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## Default & Recovery Rates of Corporate Bond Issuers

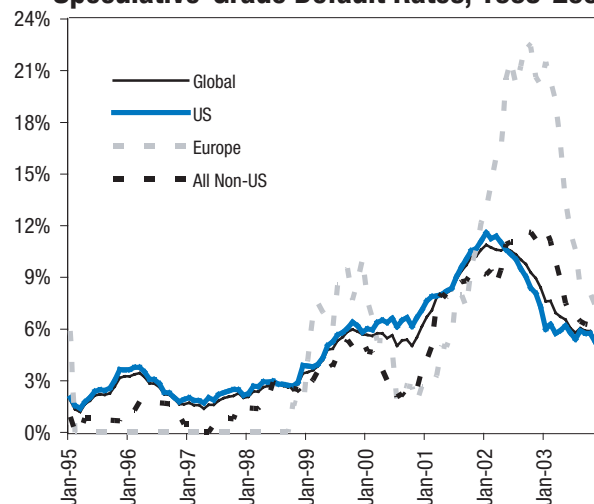
*A Statistical Review of Moody's Ratings Performance, 1920-2003*

### Summary

This report is Moody's 17th annual survey of global corporate defaults and ratings performance. Moody's reviews the default, recovery and credit loss experience for 2003 and the historical period since 1920. Briefly, we find:

- World-wide 77 Moody's-rated corporate bond issuers defaulted on a total of \$33.5 billion in 2003, compared to 141 defaults totaling \$163 billion in 2002. Fifty-eight of the year's defaults, totaling \$26 billion, were by US-domiciled issuers. The year's largest defaulter was Healthsouth Corporation (\$3.4 billion).
- For a third consecutive year, the telecommunications sector experienced the highest total number of defaulting issuers, with 13 issuers and \$6.4 billion. The energy and utilities sector experienced the highest default volume, with \$7.2 billion.
- Moody's global issuer-weighted default rate for all rated corporate issuers fell to 1.6% in 2003 from 3.0% in 2002. On a dollar volume-weighted basis, the global default rate for all rated issuers fell to 0.97% in 2003 from 5.3% in 2002. The global speculative-grade default rate fell to 5.2% in 2003 from 8.4% in 2002.
- Moody's speculative-grade default rate forecasting model indicates that over the next year the global issuer-weighted speculative-grade default rate will fall below its long-run historical average of 4.9% for the first time since 1999, reaching 3.4% by the end of 2004.
- Although three corporate issuers defaulted in 2003 within a year of holding an investment-grade credit rating, no defaulting issuers began the year with an investment-grade credit rating, resulting in a 2003 investment-grade default rate of zero. In 2002, 16 investment-grade rated issuers that held an investment-grade rating at the beginning of the year defaulted.
- Moody's ratings in 2003 proved to be particularly accurate predictors of default. Ratings in advance of default were on average a full notch lower and cumulative accuracy profiles were uniformly higher, compared to their historical averages.
- Recovery rates continued to improve in 2003. The average recovery rate for defaulted bonds was 39.6% of par value, up from 31.7% in 2002 and in line with its long-term average of 40% of par value.

**Trailing 12-Month Issuer-Weighted Speculative-Grade Default Rates, 1995-2003**



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## Introduction

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This report - Moody's seventeenth annual review of global corporate defaults - is primarily concerned with the statistical documentation of corporate defaults among Moody's-rated long-term debt issuers and the performance of Moody's ratings for the year 2003, as well as the historical period since 1920. In addition to a discussion of the major trends in default and recovery rates by geography, industry sector, and rating category, this report also contains a detailed statistical appendix that can be referenced separately from the text.

Moody's annual default study is part of a larger research program. The Rating Research and Analysis team produces numerous monthly and quarterly reports on defaults, rating trends, and rating performance.<sup>1</sup> Moody's also produces separate geography-specific reports (such as the annual European default study, forthcoming) and sector-specific default studies (such as Moody's bank loan, structured finance, and leveraged finance default research).

The first section of this study reviews some of the major trends characterizing defaults in 2003, including analyses by geography, industry, and credit rating. The pace of defaults fell sharply in 2003, sending default rates measured both as a percentage of issuers and dollar volume down to levels not seen since 1999. Moody's default rate forecasting model also indicates that default rates will continue to fall in 2004.

The second section of this study examines the 2003 default experience in a broader perspective. In this section, we study defaults in the 84-year period between 1920 and 2003. We present statistics that measure default rates over long investment horizons both as a percentage of defaulting issuers and as a percentage of dollar volume of debt outstanding. Ultimately, we seek to quantitatively gauge the performance of Moody's ratings as predictors of default and expected credit losses.

The final two sections deal with historical recovery rates for bonds in default and credit loss rates. We document historical recovery rates and their determinants, and examine the cyclical and correlation of recovery rates with default rates. We also explore the connection between Moody's credit ratings and defaulted debt recoveries. Our estimates of default and recovery rates are then combined to arrive at estimates of historical credit losses.

## DATA SOURCES & METHODOLOGY

Moody's bases the results of this study on its proprietary database of ratings and defaults for corporate bond issuers. Municipal debt issuers, structured finance transactions, private placements, and issuers with only short-term debt ratings or only bank loan ratings are excluded. In total, the data covers the credit experiences of over 16,000 corporate issuers that sold long-term public debt at some time between 1919 and 2003. As of January 1, 2004 almost 5,000 corporate issuers held a Moody's long-term debt or issuer rating.

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 database of default covers over 3,600 long-term bond defaults by issuers both rated and non-rated by Moody's. Additional data sources, such as Lehman Brothers index data, supplemented Moody's proprietary data in the construction of the aggregate dollar volume-weighted default rates. Defaulted bond pricing data was derived from Interactive Data Corp., Bloomberg, and Reuters. The majority of these market quotes represent an actual bid on the debt instrument, although no trade may have occurred at that price. Of the 77 rated corporate issuers that defaulted in 2003, post-default prices were available for 120 bank loans, bonds and preferred stocks. Over the 1982-2003 period, the dataset includes post-default prices for over 2,300 defaulted instruments issued by over 1,200 defaulting corporations.

The credit ratings on which we base most of the results of this study are Moody's notional obligor-level ratings. These estimated senior unsecured ratings are typically based on an issuer's outstanding senior unsecured obligations or its issuer rating. If an issuer does not have a senior unsecured debt rating or an issuer rating, an estimated senior unsecured rating is derived by inference from the issuer's other rated debt issues. The object of using these notional obligor-level ratings is to isolate the probability of default component of a Moody's credit rating.<sup>2</sup>

Moody's definition of default includes three types of credit events: (1) missed or delayed disbursement of interest and/or principal, including delayed payments made within a grace period; (2) bankruptcy (Chapter 11 in the US), or administration or receivership occurs (and where creditors' claims are impaired); (3) a distressed exchange occurs where the issuer offers bondholders a new security or package of securities that amount to a diminished financial obligation (such as preferred or common stock, or debt with a lower coupon or par amount), and/or the exchange had the apparent purpose of helping the borrower avoid default as defined in parts (1) or (2) above.<sup>3</sup>

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1. Examples include Moody's Monthly Default Report, The Performance of Moody's Corporate Bond Ratings quarterly update, and Moody's Rating Actions, Outlooks, and Reviews quarterly report.

2. Moody's ratings are opinions about expected credit loss, which is composed of both a default probability component and a default severity component. However, differences in ratings of a common security type across issuers are more likely to reflect differences in expected default rates than differences in expected recovery rates. See Fons (2002) for elaboration.

3. Keenan and Hamilton (2002) provide a thorough description of Moody's definition of default.

Moody's ratings are credit judgments that are intended to support investment decisions. Default rates are important statistics for evaluating the accuracy of those judgments. Moody's uses two different methodologies for calculating default rates. The first - Moody's traditional approach - uses the obligor as the unit of study. Because the number of credit judgments that Moody's must make does not vary with either the par amount or number of bonds of the issuer, we use the bond issuer itself as the unit of study.

The second approach uses the total dollar volume of debt outstanding as the basis for calculating default rates. Calculating statistics by total par amount biases the results toward the default characteristics of issuers with multiple or large debt issues. Nevertheless, this calculation provides a natural benchmark of concern to many investors, whose individual performance may be measured against the performance of the market portfolio. Several tables in the appendix report default rates on a dollar volume-weighted basis.

Except where noted, the default statistics we report in this study were calculated using a dynamic cohorts-based approach. Cohorts of issuers holding a given credit rating are formed on January 1 of each year and tracked for up to 20 years. The timing of defaults and rating withdrawals over the measurement period is recorded. Default rates are calculated by summing the number of defaults (dollar volume) over a specified time horizon (one year for annual default rates, for example), while the denominator is composed of the number of issuers (dollar volume outstanding) on the cohort formation date, with an adjustment for issuers who have had all their ratings withdrawn over the measurement period.<sup>4</sup>

## 2003 Corporate Defaults

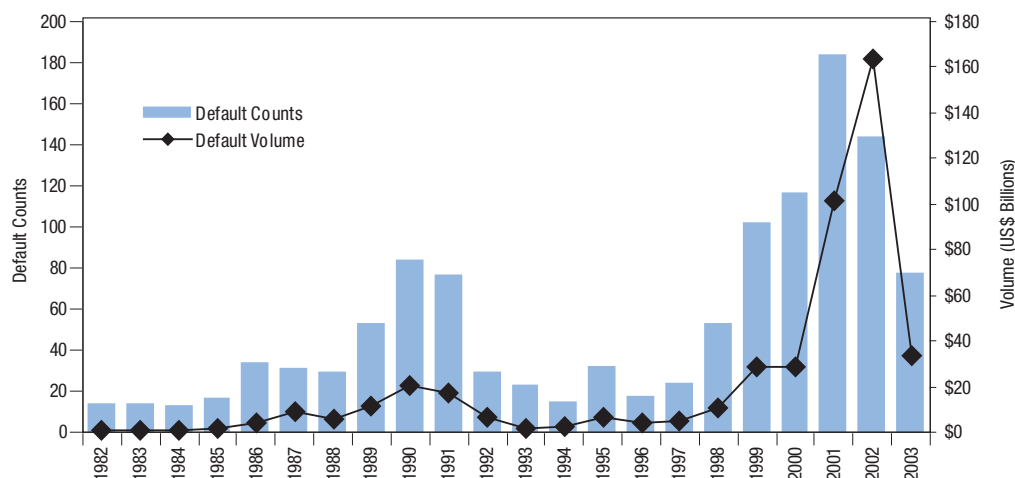
### YEAR IN REVIEW

Following the unprecedented peak in default volume in 2002, the pace of corporate default activity slowed considerably in 2003. In 2003, 77 Moody's-rated corporate bond issuers defaulted on a total of \$33.5 billion of debt. One of the most notable trends in 2003 was the sharp fall in the total dollar volume of defaulted debt. The year 2002 posted the highest total dollar volume of defaulted debt (in real and nominal terms) since the 1930s. A total of \$164 billion of corporate bonds experienced payment impairment in 2002. Last year, the total fell to \$33.5 billion, an 80% decline from 2002. Year over year, the number of defaulting corporate issuers fell by 49%. Exhibit 1 presents annual (nominal) total issuer default counts and dollar volumes from 1983 to 2003.

Some of the year's largest defaulters were Healthsouth Corporation (\$3.4 billion), Mirant Corporation (totaling \$4.6 billion for the corporate family), Fleming Companies, Inc. (\$1.6 billion), and Magellan Health Services, Inc. (\$1.3 billion). In 2002, 33 corporate bond issuers defaulted on a total over of \$1 billion of debt apiece. In 2003, nine obligors experienced multi-billion dollar defaults. Air Canada was the only non-US obligor to default on over \$1 billion of bonds in 2003. Exhibit 21 in the appendix details the complete list of 2003 defaults.

The drop in the number of multi-billion dollar defaults helped send the average size of default toward its long-run average. The average size of default in 2003 was \$435 million, down from \$1.1 billion in 2002. Between 1982 and 2002, the average size of default was approximately \$250 million.

**Exhibit 1 - Global Corporate Bond Default Counts & Dollar Volumes, 1983-2003**



4. Hamilton and Ou (2002) and Kennan, Sobehart, and Hamilton (1998) include detailed discussions of Moody's default rate calculation methodology.

The intensity of the credit stress of the past three years, and the marked improvement in 2003, is also evidenced by the number of investment-grade rated defaulters. A corporate default is generally regarded as an investment-grade default if it occurs within a year of holding an investment grade rating. Using the cohort method, an obligor would need to hold an investment-grade rating as of January 1, 2003 to be classified as an investment-grade defaulter for 2003.

In 2002, 16 corporate bond defaulters were classified as investment grade defaulters. In 2003, the number of investment-grade defaulters fell to zero. However, when the cohort restriction is relaxed, three issuers defaulted within a year of holding an investment grade rating in 2003. Exhibit 2 lists these defaults as well as their credit ratings.

### Exhibit 2 - 2003 Corporate Defaults with Investment-Grade Ratings within One Year of Default

Company	Rating 1 Year Prior to Default	Rating as of 1/1/03	Rating at Default	Bond Volume (Millions)
British Energy plc	A3	Ca	Ca	\$657.9
Lumbermens Mutual Casualty Company	Baa1	Ba3	Caa2	\$700.0
Northwestern Corporation	Baa2	Ba1	Ca	\$1,294.0

Exhibit 3 presents the distribution of initial events of default for 2003. Over half of the 77 initial default events in 2003 were missed interest and/or principal payments. Twenty-six issuer's initial default events (34%) were bankruptcies. The bankruptcy category includes issuers that filed for protection from creditors under Chapter 11 of the U.S. Bankruptcy Code (including pre-packaged Chapter 11) or, for issuers domiciled outside the U.S., filed for bankruptcy under a non-U.S. legal bankruptcy regime. The latter category includes administration, receivership, or seizure by regulators. Eight issuers whose initial default event was not bankruptcy subsequently filed for bankruptcy, resulting in a total of 34 corporate issuers bankruptcies totaling \$19 billion in 2003. In 2002, a relatively higher proportion of defaulters (47% of issuers and 61% of volume) ultimately filed for bankruptcy in the same year.

Distressed exchanges and grace period defaults constituted a relatively small share of corporate defaults in 2003, approximately the same share in terms of issuers and dollar volume as in 2002.

### Exhibit 3 - Global 2003 Default Counts & Dollar Volumes by Initial Default Event

Initial Default Event	Issuer Counts	Volume (Billions)
<i>Payment Default</i>	40	\$12.7
Missed interest/principal payment	37	\$12.2
Grace period default	3	\$0.4
<i>Bankruptcy</i>	26	\$16.3
US Chapter 11	23	\$14.6
Foreign bankruptcy	3	\$1.7
<i>Distressed exchange</i>	11	\$4.6
<b>Total</b>	<b>77</b>	<b>\$33.5</b>

The geographic distribution of corporate defaults in 2003 reversed the pattern observed in 2002, when defaults by non-US corporate obligors reached their highest level since World War II. In 2003, defaults by US-domiciled issuers returned to dominance, and to levels approaching long-run historical averages. Exhibit 4 shows the distribution of 2003 default counts and dollar volumes by geographical region and country of domicile. U.S. issuers made up 82% of defaults by dollar volume and 77% as percentage of issuers. Between 1920 and 2002, US-based corporate bond issuers have represented 91% of defaults as a percentage of issuers and 90% of defaults as a percentage of dollar volume, on average.

