 65.5 mil]**

**CS75.0 mil 10% Senior Debentures due 1996 [US\$ 56.4 mil]**

**CS60.0 mil 11.875% Senior Debentures due 1995 [US\$ 45.1 mil]**

**CS4.4 mil 9.5% Senior Debentures due 1993 [US\$ 3.3 mil]**

**CS2.9 mil 10.5% Senior Debentures due 1998 [US\$ 2.2 mil]**

**CS0.9 mil 10.5% Senior Debentures due 2009 [US\$ 0.7 mil]**

• Trizec Corp. Ltd., a Canadian corporation, manages and develops over 160 rental income properties, totaling over 75 million sq. ft. of space, with book value of almost C\$5.6 billion [US\$4.2 billion]. Three segments of the real estate market dominated its portfolio: office space, retail centers, and retirement/nursing homes. The properties are diversified geographically, with 73% of their rentable space in 21 U.S. states, and 27% divided among six Canadian provinces. Wholly-owned subsidiaries, Trizec Properties Ltd., Trizec Properties Inc., The Hahn Company, and Central Park Lodges (sold in late 1993), conduct operations in the U.S. and Canada. The tribulations of the real estate market finally felled the giant Trizec. In 1990, operating profit as a percent of revenues was 31.7%; in 1991, revenues fell 4%, yet operating profit was off by 9.8% on lower rental rates, lowering the profit-to-revenues ratio to 29.8%. The next year was far worse, though, as it brought the bankruptcy of 72%-owned, Canadian real-estate developer Bramalea Ltd. (profiled in Moody's 1993 Corporate Bond Study). The loss of Bramalea's property sales halved revenues. By mid-year 1992, Trizec's real estate investment strategy, based on the expectation that the trends of the 1980s would continue, had led to the accumulation of C\$9.4 billion of long term debt. Over the years 1990 to 1992, EBITDA/interest expense steadily declined from .84 to .70 to .43; rental income fell with the contracting commercial real estate market as leases were renegotiated for lower rates. The ensuing liquidity crisis induced asset sales that began with 9.5 million of the 11 million common shares owned of The Rouse Company for C\$140 million. The remaining shares were sold seven months later. 1993 brought more troubles as the debt-to-equity conversion that was part of Bramalea's bankruptcy reduced Trizec's 72% equity interest to about 20%. This forced pre-tax writedowns of C\$669 million. By the third quarter of 1993 EBIT had fallen another 11.1% from the previous year's level and sources of alternative financing had disappeared. On August 3, 1993, Trizec announced the key elements of a proposed recapitalization plan, including an exchange of existing senior debentures for either new debentures or new common shares, and an exchange of junior debentures and preferred shares for new common shares.

10/18/93—Announced halt of all debentures payments during restructuring negotiations.

10/21/93—Missed interest and principal payments on 6.125% SFr senior debentures.

*(Moody's contact: Helen Calvelli)*

## Value Merchants, Inc.

*Discount Retailer*

### **\$8.8 mil 9% Convertible Subordinated Notes due 1999**

• Value Merchants operates approximately 530 discount stores under the names “Everything’s \$1.00” (EAD) and “Toy Liquidators” (TL). Sales have grown rapidly in recent years, climbing 7-fold from just \$53.9 million in FY88 to \$363.5 million by FY92. Well-planned expansions increased the number of TL stores by an average of 17 in each year since 1986, when the business started with four stores. Value Merchants acquired the EAD business in 1989 with a total of 61 stores in operation; the company’s expansion of this subsidiary was explosive. Value Merchants added more than 353 new stores since 1990. With all discretionary cash flow being used to fund the rapid expansion, financing delays in 1992 prevented the company from completing its buying program and fully stocking the stores for the all-important holiday season. Operating profits of \$5.8 million in FY88 ballooned to \$17.7 million by FY91, only to plummet to a FY92 loss of \$4 million on lower-than-expected sales. The liquidity crisis of 1992 continued into 1993; in the first half of FY93 cash flow deficiencies kept the company from making certain payments to banks and suppliers in a timely fashion, leading to further difficulties in obtaining merchandise. In August 1993, Value Merchants obtained a new \$60 million credit facility, which allowed it to become current on all debts, yet the company was still unable to negotiate adequate arrangements with its suppliers. High trade credit terms and weak inventories contributed to the latest liquidity crisis, as further losses have drained the L.O.C. and the company has again fallen behind on its obligations.