Europe experienced a substantial fall in corporate defaults in 2003. During the last seven months of the year (June to December), there were no defaults by European rated corporate bond issuers. There were a total of just seven corporate defaults totaling \$2.7 billion in 2003, compared to 27 defaults totaling \$38 billion in 2002. In 2003, 9% of issuers and 8% of the volume totals were by European obligors, compared to 23% and 10%, respectively in 2002.<sup>5</sup> The year's most high-profile European default was by Parmalat (dubbed "Europe's Enron" by the financial press), which filed for bankruptcy in December. Parmalat was not, however, rated by Moody's.

Latin America was the region witnessing the highest default activity after the U.S. in 2003. 12% of issuers and 9% of dollar volume defaults occurred in Latin America. The majority of these corporate defaults (7%) occurred in Mexico, and occurred primarily by issuers in the telecommunications industry. Argentinean issuers, which accounted for the largest share of defaults in Latin America in 2002, saw just one default in 2003.

5. The 2003 European corporate default experience will be examined exclusively in a companion report, *Default and Recovery Rates of European Corporate Bond Issuers*, to be published shortly after this global survey.

#### Exhibit 4 - Geographical Distribution of 2003 Corporate Defaults

Region	Country	Percent of Total	
		Issuers	Volume
North America		76.6%	81.5%
	United States	75.3%	78.0%
	Canada	1.3%	3.6%
Europe		9.1%	8.2%
	United Kingdom	3.9%	3.7%
	Luxembourg	2.6%	3.5%
	Germany	1.3%	0.4%
	Portugal	1.3%	0.4%
Latin America & Caribbean		11.7%	9.2%
	Argentina	1.3%	0.7%
	Brazil	1.3%	0.9%
	Dominican Republic	1.3%	0.6%
	Mexico	6.5%	6.7%
	Venezuela	1.3%	0.3%
Asia-Pacific		2.6%	1.1%
	Australia	2.6%	1.1%
<b>Total</b>	<b>11 Countries</b>	<b>77 = 100%</b>	<b>\$33.5 B = 100%</b>

For the third consecutive year, telecommunications issuers dominated defaults by industry sector. Exhibit 5 shows the distribution of 2003 issuer defaults and dollar volume totals by industry category, as well as the default rate for each industry group. In 2001, telecommunications issuers constituted 25.8% of dollar volume and 16.1% as a percentage of issuers. In 2002, an extraordinary 56.4% of defaults by dollar volume and 31.2% of issuers defaulted in the telecommunications sector. Last year, these shares dropped to 19% and 17%, respectively, but were high enough to keep the beleaguered industry in the lead for a third year. The energy and utilities sector – which includes Mirant Corporation and Northwestern Corporation – experienced the highest default activity in 2003 in terms of dollar volume. The relatively large size of defaults by obligors in the healthcare industry helped put the sector in second place by dollar volume in 2003. Two of the year's largest rated corporate defaults were Healthsouth Corporation (\$3.4 billion) and Magellan Health Services (\$1.3 billion).

#### Exhibit 5 - Distribution of 2003 Global Corporate Defaults by Industry Sector

Industry	Percent of Total		Default Rate (% Issuers)
	Defaulting Issuers	Volume	
Telecommunications	16.9%	19.2%	5.1%
Metals & Mining	9.1%	4.8%	6.9%
Utilities and Energy	7.8%	21.6%	0.9%
Chemicals, Plastics, & Rubber	7.8%	4.7%	3.9%
Printing, Publishing, & Broadcasting	7.8%	4.5%	3.7%
Transportation	6.5%	6.8%	3.1%
Beverage, Food, & Tobacco	5.2%	6.4%	2.1%
Healthcare, Education, & Childcare	3.9%	14.5%	2.7%
Textiles, Leather, & Apparel	3.9%	3.7%	9.5%
Construction, Building, & Real Estate	3.9%	1.4%	2.4%
Manufacturing	3.9%	0.9%	2.7%
Retail	3.9%	0.9%	2.9%
Financial (Non-Bank)	2.6%	1.4%	0.3%
Electronics	2.6%	1.0%	1.1%
Hotels, Casinos, & Gaming	2.6%	1.0%	2.2%
Miscellaneous	2.6%	0.5%	3.8%
Nondurable Consumer Products	2.6%	0.4%	1.9%
Insurance	1.3%	2.1%	0.4%
Forest Products & Paper	1.3%	1.8%	1.3%
Aerospace & Defense	1.3%	1.0%	2.2%
Machinery	1.3%	0.9%	1.9%
Automobile	1.3%	0.4%	1.0%
<b>Total</b>	<b>77 Defaults</b>	<b>US\$33.5 billion</b>	<b>1.7%</b>

The fall in the global counts of issuers and total dollar volume sent default rates based on both measures lower in 2003. Exhibits 6 and 7 present default statistics for Moody's-rated corporate issuers for the year 2003 by whole letter

and alphanumeric rating categories. Moody's global issuer-weighted default rate fell to 1.66% from 3.01% in 2002. On a dollar-volume weighted basis, the default rate for all rated corporate bond issuers worldwide fell even more sharply, to below 1% from 5.3% the prior year.

As we noted in the section above, no obligors defaulted that had an investment-grade rating on the January 1, 2003 cohort date. Consequently, the investment-grade default rate for 2003 was zero. For speculative-grade rated issuers, the global issuer-weighted default rate fell to 5.19% in 2003 from 8.41% in 2002. The comparable default rate measured as a percentage of dollar volume, fell by over 15% in 2003, from 2002's 21% to 5.6% in 2003.

Default rates in the U.S. also fell in 2003, but the pace of improvement - particularly in the speculative-grade segment - fell somewhat short of the fall in global default rates. The U.S. issuer-weighted default rate fell from 3.22% at the end of 2002 to 2.17% in 2003. The U.S. speculative-grade default rate fell to 5.4% from 7.3% in 2002. That 1.9% decline compares to a 3.2% fall in the global figure, which was influenced by a sharp fall in non-US defaults, especially in Europe.

Default rates by rating category globally and in the U.S. were generally also down from 2002 levels. Exhibits 25, 26, and 27 in the appendix provide the time series of issuer- and dollar-volume weighted default rates by rating category.

### Exhibit 6 - 2003 Corporate Bond Defaults by Whole Letter Rating

Rating as of 1/1/03	Global				United States			
	Default Count	Volume (Billions)	Default Rate % Issuers	Default Rate % Volume*	Default Count	Volume (Billions)	Default Rate (% Issuers)	Default Rate (% Volume)
Ba	5	\$8.2	0.95	3.62	4	\$7.9	1.22	4.11
B	19	\$8.1	2.68	2.61	13	\$5.7	2.36	2.93
Caa-C	53	\$17.2	21.20	16.23	41	\$12.5	20.76	14.37
Investment-Grade	0	\$0.0	0.00	0.00	0	\$0.0	0.00	0.00
Speculative-Grade	77	\$33.5	5.19	5.54	58	\$26.1	5.39	5.60
All Rated	77	\$33.5	1.66	0.97	58	\$26.1	2.17	1.24

\* Global dollar volume default rates consist of North American and European Issuers only.

### Exhibit 7 - 2003 Corporate Bond Defaults by Alphanumeric Rating

Rating as of 1/1/03	Global			United States		
	Default Count	Volume (Billions)	Default Rate (% Issuers)	Default Count	Volume (Billions)	Default Rate (% Issuers)
Ba1	1	\$1.3	0.53	1	\$1.3	0.87
Ba2	1	\$0.3	0.75	0	\$0.0	0.00
Ba3	3	\$6.6	1.48	3	\$6.6	2.26
B1	2	\$2.2	0.77	2	\$2.2	1.03
B2	7	\$3.1	2.56	5	\$2.6	2.26
B3	10	\$2.8	5.67	6	\$0.9	4.40
Caa1	9	\$1.7	8.07	9	\$1.70	9.47
Caa2	13	\$4.9	16.88	11	\$3.55	17.32
Caa3	13	\$2.8	19.85	10	\$2.65	19.42
Ca	13	\$4.6	11.35	8	\$3.20	15.69
C	5	\$3.2	15.38	3	\$1.40	18.18
Investment-Grade	0	\$0.0	0.00	0	\$0.0	0.00
Speculative-Grade	77	\$33.5	5.19	58	\$26.1	5.39
All Rated	0	0.0	1.66	0	0.0	2.17

## 2004 DEFAULT RATE FORECAST

Moody's speculative-grade default rate forecasting model indicates that over the next year the global issuer-weighted speculative-grade default rate will fall below its long-run historical average of 4.9% for the first time since 1999, reaching 3.4% by the end of 2004. Exhibit 8 presents Moody's global speculative-grade forecast.

Moody's uses a statistical model to forecast its trailing 12-month speculative-grade issuer-based default rate. The default rate forecast is driven primarily by changes in the distribution of Moody's credit ratings, but the model also includes macroeconomic variables, such as the trend in U.S. industrial production and the slope of the Treasury yield curve. The model also includes lagged issuance as a proxy for the well-known "aging effect."<sup>6</sup> Moody's default rate forecasting model has a prediction horizon of one year.

The number of credit rating downgrades fell by 31% from 2002 to 2003, while the number of credit rating upgrades increased by 49%. The ratio of credit rating downgrades to upgrades fell from 4 to 1 in 2002 to less than 2 to

6. The "aging effect" is based on the empirical observation that bond issuers' risk of default is highest in the third or fourth year after issuance. Keenan, Sobehart, and Hamilton (1998) describe the construction of Moody's default rate forecasting model in detail.

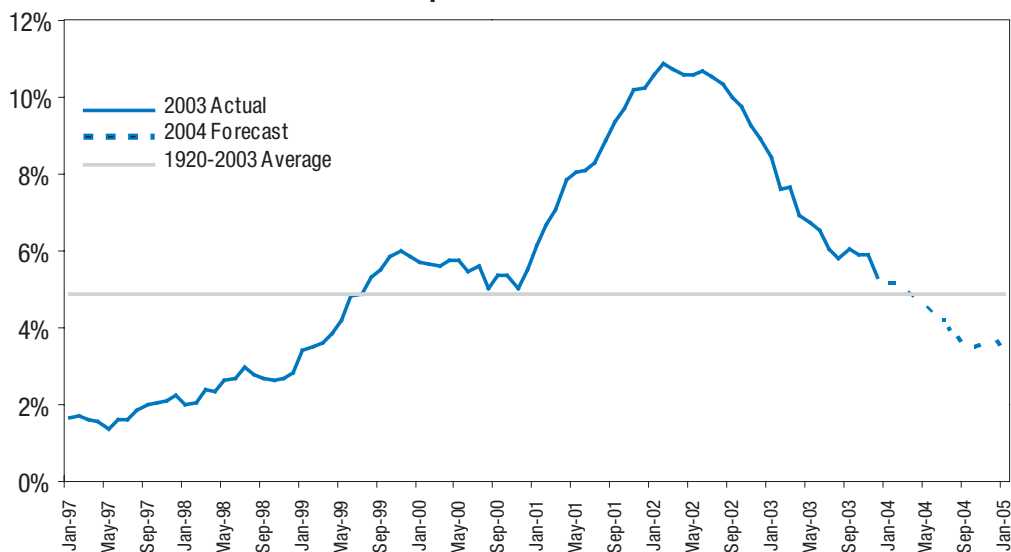
1 in 2003. In addition to improving credit fundamentals, the high rate of attrition among speculative-grade issuers over the past three years means that fewer obligors are exposed to the risk of default going forward. The aging effect, which in addition to record speculative-grade issuance in the late 1990s resulted in the bumper crop of defaults in 2001 and 2002, will be much less of a factor for defaults in 2003.

Also buttressing the case for lower expected default rates is a steep Treasury yield curve (historically indicative of future economic growth), and growth in the U.S. industrial production index, which is highly correlated with changes aggregate credit conditions.<sup>7</sup>

Within speculative-grade, a few unfavorable trends exist that may heighten the default rate at certain points in the rating scale. First, \$27 billion of speculative-graded rated debt is scheduled to mature in 2004. Almost a third of this debt is rated Caa1 and below. Furthermore, as of January 2004, 18% of the dollar volume of outstanding speculative-grade rated long-term debt held Caa ratings. The high proportion of Caa-rated issuers, many of which will need to return to the capital markets for financing, is likely to result in annual default rates for this category in excess of its 23% post-1970 historical average.

The year 2003 was a record year for high-yield issuance. Nearly three-quarters of that issuance was used for refinancing existing bonds and bank loans.<sup>8</sup> Approximately \$4 billion of the \$13 billion of rated bank debt will require refinancing in the second half of 2004, suggesting that market appetite and risk tolerance may be critical to the success of these issuers' balance sheet restructuring efforts late in the year.<sup>9</sup>

**Exhibit 8 - 2004 Global Speculative-Grade Default Rate Forecast**



## HISTORICAL CORPORATE DEFAULT RATES & RATINGS PERFORMANCE

In this section we take a longer view of corporate defaults with a twofold purpose. First, we seek to put the current credit cycle in historical perspective. More importantly, we seek to gauge quantitatively the performance of Moody's ratings as statements about default risk. In order to do so we require a time series of defaults and a historical benchmark.

### ANNUAL CORPORATE BOND DEFAULT RATES

The rise in default rates between 1997 and 2003 was one of only three extreme macrocredit events in the past 83 years. The chart on the cover of this report shows trailing 12-month default rates by broad geographical region for the 1995-2003 time period. Although default rates fell short of the two historical peaks (set in 1933 and 1991), the current credit cycle is distinguishable by its duration. From trough to peak, the current credit cycle is already the longest on record. In the two previous extreme cycles the default rate fell by 50% in the twelve months following their peaks. Following its peak in January of 2002, the global speculative-grade issuer-weighted default rate fell by just 2.5%.

Default rates measured as a percentage of outstanding dollar volume have historically exhibited a high correlation with issuer-weighted default rates, both in terms of direction and level. The enormous average size of default posted in 2001 and 2002 - in excess of \$1 billion per issuer in 2002 - led to a breakdown of this historical relationship. The global

7. Hamilton and Varma (2002).

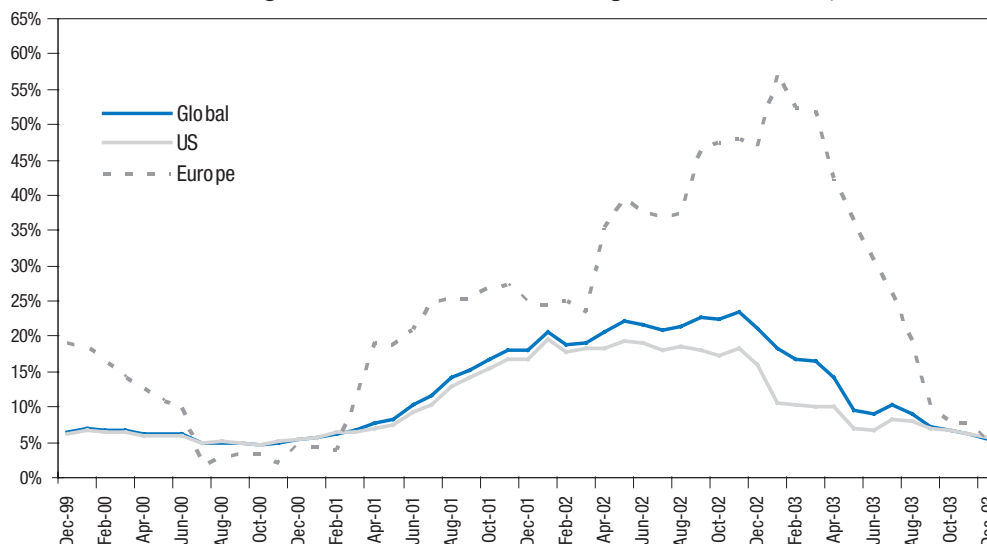
8. Garman (2003).