12/13/93—Filed for bankruptcy protection under Chapter 11.

*(Moody’s contact: Christian Voss)*

## Wean Inc.

*Manufacturer of steel processing and finishing equipment*

### **\$12.4 mil 5.5% Convertible Subordinated Debentures due 1993**

### **\$3.2 mil 10% Subordinated Notes due 2001**

### **\$2.2 mil 12% Subordinated Notes due 1999**

• Organized in 1929, Wean Inc. is a leading supplier of custom-designed strip processing and finishing equipment for sale primarily to integrated steel producers and minimills. The company’s production generally requires several months per order and large portions of sales have historically been attributable to few buyers: three customers accounted for 29% of 1989 sales (\$123.3 mil), and two made up 50% and 61% of 1990 (\$101.2 mil) & 1991 (\$75.7 mil) sales, respectively. The close alignment of the company’s fortunes with those of the highly cyclical steel industry insured that the recent recession would negatively impact Wean’s performance. Backlogs of orders decreased dramatically with the economic contraction and ensuing slow growth as illustrated by a decline from \$105 million at year-end 1989 to \$26 million as of March 31, 1992. By early 1991, cash flow projections based on the declining backlog, the time needed for production, and the looming March 1993 maturities made refinancing the convertible debt an imperative. Substantially all of the company’s assets had been pledged to various creditors, making additional bank financing unlikely. Consequently, Wean proposed exchange offers twice to the convertible debenture holders achieving a \$3.2 million trade of convertibles for the 10% subordinated notes on the first try. The second offer could not garnish enough support and ended with the company failing to pay interest on the three issues listed above and failing to return \$12.4 million of principal due on the convertible subordinated debentures.

03/01/93—Missed principal and interest payments on convertible subordinated debentures.

03/01/93—Missed interest payments on 10% & 12% subordinated notes.

07/20/93—Filed for Chapter 11.

*(Moody’s contact: Duncan Sankey)*

## Westwood Group, Inc.

*Race gambling facilities and restaurant operator*

### **\$19.6 mil 14.25% Subordinated Debentures due 1997**

• Westwood Group, Inc., incorporated in 1984 and merged racing and restaurant operations that commenced in 1935 and 1968, respectively. Through its wholly-owned racing division, Westwood operates two Massachusetts locations: Wonderland, a parimutuel greyhound racing facility; and year-old Foxboro, a parimutuel harness racing facility. Restaurant operations are consolidated under Back Bay Restaurant Group (“BBRG”) which, as of March 31, 1993, operated 27 restaurants throughout the Northeast. A March 1992 public offering reduced Westwood’s share of BBRG from wholly-owned to 42.9%. The 1990 recession adversely affected Westwood, reversing a trend of healthy revenue growth relative to expenses. From 1990 through 1992, racing revenues shrunk annually by 3.5% while expenses continued to grow by 9.6%. At Wonderland the average attendance of over 2,500 per performance in 1990 fell to under 1,950 in 1992. Foxboro, opened in 1992, fared worse with first year losses of more than \$3.2 million dollars. BBRG did not experience as dramatic a downturn as the racing division had since 1990, though annual revenue growth of 14.4% lagged behind expense growth of 15.6%. These shifts were reflected in Westwood’s operating income which peaked in 1990 at \$6.2 million and plummeted to a loss of \$1.8 million in 1992. The ratio of EBIT to interest expense, which fell below one in 1989, dropped to -1.6 by 1992, while the firm’s current ratio declined steadily from 2.2 in 1988 to 0.2 at year-end 1992. Compounding difficulties, the profit-making restaurant business could no longer buoy the loss-making racing business, as the 1992 public offering precluded cross-subsidiary movements of assets. In December 1992, violation of a number of loan covenants relating to certain senior obligations precluded payment of interest on their subordinated debentures in February, though sufficient funds were not available, anyhow.

02/15/93—Missed interest payment on subordinated debentures.

*(Moody’s contact: Randal Gaulke)*