9. Marshella (2003).



dollar-volume weighted default rate reached a record peak of 23% in November 2002. Exhibit 9 shows dollar volume-weighted speculative-grade default rates for global, US, and European issuers. Exhibits 22, 23 and 24 in the appendix show detailed time series of annual default rates by rating category.

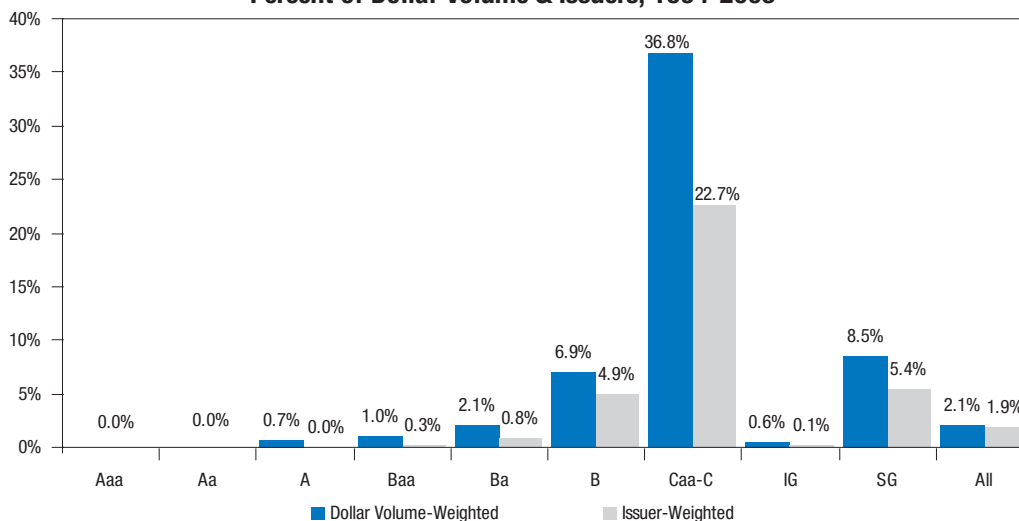
**Exhibit 9 - Trailing 12-Month Dollar Volume-Weighted Default Rates, 2000-2003**



One of the most notable trends in 2003 was the rapid closing of the difference between the issuer-weighted and dollar-volume weighted default rate indices. At its peak in November 2002, the global dollar-volume issuer-weighted default rate stood 15% over the global issuer-weighted default rate. The gap was quickly closed in 2003 as the average size of default fell to approximately \$425 million.

As Exhibits 26 and 27 in the appendix show, annual default rates measured as a percentage of the total dollar volume outstanding show considerably more volatility (roughly double for speculative-grade issuers) compared to default rates measured as a percentage of issuers. When averaged over long periods of time, annual default rates measured by dollar volume are generally higher than those measured as a percentage of issuers, although in many cases the difference is not statistically significant. Exhibit 10 below shows global weighted average one-year issuer- and dollar volume-weighted default rates between 1994 and 2003.<sup>10</sup> The heavily-weighted default volumes of 2001 and 2002 result in average speculative-grade dollar-volume default rates that often exceed issuer-weighted default rates by rating category.

**Exhibit 10 - Weighted Average One-Year Global Default Rates, Percent of Dollar Volume & Issuers, 1994-2003**



10. Moody's dollar volume-weighted default rate statistics by whole letter rating category for U.S. issuers begin in 1994. Moody's calculates a dollar volume-weighted speculative-grade default rate series that starts in 1972.

## MULTI-YEAR DEFAULT RATES

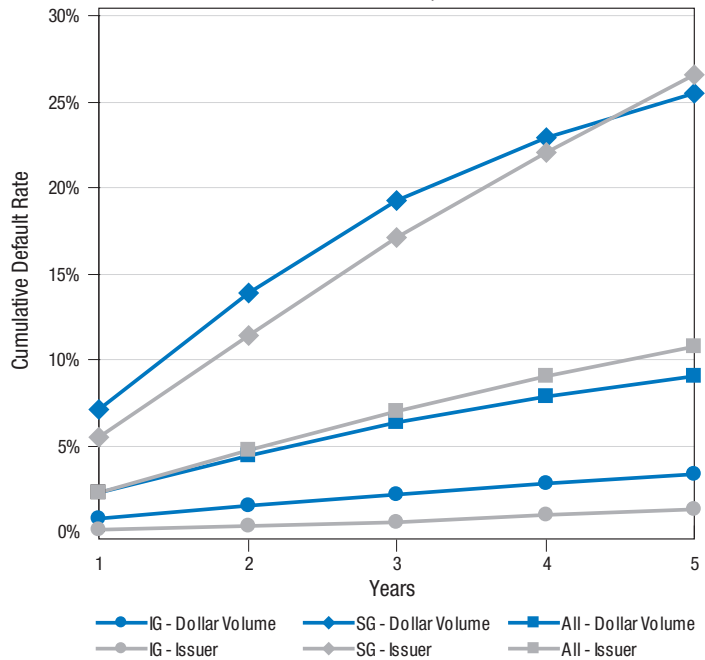
Although one-year default rates are the most commonly reported default statistics, bond investors usually have investment horizons longer than one year. Investors may desire default rate estimates with a horizon roughly equivalent to the average maturity of their portfolios. Cumulative default rates that calculate the frequency of default beyond one year are, therefore, of direct utility.

Measured both as a percentage of issuers and as a percentage of defaulted bond volumes, Moody's ratings exhibit a strong correlation with subsequent defaults over investment horizons as long as twenty years. Exhibits 28-31 in the appendix present average cumulative average default rates by whole and alphanumeric ratings, both as a percentage of issuers and as a percentage of the dollar volume outstanding. The tables illustrate a clear, monotonically increasing relationship between Moody's ratings and the risk of default over multiple investment horizons.

Exhibit 11 shows that the cumulative default rates for all Moody's-rated issuers and for speculative-grade rated issuers measured as a percentage of dollar volume and as a percentage of issuers are statistically indistinguishable at the five-year horizon. Although the dollar volume cumulative default rate curve starts higher than the issuer-weighted curve, the two converge by the fourth year. The cumulative default rate curves for all Moody's rated issuers measured as a percentage of dollar volume and as a percentage of issuers lie virtually on top of one another over the entire five-year time horizon.

The shape of the dollar volume-weighted cumulative default rate curve for speculative-grade rated issuers also suggests that the risk of default is relatively more "front loaded" compared to the issuer-weighted default rates. In other words, the risk of default in a portfolio of speculative-grade rated issuers is high during the first four years and flattens out thereafter.

**Exhibit 11 -Average US Cumulative Default Rates from One to Five Years, 1994-2003**



## RATING AS PREDICTORS OF DEFAULT

With rare exceptions, ratings are downgraded well in advance of default. In Exhibit 12 we plot the median and average rating for the 1983-2001 period and for the 2002 cohort of defaulters. Both the graphs show that five years prior to default the median rating of defaulting companies is speculative-grade. For the 1983-2001 period, the median rating five years prior to default was upper speculative grade, Ba3. For 2003 defaulters, however, the rating five years before default was a significantly lower B1.

The downward slope of the average and median ratings show that these future defaulters were already experiencing downward rating pressure five years in advance of default. At 48 months before default, the median rating has fallen to B1 and falls further to B2 17 months prior to default. At the time of default, the median and average credit rating is Caa2. We also see that as the default date approaches, the pace of rating downgrade accelerates. Exhibit 12 also shows that multi-notch rating drops before default have been rare on average. Both for 2003 and the historical time period, we observe an orderly progression of rating downgrades leading up to the default date.

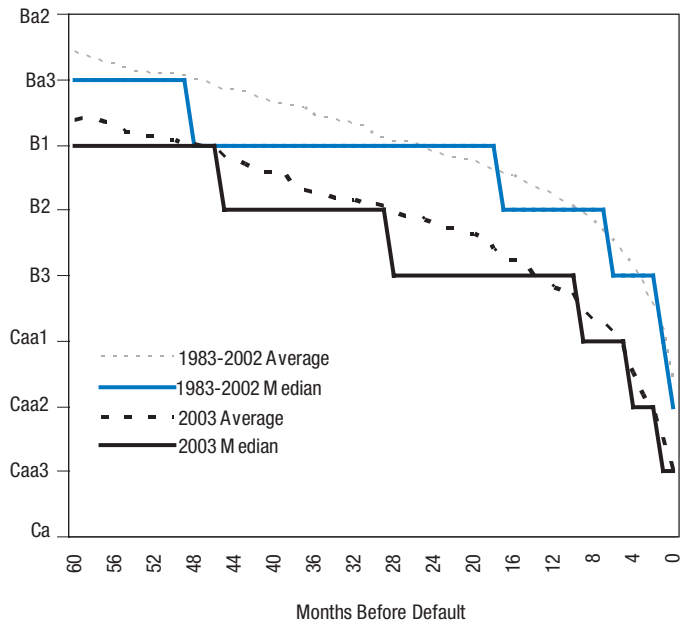
Moody's ratings have also demonstrated their ability to capture a very high proportion of defaulting issuers in the lowest rating categories over varying investment horizons. Exhibit 13 shows Cumulative Accuracy Profiles (CAPs) for one- and five-year horizons. CAP curves are useful for making visual, qualitative assessments of rating performance. A CAP curve is constructed in two ways. The first type sorts the Moody's-rated universe of corporate bond issuers from lowest (i.e. riskiest, Caa-C) rating to highest (default remote, Aaa) rating and calculates the percentage of defaulters whose credit rating is equal to or lower than that rating. An effective rating system would catch relatively more defaults from the rated population in its lowest (high default risk) categories.

The second type of CAP curve sorts the Moody's-rated pool of issuers into risk percentile, where the measure of risk is the Moody's rating. The percentage of defaulters captured in each percentile is then calculated. This second type of CAP curve can be described as a "power curve," since it shows how effective a risk scoring system (rating system) is at detecting defaults from the population. For both types of CAP curves, the further the curve bows toward the northwest corner, the greater the fraction of all defaults that carry low ratings and the more efficient ratings are at sorting defaults from non-defaults.

Exhibit 13 shows CAP curves for one-year and five-year horizons for the 1983-2002 time period, as well as for the year 2003 alone. Between 1983 and 2002, approximately 85% of all defaulters carried ratings that are B1 or below one year before default (Panel A), and 60% are rated B1 or lower five years before default (Panel C). At the one-year time horizon, nearly 95% of defaulters are captured in the riskiest 25% of the rated population (Panel B).

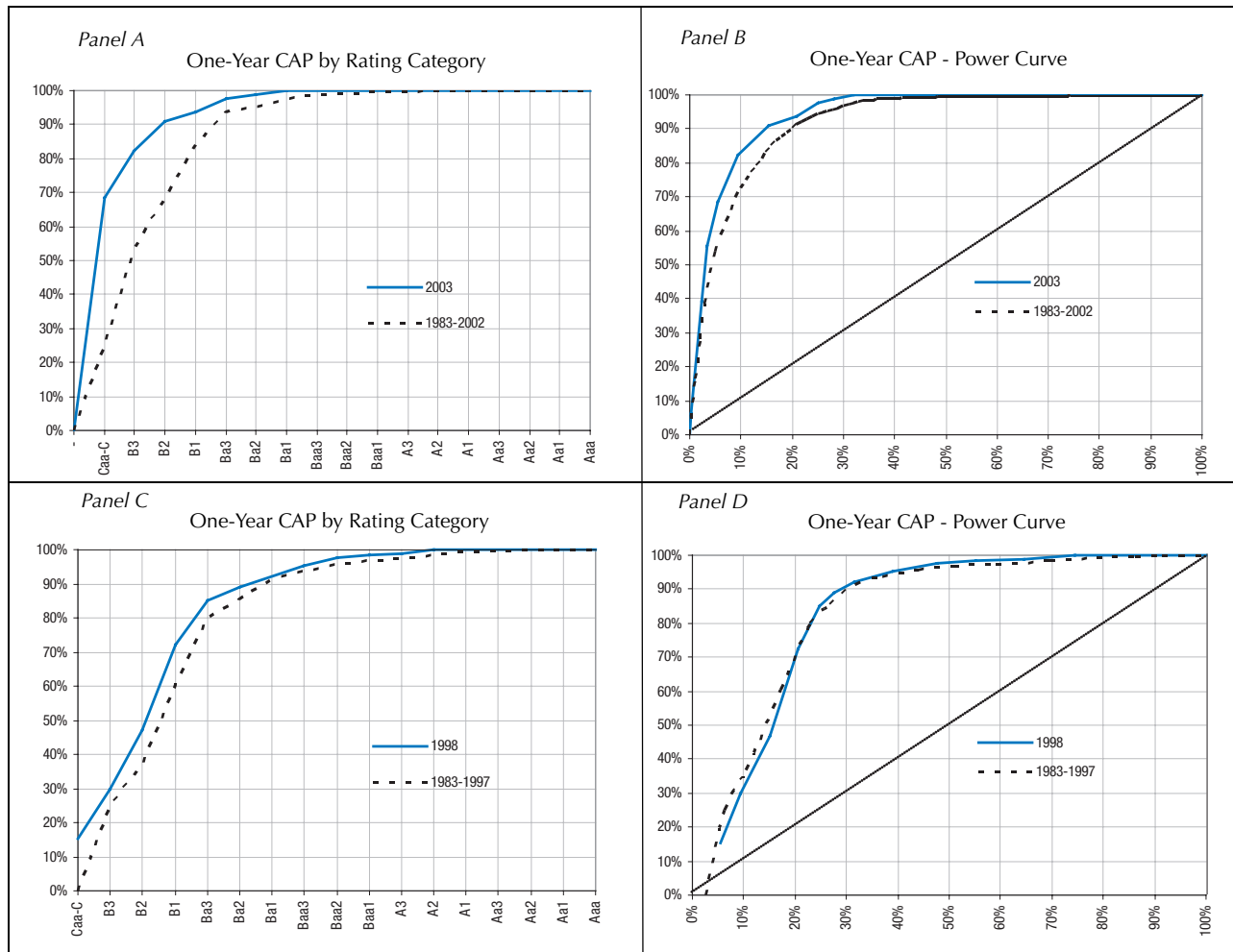
The CAP curves for 2003 show a significant improvement from 2002. The absence of any investment-grade defaults in 2003 helped boost the annual CAP. Nearly 95% of defaulting issuers held ratings B1 or below, and 98% of 2003 defaulters were captured in the riskiest quartile. At the five-year horizon, the ratings assigned to the 1998 cohort proved to be about as effective at identifying subsequent defaults as the 1983-1997 average. The CAP curves for the 1998 cohort - both sorted by rating categories and by percentile ranking (power curve), shown in Panels C and D of Exhibit 13 - lie very close to the CAP curves for 1983-1997 time period.<sup>11</sup>

**Exhibit 12 - Median & Average Rating 60 to Zero Months Before Default**



11. Mann (2004) reviews the performance of Moody's corporate credit ratings in detail.

### Exhibit 13 - One- & Five-Year Cumulative Accuracy Plots (CAP), 1983-2003



### DEFAULT SEVERITY & RECOVERY RATES

A very important aspect of corporate bond defaults is the recovery on defaulted instruments. Most bond default resolutions eventually provide bondholders with some amount of recovery. Our primary focus in this section is the recoveries on instruments that defaulted in 2003, with a secondary focus on the long-term average recovery experience of the 1982-2003 period.<sup>12</sup> The long-term results provide a comparative backdrop for 2003 recovery rates.

In this study, the recovery rate is measured by the market price of the defaulted instrument observed 30-days after the date of default. A recovery rate is defined by the ratio of the price relative to its face value (par). For many investors, who liquidate their positions after default, post-default trading prices represent, in fact, realized recovery rates. For investors that hold defaulted securities until ultimate resolution, prices observed shortly after default are widely accepted measures of the risk-adjusted, long-term expected ultimate recovery values.<sup>13</sup>

### RECOVERY RATES BY PRIORITY IN CAPITAL STRUCTURE

Exhibit 14 presents recovery rates for defaulted instruments in 2003. Prices for over 120 defaulted instruments were used to estimate recovery rates for 2003. The table shows the mean value-weighted recovery rate (an average of recovery rates on all defaulted issuers, weighted by the face value of those issues), the issuer-weighted mean recovery rate (averaged within and then across issuers), and the median issuer-weighted mean recovery rate (median within an issuer, then the median is taken across issuers).<sup>14</sup>

12. An extensive analysis of historical recovery rates can be found in the recently published study by Varma (2003).

13. The alternative approach - measuring ultimate recoveries realized in bankruptcy resolutions or workouts - presents a number of estimation challenges, including estimates of the discount rate to apply to each cash flow, assumptions about the value of certain payments made during the process, and estimates of the value of securities used to pay creditor claims (such as equity and derivative instruments). As there is often no market for such securities, ascertaining their values is highly subjective.

14. A complete description of the various methods for calculating recovery rates for defaulted instruments and their uses appears in Varma (2003).

Secured bank loans in default had the highest median recovery rate of all defaulted instruments, at about 83% of the face amount. They also experienced the highest value-weighted and issuer-weighted mean recovery rates (76% and 65%, respectively), although the one observation of a default on a senior unsecured loan recovered more, at 80% of par. The high recovery rates on secured bank loans are not surprising given their secured nature, seniority in capital structure, and strong protective covenants.

#### Exhibit 14 - 2003 Recovery Rates Descriptive Statistics by Priority in Capital Structure

Defaulted Instruments	Value Weighted	Issuer Weighted					
	Mean	Mean	Median	Minimum	Maximum	Standard Deviation	Number of Observations
Bank Loans							
<i>Sr. Secured</i>	76.0	64.6	82.9	11.9	100.8	33.5	21
<i>Sr. Unsecured</i>	80.0	80.0	80.0	80.0	80.0	NA	1
Bonds							
<i>Sr. Secured</i>	39.7	40.4	39.0	0.1	100.5	26.0	65
<i>Sr. Unsecured</i>	54.1	60.3	64.5	1.3	100.5	32.9	9
<i>Sr. Subordinated</i>	44.4	41.2	34.0	0.1	99.5	24.7	34
<i>Subordinated</i>	29.2	36.6	40.9	0.8	94.5	20.2	17
<i>Preferred Stocks</i>	12.0	12.3	11.5	3.0	25.1	8.1	5
Preferred Stocks	1.1	1.1	NA	NA	NA	NA	1

The issuer-weighted mean recovery rate for defaulted bonds was roughly 40%. Prices on only one preferred stock issue were available. It recovered 1.1%; abysmal, yet not surprising given that preferred stock have low seniority in the capital structure. No prices for junior subordinated bonds were available.

Recovery rates are strongly correlated with the defaulted instrument's seniority in the capital structure. While the relationship may not always hold exactly in samples drawn from a single year of defaults (as was the case in 2002), the expected relationship holds true over longer periods such as presented here in the 1982-2003 column. Equipment trust certificates guaranteed by equipment leases recover the highest, followed by senior secured, senior unsecured and so on.

#### Exhibit 15 - Mean Recovery Rates on Defaulted Instruments by Priority in Capital 1982-2003

Defaulted Instrument	Value Weighted			Issuer Weighted		
	2003	2002	1982-2003	2003	2002	1982-2003
<i>Bank loans</i>						
Senior Secured	76.0	63.1	59.3	64.6	65.9	65.1
Senior Unsecured	80.0	99.1	41.3	80.0	99.0	44.7
<i>All Bonds</i>	39.7	31.7	33.8	40.2	36.7	35.4
Equipment Trust	NA	36.7	61.0	NA	32.5	62.1
<i>Sr. Secured</i>	54.1	56.8	50.3	60.3	49.8	51.6
<i>Sr. Unsecured</i>	44.4	30.9	32.9	41.2	31.9	36.1
<i>Sr. Subordinated</i>	29.2	20.7	29.0	36.6	25.3	32.5
<i>Subordinated</i>	12.0	29.0	27.1	12.3	27.9	31.1
<i>Jr. Subordinated</i>	39.7	NA	22.9	40.4	NA	24.5
<i>Preferred Stock</i>	1.1	31.7	6.5	1.1	9.0	15.3
<i>All Instruments</i>	39.8	31.7	31.8	39.4	35.0	33.9

Comparing average recovery rates from one year to the next, we see that recovery rates on defaulted instruments continued their upward trajectory after hitting the bottom in 2001. While 2002 saw record defaults - in terms of both issuers and volume, recovery rates turned the corner. In 2003, they gathered momentum and reached the long-term average. A helping hand was provided by vastly lower number of defaults especially in industries like telecom, technology, and steel where recovery rates have traditionally been lower (see Exhibit 16).

### INDUSTRY-SPECIFIC RECOVERY RATES

We present recovery rates for defaulting issuers in different industries in Exhibit 16. Defaulting issuers in various industries can have different recoveries due to several reasons: value of collateral for secured instruments, value of hard assets and their longevity, revenue generating capacity, and competitive and regulatory environment.

Issuers in some industries - such as utilities and media, broadcasting and cable - have historically had higher average recovery rates than issuers in other industries like telecom and steel. The latter two industries would seem to have

little in common in terms of fundamental structure or firm characteristics, except that these two industries have experienced a significant number of defaults, many of them clustered at the same period-of-time.

The rise in recovery rates in 2003 was sufficiently widespread that even defaulting telecom issues benefited from an increase in recovery rates. The deluge of defaults in the telecom industry subsided, reducing the volume of defaulted telecom assets on the trading block and increasing the average recovery rate to 45% from a low of 23% in 2001.

**Exhibit 16 - Average Recovery Rates by Industry Category**

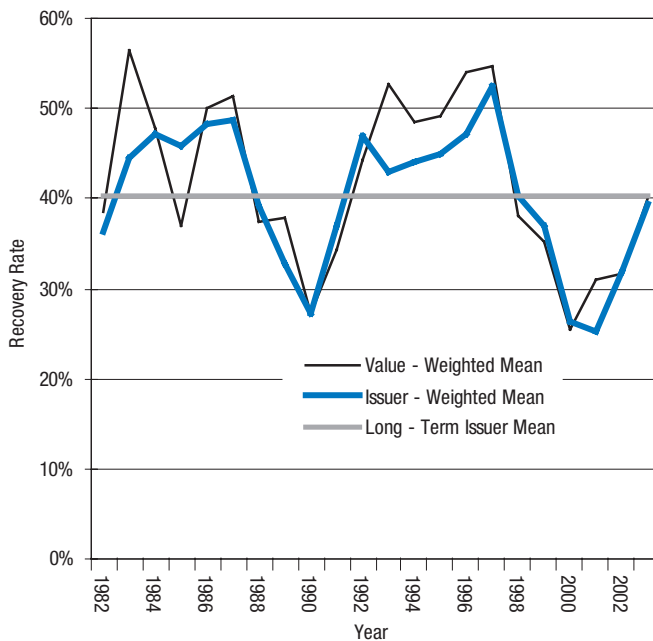
Industry	Issuer Weighted Mean Recovery Rate		
	2003	2002	1982-2003
Utility-Gas	48.0	54.6	51.5
Oil and Oil Services	NA	44.1	44.5
Hospitality	64.5	60.0	42.5
Utility-Electric	5.3	39.8	41.4
Transport-Ocean	76.8	31.0	38.8
Media, Broadcasting and Cable	57.5	39.5	38.2
Transport-Surface	NA	37.9	36.6
Finance and Banking	18.8	25.6	36.3
Industrial	33.4	34.3	35.4
Retail	57.9	58.2	34.4
Transport - Air	22.6	24.9	34.3
Automotive	39.0	39.5	33.4
Healthcare	52.2	47.0	32.7
Consumer Goods	54.0	22.8	32.5
Construction	22.5	23.0	31.9
Technology	9.4	36.7	29.5
Real Estate	NA	5.0	28.8
Steel	31.8	28.5	27.4
Telecommunications	45.9	21.4	23.2
Miscellaneous	69.5	46.5	39.5

**RECOVERY RATES TRENDS**

Moody's has previously observed that the speculative-grade recovery rates tend to follow a mean reversion process with long-term average recovery rate of roughly 40%. Recovery rates tend to be higher during economic boom times and lower when the economic cycle is in a downturn. Exhibit 17 presents annual average recovery rates for defaulted bonds over a twenty-one year period of 1983-2003. From a high of roughly 50% in 1986 to a low of roughly 20% in 2001, the recovery rates tend to fluctuate within this range, around a long-term mean of 40%.

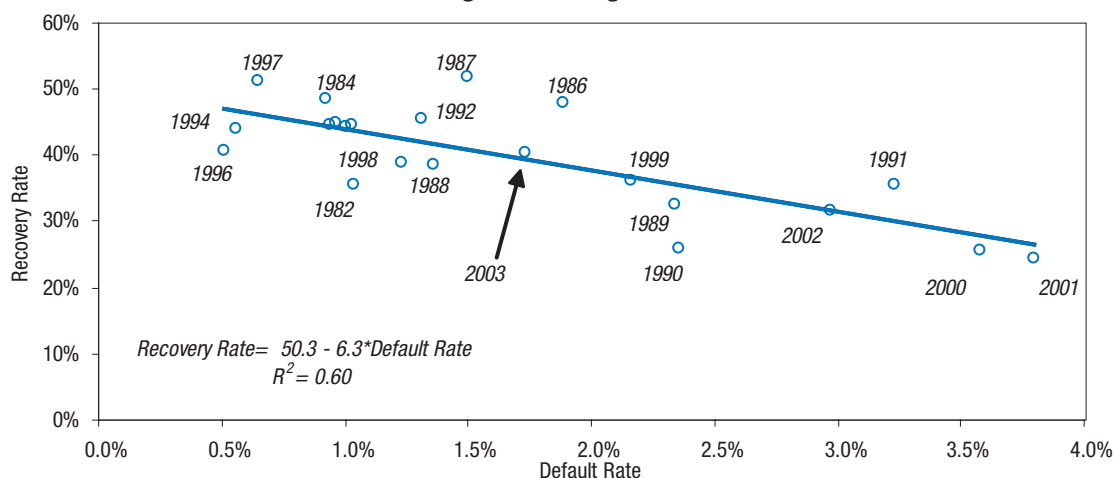
Historically, recovery rates and default rates have been negatively correlated. Higher than average default rates tend to coincide with lower than average recovery rates; the converse is also true.<sup>15</sup> Exhibit 18 presents a scatter plot of recovery rates and default rates over the 1982-2003 period. The exhibit shows a negative relationship between default rates and recovery rates. A simple regression model shows that much of the annual variation in recovery rates ( $R^2$  of 60%) can be explained by the aggregate default rates. The 2003 recovery rate experience is well predicted by this relationship, as shown in the exhibit.

**Exhibit 17 - Annual Average Senior Unsecured Bond Recovery Rates Exhibit Mean Reversion**



15. This relationship has been documented for many years in Moody's annual corporate bond and default studies, and it has recently received academic attention due to its portfolio risk correlation implications. See, for example, Altman, et. al. (2003) and Hu and Perraudin (2002).

### Exhibit 18 - Correlation between Annual Issuer-Weighted Average Recovery Rates and Issuer-Weighted Average Default Rates



### MOODY'S RATINGS CORRELATED WITH RECOVERY RATES

While it is expected that ratings differentiate relative default risk, it is less clear whether they differentiate relative loss rates in the event of default. Moody's ratings are intended to rank order securities with respect to relative expected loss rates - which is the product of the expected default rate and the expected loss severity in the event of default. For issuers with more than one class of debt in the market, Moody's rates the secured and/or higher priority claims higher than it rates unsecured or lower priority claims.

However, within the same security class, it is considerably more difficult to predict which issuers in the event of default are likely to have higher or lower recovery rates. In this section, we investigate the extent ratings also distinguish relative recovery rates on like instruments - in particular, defaulted senior unsecured bonds - across a range of defaulting issuers. A straightforward way to analyze the relationship between recovery rates and issuers' ratings at some time prior to default. Exhibit 19 shows recovery rates based on issuer ratings at various points in time prior to defaulting.

### Exhibit 19 - Senior Unsecured Issuer-Weighted Mean Recovery Rates: 1982-2003

Prior Rating	One Year Before Default	Two Years Before Default	Three Years Before Default	Four Years Before Default	Five Years Before Default
Aaa	NA	NA	NA	97.0	74.1
Aa	95.4	62.1	30.8	44.4	41.1
A	51.3	47.1	42.0	44.5	45.7
Baa	43.3	42.3	43.7	40.8	38.1
Ba	37.7	40.3	39.7	41.9	42.6
B	35.9	35.0	36.2	35.2	37.8
Caa-Ca	28.4	22.4	17.9	27.6	12.3
Investment-Grade	46.2	44.5	42.7	43.0	41.3
Speculative-Grade	34.6	33.9	34.5	36.8	39.2
All Issuers	35.7	35.4	36.3	38.6	39.9

Two observations can be made based on information presented in Exhibit 19:

1. Issuers rated investment grade within 5-years prior to default have higher recovery rates regardless of when the rating was investment grade. As issuers move closer to default, the separations between recovery rates for speculative grade and investment grade become wider: from 5% five years prior to default to over 25% one year prior to default.
2. As default becomes more and more likely, issuer ratings more explicitly differentiate between recovery rates for different issuers. For example, in the year prior to default, there is a monotonic relationship between realized recovery rates. Issuers rated Aa one year prior to default have the highest recovery rates followed by issuers rated A and so on.

## HISTORICAL CREDIT LOSS RATES

Moody's long-term debt ratings are statements about protection against credit loss, and, therefore about both the probability of default and the expected loss severity in the event of default. Historical average default probabilities for each broad-letter rating category are presented in previous sections of this Special Comment. Recovery rates for senior-unsecured bonds are presented in Exhibit 19. Estimates of credit losses, therefore, can be presented as the product of historical default probability and loss severity for senior unsecured debt (which is simply one minus the recovery rate for senior unsecured debt).<sup>16</sup>

Exhibit 20 presents one-year through five-year cumulative loss rates for various broad-letter-grade ratings. Unsurprisingly, cumulative losses rise as ratings decline and the investment horizon increases.

**Exhibit 20 - Average Cumulative Credit Loss Rates from One to Five Year**

Issuer Weighted Senior Unsecured	One Year	Two Year	Three Year	Four Year	Five Year
Aaa	-	-	-	-	0.03%
Aa	-	0.00%	0.03%	0.08%	0.14%
A	0.01%	0.05%	0.14%	0.24%	0.34%
Baa	0.15%	0.40%	0.69%	1.13%	1.55%
Ba	0.88%	2.50%	4.49%	6.56%	8.59%
B	4.19%	9.75%	15.12%	20.37%	25.27%
Caa-Ca	17.14%	30.91%	44.84%	55.91%	66.80%
Investment -Grade	0.05%	0.13%	0.25%	0.42%	0.58%
Speculative -Grade	3.64%	7.73%	11.72%	15.33%	18.59%
All Issuers	1.22%	2.51%	3.69%	4.70%	5.55%

16. The credit loss rate associated with any particular rating category over a horizon of T years can be calculated as follows:

$$CL_t = \sum_{i=1}^T DR_i * (1 - RR_i)$$

Where,

$CL_t$  is credit losses over any time horizon t, in years;

$DR_t$  is the default rate for the issuer cohort that have the same issuer rating t years prior to default;



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## Appendix - Statistical Tables

### Exhibit 21 - Moody's-Rated 2003 Corporate Bond Issuer Defaults

Company	Volume (Millions)	Initial Default Event	Industry	Country
<b>January</b>				
Cenargo International Plc	\$175	Bankruptcy	Transportation	United Kingdom
Corporacion Durango S.A. de C.V.	\$605	Missed interest payment	Industrial	Mexico
Cybernet Internet Services International Inc.	\$150	Grace period default	Technology	Germany
Sun World International, Inc.	\$115	Chapter 11	Industrial	United States
Vantico Group	\$272	Distressed exchange	Industrial	Luxembourg
XM Satellite Radio, Inc.	\$325	Distressed exchange	Media	United States
Volume (US\$ Mil)	\$1,642			
Count	6			
<b>February</b>				
AES Drax Energy Limited	\$413	Missed interest payment	Utilities	United Kingdom
American Lawyers Media Holdings, Inc.	\$64	Missed interest payment	Media	United States
Asarco Incorporated	\$540	Missed principal payment	Industrial	United States
British Energy, plc	\$658	Distressed exchange	Utilities	United Kingdom
Brown Jordan International, Inc.	\$105	Grace period default	Consumer Products	United States
DDi Corp.	\$200	Missed interest payment	Technology	United States
iPCS, Inc	\$300	Chapter 11	Technology	United States
Maxxim Medical Group, Inc.	\$145	Chapter 11	Industrial	United States
NTELOS, Inc.	\$280	Missed interest payment	Technology	United States
UbiquiTel Operating, Co.	\$300	Distressed exchange	Technology	United States
Volume (US\$ Mil)	\$3,003			
Count	10			
<b>March</b>				
Atlas Air Inc.	\$438	Suspension of payments	Transportation	United States
Cable Satisfaction International, Inc.	\$150	Missed interest payment	Media	Portugal
Healthsouth Corporation	\$3,391	Missed principal and interest payments	Industrial	United States
Lumbermens Mutual Casualty Company	\$700	Missed interest payment	Financial (Non-Bank)	United States
Magellan Health Services, Inc	\$1,330	Chapter 11	Industrial	United States
Precision Partners, Inc.	\$100	Missed interest payment	Industrial	United States
Transportadora De Gas del Sur S.A.	\$250	Missed principal payment	Energy	Argentina
Volume (US\$ Mil)	\$6,358			
Count	7			
<b>April</b>				
Air Canada	\$1,197	Bankruptcy	Transportation	Canada
Eagle Food Centers, Inc.	\$85	Chapter 11	Retail	United States
Fleming Companies, Inc	\$1,555	Chapter 11	Consumer Products	United States
General Chemical Industrial Products Inc.	\$100	Missed interest payment	Industrial	United States
J Crew Group, Inc.	\$142	Distressed exchange	Consumer Products	United States
Jackson Products, Inc.	\$115	Missed interest payment	Industrial	United States
Leap Wireless International, Inc	\$893	Chapter 11	Technology	United States
MTS, Inc.	\$110	Missed interest payment	Retail	United States
Volume (US\$ Mil)	\$4,197			
Count	8			

## Exhibit 21 - Moody's-Rated 2003 Corporate Bond Issuer Defaults

### May

Allegiance Telecom, Inc	\$650	Chapter 11	Technology	United States
Grupo TMM, S.A.	\$400	Missed principal and interest payments	Transportation	Mexico
Millicom International Cellular S.A.	\$917	Distressed exchange	Technology	Luxembourg
Mississippi Chemical Corporation	\$200	Chapter 11	Industrial	United States
National Equipment Services Inc.	\$275	Missed interest payment	Financial (Non-Bank)	United States
Neenah Corporation	\$150	Missed interest payment	Industrial	United States
Neenah Foundry Company	\$135	Missed interest payment	Industrial	United States
Penn Traffic Company	\$100	Chapter 11	Retail	United States
WCI Steel, Inc.	\$300	Missed interest payment	Industrial	United States
Volume (US\$ Mil)	\$3,127			
Count	9			

### June

Grupo Iusacell, SA De C.V.	\$350	Missed interest payment	Technology	Mexico
J.B. Poindexter & Co., Inc.	\$85	Distressed exchange	Miscellaneous	United States
New World Restaurant Group, Inc.	\$140	Missed principal and interest payments	Hotel, Gaming, & Leisure	United States
WestPoint Stevens, Inc.	\$1,000	Chapter 11	Industrial	United States
Volume (US\$ Mil)	\$1,575			
Count	4			

### July

@Entertainment Inc.	\$460	Chapter 11	Media	United States
American Cellular Corporation	\$700	Distressed exchange	Technology	United States
Aurora Foods Inc.	\$400	Missed interest payment	Consumer Products	United States
Azteca Holdings, S.A. de C.V.	\$359	Distressed exchange	Media	Mexico
Loral Space & Communications Ltd.	\$350	Chapter 11	Technology	United States
Mirant Americas Generation, LLC	\$2,500	Chapter 11	Utilities	United States
Mirant Corporation	\$2,120	Chapter 11	Utilities	United States
Newmont Yandel Operations Limited	\$300	Bankruptcy	Industrial	Australia
Texas Petrochemical Limited Partnership	\$225	Missed interest payment	Industrial	United States
Volume (US\$ Mil)	\$7,414			
Count	9			

### August

CANTV Finance Ltd.	\$100	Missed interest payment	Technology	Venezuela
DVI, Inc.	\$155	Missed interest payment	Financial (Non-Bank)	United States
GEO Speciality Chemicals	\$120	Missed interest payment	Industrial	United States
High Voltage Engineering Corporation	\$135	Missed interest payment	Industrial	United States
Hollywood Casino Shreveport	\$189	Missed interest payment	Hotel, Gaming, & Leisure	United States
Horizon PCS, Inc.	\$470	Chapter 11	Technology	United States
Oglebay Norton Company	\$100	Missed interest payment	Industrial	United States
Radio Unica Corp.	\$158	Grace period default	Media	United States
Satelites Mexicanos, S.A. De C.V.	\$524	Missed interest payment	Media	Mexico
Volume (US\$ Mil)	\$1,951			
Count	9			

## Exhibit 21 - Moody's-Rated 2003 Corporate Bond Issuer Defaults

### September

Cone Mills Corporation	\$100	Missed interest payment	Industrial	United States
Northwestern Corporation	\$1,295	Chapter 11	Utilities	United States
Tricom SA	\$200	Missed interest payment	Technology	Dominican Republic
Twin Laboratories, Inc.	\$39.9	Chapter 11	Technology	United States
Volume (US\$ Mil)	\$1,635			
Count	4			

### October

American Plumbing & Mechanical Inc.	\$95	Chapter 11	Industrial	United States
Piccadilly Cafeterias, Inc.	\$75	Chapter 11	Consumer Products	United States
Volume (US\$ Mil)	\$170			
Count	2			

### November

Alamosa Delaware, Inc	\$750	Distressed exchange	Technology	United States
Volume (US\$ Mil)	\$750			
Count	1			

### December

Airtrain Citylink Limited	\$74	Missed interest payment	Transportation	Australia
Congoleum Corporation	\$100	Chapter 11	Industrial	United States
International Wire Group Inc.	\$300	Missed interest payment	Industrial	United States
Iron Age Corporation	\$100	Distressed exchange	Consumer Products	United States
Iron Age Holdings Corporation	\$45	Distressed exchange	Consumer Products	United States
Metallurg Holdings, Inc.	\$121	Missed interest payment	Industrial	United States
Solutia, Inc.	\$673	Chapter 11	Industrial	United States
Tiete Certificates Gerantor Trust	\$300	Missed principal & interest payment	Industrial	Brazil
Volume (US\$ Mil)	\$1,713			
Count	8			

**Exhibit 22 - Annual Global Issuer-Weighted Default Rates by Whole Letter Rating, 1970-2003**

Rating	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00
Baa	0.27	0.00	0.00	0.46	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.31	0.00	0.36	0.00	1.33
Ba	4.14	0.42	0.00	0.00	0.00	1.03	1.02	0.52	1.09	0.49	0.00	0.00	2.73	0.92	0.84	1.41	2.03
B	20.78	3.85	7.14	3.77	10.00	5.97	0.00	3.28	5.41	0.00	4.94	4.49	2.41	6.31	6.72	8.22	11.73
Caa-C	53.33	13.33	40.00	44.44	0.00	0.00	0.00	50.00	0.00	0.00	33.33	0.00	25.00	40.00	100.00	0.00	23.53
Investment-Grade	0.14	0.00	0.00	0.23	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.21	0.00	0.10	0.00	0.32
Speculative-Grade	8.81	1.11	1.88	1.24	1.31	1.74	0.88	1.35	1.79	0.42	1.61	0.70	3.55	3.83	3.33	3.67	5.64
All Corporate	2.64	0.29	0.46	0.45	0.28	0.36	0.18	0.35	0.35	0.09	0.34	0.16	1.04	0.96	0.92	1.00	1.89

Rating	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00
Baa	0.00	0.00	0.59	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.10	0.38	0.19	1.21	0.00
Ba	2.71	1.24	2.98	3.35	5.35	0.30	0.55	0.24	0.69	0.00	0.19	0.63	1.01	0.89	1.57	1.54	0.95
B	6.23	6.36	8.95	16.18	14.56	9.03	5.71	3.81	4.80	1.44	2.12	4.24	5.83	5.51	9.39	4.99	2.68
Caa-C	20.00	28.57	25.00	58.82	36.84	26.67	28.57	5.13	11.57	13.99	14.67	15.09	20.44	20.04	34.51	30.05	21.20
Investment-Grade	0.00	0.00	0.29	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.13	0.13	0.49	0.00
Speculative-Grade	4.23	3.59	5.79	10.08	10.40	4.84	3.51	1.94	3.32	1.67	2.05	3.44	5.64	6.15	10.59	8.41	5.19
All Corporate	1.50	1.36	2.34	3.58	3.23	1.31	0.94	0.56	1.03	0.51	0.65	1.23	2.14	2.40	3.81	3.01	1.66

**Exhibit 23 - Annual Global Dollar Volume-Weighted Default Rates by Whole Letter Rating, 1994-2003\***

Rating	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	2.92	0.00
Baa	0.00	0.00	0.00	0.00	0.00	0.14	0.67	2.83	3.47	0.00
Ba	0.14	0.57	0.00	0.05	0.65	2.30	1.04	1.10	4.08	3.62
B	2.04	6.54	1.62	3.16	3.02	5.92	5.53	15.49	17.39	2.61
Caa-C	2.80	13.06	22.53	7.73	14.70	20.92	20.46	66.15	82.82	16.23
Investment-Grade	0.00	0.00	0.00	0.00	0.00	0.03	0.15	1.26	2.35	0.00
Speculative-Grade	1.26	4.49	2.31	2.03	2.98	6.46	5.52	17.97	21.03	5.54
All Corporate	0.26	1.04	0.66	0.53	0.89	1.29	1.36	4.16	5.29	0.97

\* Global dollar-volume weighted default rates consist only of North American and European corporate bonds.

**Exhibit 24 - Annual Global Issuer-Weighted Default Rates by Alpha-Numeric Rating, 1983-2003**

Rating	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa3	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00
A1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baa1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
Baa2	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.00
Baa3	0.00	1.06	0.00	4.82	0.00	0.00	1.06	0.00	0.00	0.00	0.00
Ba1	0.00	1.16	0.00	0.87	3.70	0.00	0.79	2.67	1.08	0.00	0.83
Ba2	0.00	1.61	1.63	1.20	0.95	0.00	1.82	2.82	0.00	0.00	0.00
Ba3	2.65	0.00	2.84	3.44	2.96	2.58	4.71	3.93	10.08	0.73	0.76
B1	0.00	5.84	4.38	7.61	4.93	4.31	5.76	8.50	5.86	1.00	3.24
B2	10.00	18.75	7.69	16.67	4.30	7.14	9.79	22.64	12.90	1.59	5.04
B3	17.91	2.90	13.59	15.79	10.22	10.96	18.05	29.11	28.42	24.84	11.29
Caa-C	40.00	100.00	0.00	23.53	20.00	28.57	25.00	58.82	36.84	26.67	28.57
Investment-Grade	0.00	0.10	0.00	0.32	0.00	0.00	0.29	0.00	0.06	0.00	0.00
Speculative-Grade	3.83	3.33	3.67	5.64	4.23	3.59	5.79	10.08	10.40	4.84	3.51
All Corporates	0.96	0.92	1.00	1.89	1.50	1.36	2.34	3.58	3.23	1.31	0.94

Rating	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00
A3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00
Baa1	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.27	1.25	0.00
Baa2	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.26	0.71	0.00
Baa3	0.00	0.00	0.00	0.00	0.00	0.34	0.97	0.00	1.76	0.00
Ba1	0.00	0.00	0.00	0.00	0.00	0.47	0.93	0.51	1.57	0.53
Ba2	0.00	0.00	0.00	0.00	0.62	0.00	0.63	1.37	1.40	0.75
Ba3	0.59	1.76	0.00	0.47	1.12	2.00	1.04	2.97	1.60	1.48
B1	1.88	4.35	1.17	0.00	2.11	3.29	3.51	3.42	1.94	0.77
B2	3.75	6.42	0.00	1.54	7.55	6.59	4.06	10.44	6.59	2.56
B3	7.95	4.06	3.28	7.27	5.59	9.73	10.92	16.77	6.82	5.67
Caa-C	5.13	11.57	13.99	14.67	15.09	20.44	20.04	34.51	30.05	21.20
Investment-Grade	0.00	0.00	0.00	0.00	0.04	0.04	0.13	0.13	0.49	0.00
Speculative-Grade	1.94	3.32	1.67	2.05	3.44	5.64	6.15	10.59	8.41	5.19
All Corporates	0.56	1.03	0.51	0.65	1.23	2.14	2.40	3.81	3.01	1.66

**Exhibit 25 - Annual Global Issuer-Weighted Default Rate Descriptive Statistics, 1920-2003**

Rating	Min	1st Quartile	Median	Mean	StDev	3rd Quartile	Max
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.06	0.18	0.00	0.83
A	0.00	0.00	0.00	0.09	0.27	0.00	1.70
Baa	0.00	0.00	0.00	0.27	0.48	0.37	1.97
Ba	0.00	0.00	0.64	1.09	1.67	1.29	11.11
B	0.00	0.38	2.34	3.71	4.30	5.43	20.78
Caa-C	0.00	0.00	7.93	13.74	17.18	20.82	100.00
Investment-Grade	0.00	0.00	0.00	0.15	0.28	0.21	1.55
Speculative-Grade	0.00	0.59	1.75	2.70	3.04	3.52	15.39
All Corporate	0.00	0.18	0.67	1.10	1.38	1.32	8.40

**Exhibit 26 - Annual Global Issuer-Weighted Default Rate Descriptive Statistics, 1970-2003**

Rating	Min	1st Quartile	Median	Mean	StDev	3rd Quartile	Max
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.02	0.11	0.00	0.61
A	0.00	0.00	0.00	0.02	0.06	0.00	0.26
Baa	0.00	0.00	0.00	0.17	0.32	0.27	1.33
Ba	0.00	0.33	0.90	1.20	1.28	1.50	5.35
B	0.00	3.82	5.61	6.38	4.40	7.95	20.78
Caa-C	0.00	12.01	22.36	24.53	21.23	34.22	100.00
Investment-Grade	0.00	0.00	0.00	0.07	0.12	0.11	0.49
Speculative-Grade	0.42	1.69	3.48	3.93	2.90	5.53	10.60
All Corporate	0.09	0.38	0.98	1.27	1.06	1.84	3.80

**Exhibit 27 - Annual Global Dollar Volume-Weighted Default Rate Descriptive Statistics, 1994-2003**

Rating	Min	1st Quartile	Median	Mean	StDev	3rd Quartile	Max
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.42	0.96	0.00	2.92
Baa	0.00	0.00	0.00	0.71	1.31	0.54	3.47
Ba	0.00	0.25	0.85	1.36	1.48	2.00	4.08
B	1.62	2.71	4.35	6.33	5.60	6.39	17.39
Caa-C	2.80	13.47	18.35	26.74	26.18	22.13	82.82
Investment-Grade	—	0.00	0.00	0.38	0.80	0.12	2.35
Speculative-Grade	1.26	2.48	5.01	6.96	6.86	6.23	21.03
All Corporate	0.26	0.72	1.01	1.65	1.68	1.34	5.29

**Exhibit 28 - Average Global Cumulative Issuer-Weighted Default Rates from 1-20 Years  
by Whole Letter Rating, 1920-2003**

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	0.00	0.00	0.02	0.09	0.19	0.29	0.40	0.58	0.76	1.00
Aa	0.07	0.21	0.34	0.52	0.82	1.16	1.54	1.93	2.29	2.68
A	0.08	0.26	0.56	0.91	1.27	1.65	2.07	2.45	2.89	3.37
Baa	0.32	0.96	1.74	2.62	3.49	4.39	5.25	6.10	7.00	7.82
Ba	1.41	3.42	5.57	7.84	10.10	12.22	14.08	15.93	17.57	19.35
B	4.71	10.26	15.63	20.26	24.21	27.46	30.39	32.80	34.88	36.63
Caa-C	15.18	24.70	31.62	36.50	40.11	43.16	45.40	47.55	49.48	51.21
Investment-Grade	0.16	0.49	0.90	1.38	1.89	2.42	2.96	3.49	4.05	4.61
Speculative-Grade	3.88	7.86	11.59	14.91	17.84	20.39	22.60	24.62	26.39	28.13
All Corporate	1.50	3.11	4.65	6.06	7.33	8.46	9.47	10.41	11.29	12.16

Rating	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Aaa	1.21	1.36	1.57	1.65	1.70	1.80	1.91	1.96	2.08	2.14
Aa	3.13	3.64	4.14	4.66	5.05	5.33	5.56	5.78	6.09	6.32
A	3.88	4.39	4.85	5.31	5.79	6.26	6.56	6.87	7.17	7.48
Baa	8.63	9.45	10.24	10.96	11.59	12.19	12.80	13.33	13.79	14.25
Ba	20.97	22.56	24.13	25.50	26.73	27.87	29.04	30.16	31.05	31.95
B	38.31	39.86	41.31	42.77	44.03	45.34	46.29	47.05	47.68	47.96
Caa-C	53.27	55.32	57.12	59.06	60.88	62.54	63.99	65.50	66.92	68.23
Investment-Grade	5.19	5.77	6.33	6.86	7.34	7.79	8.16	8.51	8.85	9.18
Speculative-Grade	29.79	31.38	32.91	34.34	35.61	36.83	37.96	39.02	39.89	40.68
All Corporate	13.00	13.84	14.63	15.37	16.03	16.65	17.19	17.70	18.16	18.59



**Exhibit 29 - Average Global Cumulative Issuer-Weighted Default Rates from 1-20 Years  
by Whole Letter Rating, 1970-2003**

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	0.00	0.00	0.00	0.04	0.12	0.20	0.29	0.39	0.50	0.62
Aa	0.02	0.03	0.06	0.15	0.24	0.34	0.43	0.53	0.60	0.68
A	0.02	0.09	0.23	0.38	0.54	0.72	0.91	1.12	1.35	1.59
Baa	0.20	0.57	1.03	1.62	2.16	2.69	3.24	3.80	4.42	5.10
Ba	1.26	3.48	6.00	8.59	11.17	13.53	15.44	17.37	19.22	21.01
B	6.21	13.76	20.65	26.66	31.99	36.56	40.79	44.21	47.19	50.02
Caa-C	23.65	37.20	48.02	55.56	60.83	65.53	69.36	73.65	75.94	77.91
Investment-Grade	0.08	0.23	0.44	0.70	0.96	1.23	1.50	1.78	2.09	2.42
Speculative-Grade	5.02	10.15	14.84	18.90	22.45	25.51	28.06	30.35	32.37	34.27
All Corporate	1.60	3.23	4.71	5.99	7.07	7.99	8.76	9.46	10.10	10.73

Rating	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Aaa	0.74	0.88	1.03	1.12	1.21	1.31	1.43	1.55	1.55	1.55
Aa	0.77	0.93	1.12	1.37	1.51	1.67	1.91	2.12	2.43	2.70
A	1.86	2.10	2.37	2.61	2.94	3.35	3.78	4.23	4.74	5.24
Baa	5.83	6.63	7.44	8.27	9.12	9.91	10.71	11.45	12.09	12.59
Ba	23.01	25.16	27.24	29.16	30.88	32.81	34.53	36.13	37.38	38.56
B	52.24	54.09	55.95	57.77	59.21	60.37	60.73	60.73	60.73	60.73
Caa-C	80.23	80.23	80.23	80.23	80.23	80.23	80.23	80.23	80.23	80.23
Investment-Grade	2.78	3.16	3.57	3.97	4.41	4.86	5.34	5.80	6.27	6.69
Speculative-Grade	36.17	38.04	39.86	41.55	43.03	44.61	45.92	47.09	48.02	48.90
All Corporate	11.36	12.00	12.65	13.26	13.86	14.48	15.08	15.65	16.17	16.65

**Exhibit 30 - Average Global Cumulative Issuer-Weighted Default Rates by Whole Letter Rating, 1994-2003**

Rating	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00
A	0.65	1.23	1.74	2.19	2.75
Baa	1.04	2.34	3.57	5.06	5.86
Ba	2.05	5.14	8.28	10.66	12.77
B	6.91	17.32	25.27	30.67	33.84
Caa-C	36.84	54.52	64.27	68.58	69.59
Investment-Grade	0.58	1.18	1.73	2.32	2.80
Speculative-Grade	8.47	16.65	23.06	27.28	29.84
All Corporate	2.12	4.24	6.06	7.55	8.57

**Exhibit 31 - Average Global Cumulative Issuer-Weighted Default Rates by Alpha-Numeric Rating, 1983-2003**

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	0.00	0.00	0.00	0.05	0.17	0.23	0.30	0.38	0.38	0.38
Aa1	0.00	0.00	0.00	0.16	0.16	0.26	0.26	0.26	0.26	0.26
Aa2	0.00	0.00	0.04	0.14	0.30	0.36	0.43	0.52	0.61	0.73
Aa3	0.04	0.07	0.12	0.19	0.26	0.35	0.35	0.35	0.35	0.43
A1	0.00	0.02	0.22	0.34	0.43	0.53	0.56	0.65	0.76	0.95
A2	0.03	0.08	0.24	0.51	0.74	0.98	1.15	1.48	1.77	1.88
A3	0.04	0.23	0.40	0.55	0.71	0.95	1.32	1.54	1.73	1.89
Baa1	0.19	0.54	0.92	1.26	1.61	1.88	2.13	2.28	2.47	2.58
Baa2	0.13	0.44	0.84	1.55	2.19	2.85	3.48	4.08	4.73	5.71
Baa3	0.45	1.14	1.84	2.86	3.86	4.81	5.80	6.70	7.31	7.91
Ba1	0.69	2.20	3.78	5.59	7.27	9.31	10.47	11.75	12.59	13.43
Ba2	0.66	2.29	4.63	7.15	9.30	10.74	12.64	14.07	15.29	15.81
Ba3	2.34	6.43	11.14	15.75	20.09	24.29	27.99	31.69	35.27	38.39
B1	3.22	9.42	15.63	21.36	26.93	32.22	37.85	42.19	46.28	49.89
B2	6.54	15.00	22.35	28.54	33.23	36.36	38.76	41.02	43.54	46.22
B3	11.55	21.75	30.63	38.26	44.95	50.46	54.64	58.57	61.22	62.27
Caa-C	23.49	37.05	48.09	56.04	61.60	66.24	69.58	74.26	76.77	80.21
Investment-Grade	0.09	0.25	0.47	0.75	1.02	1.28	1.52	1.75	1.95	2.17
Speculative-Grade	3.81	8.99	14.02	18.59	22.61	26.17	29.32	32.04	34.41	36.29
All Corporate	1.24	2.90	4.51	5.97	7.19	8.22	9.09	9.82	10.44	10.95

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1970</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.43	0.43	0.43	0.43	0.43	0.91	0.91	0.91	0.91	0.91	0.91	1.42	1.42	1.42	1.42
Baa	0.27	0.27	0.27	1.14	1.44	1.44	1.75	2.40	3.07	3.07	3.44	3.44	4.62	5.03	5.45	6.33	7.73	8.75	9.85	10.45
Ba	4.14	4.57	5.01	5.47	6.42	7.40	7.92	8.48	9.65	9.65	9.65	11.12	13.49	14.34	14.34	16.26	20.35	22.64	22.64	24.03
B	20.78	23.42	26.06	26.06	26.06	26.06	26.06	26.06	26.06	26.06	26.06	26.06	33.64	33.64	33.64	33.64	33.64	33.64	33.64	33.64
Caa-C	53.33	60.00	80.00	88.00	88.00	88.00	88.00	100.00	—	—	—	—	—	—	—	—	—	—	—	—
Investment-Grade	0.14	0.14	0.14	0.57	0.72	0.86	1.02	1.33	1.64	1.64	1.98	1.98	2.51	2.87	3.06	3.43	4.41	5.02	5.89	6.12
Speculative-Grade	8.81	9.86	11.66	12.41	13.18	13.98	14.41	15.31	16.26	16.26	16.26	17.43	20.56	21.23	21.23	22.73	25.97	27.79	27.79	28.91
All Corporate	2.64	2.94	3.45	3.97	4.29	4.61	4.83	5.29	5.77	5.77	6.02	6.29	7.38	7.80	7.95	8.54	9.93	10.76	11.46	11.83
<b>1971</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.79	0.79	1.22	1.65	1.65	1.65	2.10	2.10	3.06	3.06	3.06
Baa	0.00	0.00	0.80	1.07	1.07	1.36	1.97	2.60	2.60	2.94	2.94	4.05	4.44	4.84	5.67	6.99	7.94	8.97	9.52	10.68
Ba	0.42	0.86	1.32	2.25	3.72	4.23	4.78	5.94	5.94	5.94	7.38	9.69	10.52	10.52	12.38	17.36	19.63	19.63	21.00	21.00
B	3.85	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Caa-C	13.33	56.67	74.00	74.00	74.00	74.00	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Investment-Grade	0.00	0.00	0.40	0.53	0.67	0.81	1.10	1.39	1.39	1.70	1.70	2.36	2.70	2.87	3.23	3.95	4.52	5.33	5.54	6.20
Speculative-Grade	1.11	3.02	3.82	4.64	5.93	6.38	7.34	8.36	8.36	8.36	9.61	12.96	13.68	13.68	15.28	19.58	21.52	21.52	22.72	22.72
All Corporate	0.29	0.77	1.27	1.57	1.99	2.20	2.65	3.10	3.10	3.35	3.60	4.79	5.20	5.34	5.91	7.25	8.04	8.72	9.07	9.63
<b>1972</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.78	0.78	0.78	1.19	1.19	2.08	2.08	2.57	3.07
Baa	0.00	0.73	0.98	1.24	1.51	2.06	2.64	2.64	3.27	3.27	3.97	4.33	4.70	5.47	6.68	7.55	8.51	9.53	11.16	13.42
Ba	0.00	0.45	1.37	2.82	3.32	3.86	4.99	4.99	4.99	6.37	9.33	10.12	10.96	13.61	18.30	20.41	20.41	21.66	22.98	29.86
B	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	18.07	18.07	18.07	18.07	18.07	18.07	18.07	18.07	18.07	18.07
Caa-C	40.00	57.14	57.14	57.14	57.14	78.57	78.57	78.57	78.57	78.57	78.57	78.57	—	—	—	—	—	—	—	—
Investment-Grade	0.00	0.37	0.49	0.62	0.75	1.02	1.29	1.29	1.58	1.58	2.04	2.35	2.51	2.84	3.51	4.04	4.79	5.19	6.21	7.26
Speculative-Grade	1.88	2.66	3.47	4.73	5.17	6.11	7.09	7.09	7.09	8.28	12.09	12.76	13.49	15.77	19.84	21.65	21.65	22.75	23.92	30.05
All Corporate	0.46	0.92	1.21	1.60	1.80	2.21	2.64	2.64	2.87	3.11	4.22	4.60	4.86	5.53	6.78	7.51	8.14	8.63	9.67	11.45

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1973</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.76	0.76	0.76	1.17	1.17	2.04	2.04	2.51	3.00	3.52
Baa	0.46	0.69	1.17	1.41	1.93	2.46	2.46	3.05	3.05	3.70	4.36	5.05	6.13	7.25	8.06	8.94	9.88	11.90	14.02	14.02
Ba	0.00	0.98	2.00	2.54	3.11	4.30	4.30	4.30	5.74	9.55	10.36	10.36	12.13	16.88	20.10	20.10	21.36	22.68	30.89	32.36
B	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09	15.09
Caa-C	44.44	44.44	44.44	44.44	72.22	72.22	72.22	72.22	72.22	72.22	72.22	—	—	—	—	—	—	—	—	—
Investment-Grade	0.23	0.35	0.59	0.72	0.97	1.23	1.23	1.50	1.50	1.94	2.39	2.69	3.16	3.80	4.31	5.03	5.40	6.57	7.58	7.80
Speculative-Grade	1.24	2.10	3.00	3.47	4.46	5.50	5.50	5.50	6.75	11.36	12.06	12.06	13.62	17.82	20.63	20.63	21.76	22.96	30.48	31.82
All Corporate	0.45	0.73	1.11	1.31	1.71	2.12	2.12	2.35	2.58	3.77	4.26	4.52	5.16	6.37	7.23	7.83	8.31	9.48	11.38	11.75
<b>1974</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.76	0.76	0.76	1.16	1.16	2.03	2.03	2.49	2.97	3.48	3.48
Baa	0.00	0.47	0.72	1.23	1.76	1.76	2.34	2.34	2.98	3.64	4.32	5.38	5.76	6.56	7.44	8.38	9.88	11.99	11.99	11.99
Ba	0.00	1.07	1.63	2.23	3.49	3.49	3.49	4.24	8.23	9.08	9.08	10.91	17.77	21.08	21.08	22.38	25.11	33.50	35.02	36.73
B	10.00	10.00	10.00	10.00	10.00	10.00	10.00	14.39	23.65	23.65	23.65	23.65	23.65	23.65	23.65	23.65	23.65	23.65	23.65	23.65
Caa-C	0.00	0.00	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	—	—	—	—	—	—	—	—	—	—
Investment-Grade	0.00	0.24	0.36	0.61	0.86	0.86	1.13	1.13	1.70	2.14	2.44	2.90	3.22	3.71	4.42	4.78	5.74	6.73	6.94	6.94
Speculative-Grade	1.31	2.23	2.72	3.74	4.81	4.81	4.81	6.08	10.80	11.51	11.51	13.12	19.11	21.98	21.98	23.14	25.61	33.38	34.76	36.32
All Corporate	0.28	0.65	0.85	1.24	1.65	1.65	1.88	2.10	3.40	3.89	4.14	4.78	5.98	6.82	7.42	7.89	9.04	10.91	11.27	11.47
<b>1975</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.37	0.37	0.75	1.59	1.59	2.04	2.97	3.47	4.01	4.01
Baa	0.00	0.00	0.26	0.79	0.79	1.38	1.38	2.34	3.00	3.68	4.74	5.12	5.92	6.35	7.29	9.26	11.32	11.32	11.32	11.32
Ba	1.03	2.11	3.25	3.85	3.85	3.85	4.57	8.40	9.21	9.21	10.96	17.52	20.69	21.86	23.11	24.41	31.10	32.54	34.13	34.13
B	5.97	5.97	5.97	9.27	9.27	9.27	13.13	21.21	21.21	21.21	21.21	21.21	21.21	21.21	21.21	31.06	42.55	42.55	42.55	42.55
Caa-C	0.00	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	—	—	—	—	—	—	—	—	—	—	—
Investment-Grade	0.00	0.00	0.12	0.36	0.36	0.62	0.62	1.17	1.59	1.87	2.31	2.61	3.08	3.74	4.09	5.17	6.28	6.48	6.69	6.69
Speculative-Grade	1.74	2.65	4.09	5.09	5.09	5.09	6.30	10.76	11.43	11.43	12.95	18.62	21.33	22.32	23.39	25.68	32.81	34.08	35.47	35.47
All Corporate	0.36	0.55	0.93	1.32	1.32	1.53	1.75	2.98	3.44	3.68	4.29	5.42	6.22	6.93	7.37	8.61	10.52	10.86	11.23	11.23

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1976</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Baa	0.00	0.27	0.56	0.56	0.87	0.87	2.22	2.92	3.64	4.76	5.15	5.99	5.99	6.97	9.06	10.69	11.25	11.25	11.25	11.25
Ba	1.02	2.09	3.21	3.21	3.83	4.50	7.35	8.10	8.10	9.73	15.81	18.75	19.84	20.99	22.19	29.66	31.00	32.47	32.47	32.47
B	0.00	0.00	3.64	3.64	3.64	8.12	17.54	17.54	17.54	17.54	17.54	17.54	17.54	17.54	30.23	45.73	45.73	45.73	45.73	45.73
Caa-C	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	—	—	—	—	—	—	—	—	—	—	—	—
Investment-Grade	0.00	0.11	0.23	0.23	0.35	0.35	0.99	1.51	1.78	2.19	2.62	3.06	3.69	4.02	5.04	6.10	6.28	6.49	6.49	6.93
Speculative-Grade	0.88	2.26	3.70	3.70	4.24	5.39	9.07	9.72	9.72	11.18	16.61	19.21	20.17	21.20	23.38	31.38	32.62	33.97	33.97	33.97
All Corporate	0.18	0.54	0.91	0.91	1.11	1.31	2.47	3.02	3.24	3.82	5.02	5.78	6.45	6.87	8.04	10.01	10.33	10.68	10.68	11.07
<b>1977</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	1.24	1.24	3.01	3.01	3.77	4.96	4.96	5.43	5.43	6.43	6.43
A	0.28	0.57	0.57	0.57	0.57	1.93	2.64	3.36	4.50	4.90	5.74	5.74	6.73	8.31	9.94	10.51	10.51	10.51	10.51	10.51
Baa	0.52	1.63	1.63	2.24	2.89	5.67	6.40	7.98	13.87	16.69	17.72	18.82	19.97	27.19	28.49	29.92	29.92	29.92	29.92	29.92
Ba	3.28	6.73	6.73	10.97	15.54	25.78	25.78	25.78	25.78	25.78	25.78	25.78	25.78	39.27	56.62	56.62	56.62	56.62	56.62	56.62
B	50.00	50.00	50.00	50.00	50.00	50.00	50.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Caa-C	0.11	0.22	0.22	0.22	0.22	0.84	1.35	1.61	2.01	2.43	2.86	3.78	4.10	5.09	6.11	6.30	6.49	6.49	6.93	6.93
Investment-Grade	1.35	2.76	2.76	3.81	4.95	8.57	9.21	9.21	10.64	15.94	18.47	19.40	20.39	22.48	30.23	31.44	32.76	32.76	32.76	32.76
Speculative-Grade	0.35	0.71	0.71	0.91	1.11	2.24	2.77	2.99	3.55	4.72	5.46	6.37	6.78	7.92	9.83	10.14	10.48	10.48	10.86	10.86
All Corporate	<b>1978</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	1.27	1.27	2.73	2.73	3.92	4.74	5.23	5.23	6.27	6.27	6.27
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	3.50	4.74	5.18	6.13	7.64	9.74	10.28	10.28	10.28	10.28	10.28
Baa	1.09	1.09	1.09	1.75	4.53	6.00	6.00	9.17	15.00	16.86	17.89	18.98	21.28	28.49	29.79	32.66	32.66	32.66	32.66	32.66
Ba	5.41	5.41	11.71	15.04	22.27	22.27	26.72	26.72	32.35	38.50	38.50	38.50	47.29	60.47	60.47	60.47	60.47	60.47	60.47	60.47
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Caa-C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investment-Grade	1.79	1.79	2.80	3.88	7.32	8.54	9.18	11.86	18.26	20.63	21.50	22.43	25.39	32.80	33.96	36.50	36.50	36.50	36.50	36.50
Speculative-Grade	0.35	0.35	0.54	0.73	1.84	2.35	2.67	3.32	4.68	5.52	6.41	6.81	8.18	10.04	10.35	10.84	10.84	11.21	11.21	11.21
All Corporate																				

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1979</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.43	1.43	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
Aaa	0.00	0.00	0.00	0.82	0.82	0.82	0.82	0.82	0.82	0.82	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74
Aa	0.00	0.00	0.00	0.00	0.60	0.60	0.60	1.25	1.25	2.69	2.69	3.47	4.27	4.27	4.75	4.75	5.77	5.77	5.77	5.77
A	0.00	0.30	0.30	1.60	1.94	2.29	3.02	3.02	4.23	4.67	5.62	8.15	10.26	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Baa	0.49	0.49	1.05	3.41	5.88	9.14	11.86	18.25	19.81	20.66	21.58	24.46	31.61	32.70	35.06	35.06	35.06	35.06	35.06	35.06
Ba	0.00	6.45	9.85	17.21	17.21	21.69	26.58	38.33	45.18	45.18	45.18	56.14	56.14	56.14	—	—	—	—	—	—
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Caa-C	0.00	0.11	0.11	0.71	1.07	1.20	1.45	1.72	2.27	3.15	3.46	4.73	5.71	5.88	6.07	6.07	6.49	6.49	6.49	6.49
Investment-Grade	0.42	1.31	2.26	5.26	7.37	10.75	13.68	21.16	23.22	23.97	24.77	28.21	34.74	35.76	37.97	37.97	37.97	37.97	37.97	37.97
Speculative-Grade	0.09	0.36	0.54	1.60	2.29	3.01	3.74	5.27	6.07	6.92	7.31	8.91	10.70	11.00	11.48	11.48	11.83	11.83	11.83	11.83
All Corporate	<b>1980</b>	0.00	0.00	0.00	0.00	0.00	0.00	1.24	1.24	1.24	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
Aa	0.00	0.00	0.28	0.86	0.86	0.86	1.78	2.11	3.14	3.14	3.89	4.66	4.66	5.12	5.12	6.10	6.10	6.10	6.10	6.63
A	0.00	0.00	0.96	1.29	1.63	2.69	2.69	3.49	4.33	5.69	8.09	10.09	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13
Baa	0.00	0.53	3.86	5.01	8.69	11.87	17.90	20.10	20.92	23.60	26.43	34.55	36.78	39.19	39.19	39.19	39.19	40.59	40.59	40.59
Ba	4.94	7.54	15.82	21.73	28.12	31.63	44.06	48.72	48.72	48.72	60.11	68.09	68.09	68.09	68.09	68.09	68.09	68.09	68.09	68.09
B	33.33	33.33	33.33	33.33	33.33	33.33	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56
Caa-C	0.00	0.00	0.46	0.81	0.93	1.30	1.68	2.35	3.19	3.63	4.84	5.78	6.11	6.30	6.30	6.70	6.70	6.70	6.70	6.92
Investment-Grade	1.61	2.47	6.52	8.41	12.42	15.57	22.84	25.29	25.96	28.17	32.10	39.88	41.82	43.92	43.92	43.92	43.92	45.12	45.12	45.12
Speculative-Grade	0.34	0.52	1.71	2.36	3.23	4.13	5.78	6.77	7.57	8.30	9.94	11.91	12.47	12.93	12.93	13.27	13.27	13.45	13.45	13.64
All Corporate	<b>1981</b>	0.00	0.00	0.00	0.00	0.00	0.00	1.23	1.23	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.85	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.49
Aa	0.00	0.27	0.27	0.27	0.27	1.19	1.51	2.20	2.20	2.94	3.71	3.71	4.17	4.17	5.16	5.16	5.16	5.16	5.70	3.90
A	0.00	0.61	1.88	2.55	3.58	3.58	3.96	4.77	6.08	8.39	9.81	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80	6.25
Baa	0.00	3.60	5.02	8.02	11.67	18.33	20.79	21.48	24.49	28.50	36.55	38.58	40.77	40.77	40.77	40.77	42.07	43.42	43.42	11.55
Ba	4.49	11.57	16.55	24.50	27.35	40.26	40.26	40.26	40.26	50.22	56.44	56.44	56.44	56.44	56.44	56.44	56.44	56.44	56.44	43.42
B	0.00	0.00	0.00	0.00	0.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	56.44
Caa-C	0.00	0.33	0.78	1.01	1.37	1.74	2.25	3.07	3.50	4.68	5.44	5.76	5.94	6.33	6.33	6.33	6.33	6.33	6.33	40.00
Investment-Grade	0.70	4.77	6.71	10.42	13.87	21.72	24.26	24.82	27.29	31.98	39.54	41.26	43.14	43.14	43.14	43.14	44.25	45.39	45.39	7.22
Speculative-Grade	0.16	1.35	2.13	3.12	4.15	6.09	7.02	7.78	8.58	10.38	12.26	12.79	13.23	13.23	13.55	13.55	13.72	13.90	14.08	45.39
All Corporate																				14.64

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1982</b>	0.00	0.00	0.00	0.00	0.00	1.21	1.21	1.21	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48
Aaa	0.00	0.00	0.00	0.00	0.00	0.76	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32
Aa	0.26	0.26	0.26	0.26	1.14	1.14	1.81	1.81	2.89	3.65	3.65	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
A	0.31	0.31	1.32	2.37	2.74	3.52	4.36	5.70	8.05	9.51	10.52	10.52	11.14	11.14	11.14	11.14	11.14	11.14	11.14	11.90
Baa	2.73	5.22	7.86	11.52	18.33	20.47	21.06	23.70	28.02	32.90	34.76	36.77	36.77	36.77	36.77	38.06	39.43	39.43	39.43	42.39
Ba	2.41	9.92	15.14	17.92	30.31	30.31	30.31	30.31	35.67	60.18	60.18	60.18	60.18	60.18	60.18	60.18	60.18	60.18	60.18	60.18
B	25.00	51.47	51.47	51.47	61.18	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88
Caa-C	0.21	0.21	0.55	0.89	1.37	1.88	2.68	3.10	4.41	5.16	5.48	5.65	5.65	6.03	6.03	6.03	6.03	6.03	6.25	6.91
Investment-Grade	3.55	7.65	10.55	13.95	21.61	23.82	24.32	26.51	30.74	37.60	39.17	40.87	40.87	40.87	40.87	41.95	43.09	43.09	43.09	45.56
Speculative-Grade	1.04	2.03	2.97	4.03	6.15	7.03	7.77	8.54	10.39	12.22	12.74	13.16	13.16	13.48	13.48	13.64	13.82	13.82	13.99	14.54
All Corporate																				
<b>1983</b>	0.00	0.00	0.00	0.00	2.41	2.41	2.41	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72
Aaa	0.00	0.00	0.00	0.00	0.49	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.73	2.73	2.73	2.73	2.73	2.73	3.53
Aa	0.00	0.00	0.00	0.26	0.26	0.83	0.83	1.76	2.03	3.42	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	4.25
A	0.00	1.16	1.57	3.28	3.75	4.27	5.37	6.53	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	8.69	10.62
Baa	0.92	2.41	5.06	12.71	14.75	17.90	21.50	26.60	32.20	32.20	33.63	33.63	35.21	35.21	37.04	38.92	38.92	40.92	45.14	49.53
Ba	6.31	11.01	17.86	25.14	28.42	29.60	32.33	40.29	50.25	55.22	58.02	58.02	58.02	58.02	58.02	58.02	58.02	58.02	58.02	58.02
B	40.00	64.00	64.00	64.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00	76.00
Caa-C	0.00	0.30	0.41	0.95	1.41	2.15	2.40	3.20	3.88	4.17	4.33	4.33	4.51	4.51	4.51	4.51	4.71	5.31	6.55	7.40
Investment-Grade	3.83	6.99	11.01	18.32	21.19	23.49	26.67	32.71	39.61	41.22	43.01	43.01	44.01	44.01	45.18	46.41	46.41	47.72	50.47	53.30
Speculative-Grade	0.96	1.96	2.99	5.08	6.07	7.13	7.94	9.66	11.34	11.83	12.23	12.23	12.52	12.52	12.68	12.84	13.00	13.68	15.07	16.14
All Corporate																				
<b>1984</b>	0.00	0.00	0.00	1.44	1.44	1.44	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
Aaa	0.00	0.00	0.00	0.90	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	2.47	2.47	2.47	2.47	2.47	2.47	2.47	3.94
Aa	0.00	0.22	0.46	0.71	1.48	1.74	2.58	3.46	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.50	6.23	6.68
A	0.36	0.36	0.77	1.23	1.74	2.81	3.94	5.73	5.73	6.43	6.43	6.43	6.43	6.43	6.43	7.35	9.26	10.25	12.31	13.38
Baa	0.84	3.94	12.61	14.79	18.52	22.05	27.56	34.42	35.38	36.46	36.46	37.68	37.68	39.15	39.15	39.15	40.79	44.17	47.66	47.66
Ba	6.72	12.77	20.11	23.99	27.13	32.07	42.30	49.51	51.76	56.83	56.83	56.83	56.83	56.83	60.94	60.94	60.94	60.94	60.94	60.94
B	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Caa-C	0.10	0.19	0.40	0.94	1.64	2.00	2.75	3.54	3.82	3.97	3.97	4.14	4.14	4.14	4.14	4.33	4.91	6.09	6.91	7.34
Investment-Grade	3.33	7.42	15.59	18.37	21.88	25.90	33.03	39.93	41.26	43.49	43.49	44.33	44.33	45.35	46.46	46.46	47.64	50.07	52.60	52.60
Speculative-Grade	0.92	2.02	4.19	5.26	6.60	7.73	9.73	11.61	12.07	12.56	12.56	12.84	12.84	12.98	13.14	13.29	13.94	15.25	16.27	16.62
All Corporate																				

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
<b>1985</b>	0.00	0.00	0.00	0.00	0.00	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Aaa	0.00	0.00	0.00	0.79	0.79	0.79	0.79	0.79	0.79	0.79	1.39	1.39	1.39	1.39	1.39	1.39	1.39	2.06	2.76	2.76
Aa	0.00	0.21	1.33	2.27	2.52	3.57	4.38	4.67	4.67	4.67	4.67	4.67	4.67	4.67	4.67	5.07	6.29	6.72	7.17	7.17
A	0.00	1.20	1.20	1.71	2.79	3.35	5.13	5.77	6.47	6.47	6.47	6.47	6.47	6.47	8.47	10.55	11.63	13.89	15.07	15.07
Baa	1.41	6.70	9.29	12.76	18.30	23.89	30.72	32.22	33.06	33.06	35.00	35.00	36.12	36.12	36.12	37.47	41.73	44.64	44.64	44.64
Ba	8.22	17.65	23.84	27.26	31.51	43.36	50.12	52.39	57.68	57.68	57.68	57.68	57.68	61.91	61.91	61.91	61.91	61.91	61.91	61.91
B	0.00	0.00	0.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	100.00	—	—	—	—	—	—	—	—	—
Caa-C	0.00	0.37	0.86	1.61	1.94	2.65	3.38	3.64	3.79	3.79	3.95	3.95	3.95	3.95	4.31	4.87	5.83	6.62	7.03	7.03
Investment-Grade	3.67	10.33	14.18	17.92	22.96	30.44	37.08	38.73	40.56	40.56	42.69	42.69	43.51	44.41	44.41	45.42	48.63	50.84	50.84	50.84
Speculative-Grade	1.01	3.07	4.45	5.96	7.41	9.58	11.50	12.02	12.48	12.48	12.99	12.99	13.13	13.28	13.57	14.18	15.43	16.40	16.74	16.74
All Corporate																				
<b>1986</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.78	0.78	1.22	1.22	1.22	1.22	1.22	1.81	1.81	1.81	1.81	1.81	1.81	2.48	3.17	3.17	3.17	3.17
Aa	0.00	0.19	0.79	1.20	1.86	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.98	4.02	4.75	5.13	5.13	5.13
A	1.33	1.33	3.01	3.89	5.27	6.72	7.77	8.36	8.36	8.36	8.36	8.36	8.36	10.05	10.92	11.83	13.68	13.68	13.68	13.68
Baa	2.03	5.93	8.51	13.54	20.14	28.10	29.92	32.67	33.42	34.21	34.21	36.10	36.10	36.10	38.45	43.42	44.72	46.05	46.05	46.05
Ba	11.73	17.70	21.69	25.73	35.50	45.06	49.51	52.99	52.99	55.41	55.41	55.41	58.59	62.36	62.36	62.36	62.36	62.36	62.36	62.36
B	23.53	23.53	40.52	40.52	40.52	40.52	40.52	40.52	40.52	100.00	—	—	—	—	—	—	—	—	—	—
Caa-C	0.32	0.40	1.23	1.61	2.31	2.84	3.06	3.18	3.18	3.32	3.32	3.32	3.32	3.64	4.13	4.96	5.82	6.00	6.00	6.00
Investment-Grade	5.64	10.21	13.49	18.11	25.60	33.86	36.39	39.27	39.80	41.53	41.53	42.89	43.66	44.49	46.22	49.90	50.86	51.85	51.85	51.85
Speculative-Grade	1.90	3.30	4.81	6.29	8.63	10.87	11.57	12.24	12.35	12.78	12.78	13.02	13.15	13.53	14.19	15.40	16.24	16.53	16.53	16.53
All Corporate																				
<b>1987</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Aa	0.00	0.00	0.40	1.24	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.99	2.65	3.34	4.07	4.07	4.07
A	0.00	1.05	1.42	2.98	4.63	5.93	6.90	6.90	6.90	6.90	7.55	7.55	7.55	8.94	9.66	11.89	12.66	12.66	12.66	12.66
Baa	2.71	4.47	9.26	16.27	23.97	27.39	30.87	31.98	33.21	33.90	35.47	36.36	36.36	38.43	40.61	44.10	45.36	45.36	45.36	45.36
Ba	6.23	13.49	20.35	31.89	43.13	46.57	48.63	48.63	50.00	50.00	50.00	51.96	54.14	58.62	60.98	66.36	66.36	66.36	66.36	66.36
B	20.00	30.67	30.67	30.67	30.67	30.67	30.67	30.67	30.67	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33
Caa-C	0.00	0.25	0.51	1.32	1.88	2.18	2.40	2.40	2.52	2.52	2.66	2.66	2.94	3.23	4.13	4.74	5.07	5.07	5.07	5.07
Investment-Grade	4.23	8.13	13.59	22.09	30.85	34.21	37.17	37.91	39.56	40.02	41.06	42.25	42.91	45.66	47.84	51.76	52.61	52.61	52.61	52.61
Speculative-Grade	1.50	3.01	4.98	8.15	11.01	12.09	12.97	13.15	13.61	13.71	14.02	14.23	14.56	15.25	16.30	17.40	17.78	17.78	17.78	17.78
All Corporate																				



**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
<b>1988</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Aaa	0.00	0.32	0.66	0.66	0.66	0.66	0.66	1.13	1.13	1.13	1.13	1.13	1.67	2.23	2.80	2.80				
Aa	0.00	0.38	0.98	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	2.02	2.35	3.05				
A	0.00	0.33	1.03	2.48	3.64	4.48	4.48	4.48	4.48	5.05	5.05	5.66	6.28	8.22	9.56	10.27				
Baa	1.24	6.52	12.88	20.67	23.72	26.93	27.85	28.86	29.99	31.27	31.99	32.78	34.49	39.11	43.17	43.17				
Ba	6.36	13.43	26.06	37.28	41.44	46.54	47.40	50.43	50.43	51.70	57.65	59.34	62.96	64.96	69.48	69.48				
B	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29				
Caa-C	0.00	0.32	0.81	1.32	1.60	1.80	1.80	1.91	1.91	2.03	2.03	2.16	2.43	3.25	3.81	4.26				
Investment-Grade	3.59	9.50	18.17	27.13	30.53	34.35	35.23	37.21	37.95	39.19	41.55	42.60	44.85	48.51	52.54	52.54				
Speculative-Grade	1.36	3.71	7.04	10.26	11.45	12.65	12.88	13.45	13.62	13.99	14.46	14.76	15.37	16.63	17.73	18.07				
All Corporate																				
<b>1989</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Aaa	0.61	0.61	0.61	0.61	0.61	0.61	1.06	1.06	1.06	1.06	1.06	1.58	2.11	2.64	2.64	2.64				
Aa	0.00	0.18	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	1.42	1.72	2.03	2.03				
A	0.59	1.22	1.87	2.91	2.91	2.91	2.91	2.91	3.39	3.39	3.90	4.44	6.64	8.37	9.59	9.59				
Baa	2.98	9.99	18.12	20.83	24.01	24.42	25.34	26.88	28.62	30.60	31.33	33.70	37.95	43.55	43.55	43.55				
Ba	8.95	23.13	33.59	38.66	44.31	46.36	50.37	50.37	52.52	56.48	57.96	61.13	62.86	66.67	66.67	66.67				
B	25.00	43.75	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81				
Caa-C	0.29	0.51	0.82	1.07	1.07	1.07	1.18	1.18	1.29	1.29	1.41	1.65	2.64	3.28	3.68	3.68				
Investment-Grade	5.79	15.90	24.99	28.58	32.64	33.65	35.65	36.62	38.45	40.99	41.93	44.47	47.75	52.55	52.55	52.55				
Speculative-Grade	2.34	6.10	9.34	10.64	11.83	12.11	12.70	12.93	13.43	13.94	14.21	14.85	16.18	17.47	17.78	17.78				
All Corporate																				
<b>1990</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Aaa	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.37	0.37	0.37	0.37	0.83	1.29	1.29	1.29	1.29				
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.53	0.81	1.10	1.10	1.10				
A	0.00	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	1.13	1.66	4.35	6.58	7.77	7.77	7.77				
Baa	3.35	11.84	14.39	17.38	18.15	19.43	20.35	22.38	24.08	24.70	27.36	32.37	36.28	36.28	36.28	36.28				
Ba	16.18	27.57	34.52	39.65	41.34	44.06	44.87	46.84	50.59	53.63	57.00	58.91	65.40	65.40	65.40	65.40				
B	58.82	67.06	67.06	67.06	67.06	100.00	—	—	—	—	—	—	—	—	—	—				
Caa-C	0.00	0.14	0.14	0.14	0.14	0.23	0.23	0.23	0.23	0.34	0.56	1.35	2.05	2.42	2.42	2.42				
Investment-Grade	10.08	19.77	24.09	27.88	28.99	31.02	31.87	33.79	36.01	37.24	39.92	43.80	48.06	48.06	48.06	48.06				
Speculative-Grade	3.60	6.95	8.32	9.45	9.76	10.36	10.57	11.02	11.49	11.81	12.49	13.80	15.06	15.35	15.35	15.35				
All Corporate																				

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years												
	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>1991</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.71	1.12	1.12
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.52	0.79	1.07
Baa	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.69	1.12	3.32	5.14	6.10
Ba	5.35	6.63	8.47	8.90	9.84	10.87	12.56	14.48	15.90	18.97	23.93	27.55	27.55
B	14.56	23.68	30.51	32.71	36.61	37.38	40.17	43.58	46.27	49.30	51.05	59.04	59.04
Caa-C	36.84	36.84	36.84	36.84	47.37	47.37	47.37	47.37	47.37	47.37	73.68	73.68	73.68
Investment-Grade	0.07	0.07	0.07	0.07	0.15	0.15	0.15	0.15	0.25	0.45	1.17	1.82	2.15
Speculative-Grade	10.40	15.11	19.06	20.22	22.60	23.49	25.49	27.81	29.57	32.44	36.63	41.26	41.26
All Corporate	3.24	4.61	5.69	5.99	6.63	6.83	7.26	7.71	8.10	8.75	10.00	11.22	11.49
<b>1992</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.93	1.17	1.17
Baa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.77	2.80	4.09	5.00	5.00
Ba	0.30	1.00	1.00	1.90	2.38	3.46	5.26	6.60	8.78	13.40	17.54	17.54	17.54
B	9.03	17.54	20.91	25.64	28.00	30.77	34.15	36.75	42.64	44.32	52.00	52.00	52.00
Caa-C	26.67	32.10	32.10	40.09	40.09	52.07	52.07	52.07	52.07	76.03	76.03	76.03	76.03
Investment-Grade	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.16	0.34	1.00	1.49	1.79	1.79
Speculative-Grade	4.84	8.92	10.28	12.87	14.02	15.98	18.21	19.90	23.13	27.11	31.99	31.99	31.99
All Corporate	1.31	2.36	2.69	3.33	3.58	3.97	4.38	4.74	5.41	6.57	7.71	7.71	7.97

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years										
	1	2	3	4	5	6	7	8	9	10	11
<b>1993</b>											
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.59	1.00	1.22
Baa	0.00	0.00	0.25	0.25	0.25	0.54	1.13	1.74	3.00	4.00	4.70
Ba	0.55	0.55	2.63	3.38	4.66	6.10	7.16	8.91	12.60	15.91	15.91
B	5.71	9.90	15.27	17.11	20.01	22.61	27.54	34.03	37.73	43.20	44.72
Caa-C	28.57	28.57	42.18	50.44	50.44	50.44	50.44	50.44	75.22	75.22	75.22
Investment-Grade	0.00	0.00	0.07	0.07	0.07	0.14	0.29	0.53	1.01	1.44	1.70
Speculative-Grade	3.51	5.14	8.81	10.16	11.98	13.78	16.12	19.42	23.38	27.24	27.71
All Corporate	0.94	1.36	2.30	2.61	3.00	3.42	3.97	4.74	5.80	6.78	7.08
<b>1994</b>											
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.46	0.78	0.95	0.95
Baa	0.00	0.20	0.20	0.42	0.64	1.58	2.07	3.34	4.14	4.71	4.71
Ba	0.24	1.80	2.08	3.03	4.83	7.25	9.92	12.27	15.31	15.87	15.87
B	3.81	9.14	12.31	14.16	18.21	23.10	29.28	34.40	39.94	43.02	43.02
Caa-C	5.13	13.75	24.31	24.31	24.31	30.90	30.90	56.02	56.02	56.02	56.02
Investment-Grade	0.00	0.05	0.05	0.11	0.18	0.43	0.63	1.11	1.47	1.69	1.69
Speculative-Grade	1.94	5.37	7.26	8.52	11.05	14.47	18.25	22.05	25.84	27.26	27.26
All Corporate	0.56	1.55	2.06	2.42	3.04	3.95	4.84	5.94	6.92	7.35	7.35
<b>1995</b>											
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.00	0.13	0.39	0.80	0.94	0.94	0.94
Baa	0.00	0.00	0.00	0.42	1.29	1.74	3.14	3.64	3.90	3.90	3.90
Ba	0.69	0.94	2.05	3.62	6.43	9.13	11.57	14.20	15.67	15.67	15.67
B	4.80	7.32	10.18	13.90	18.32	24.17	32.89	39.65	43.74	43.74	43.74
Caa-C	11.57	19.52	19.52	24.63	30.78	34.74	55.62	68.30	68.30	68.30	68.30
Investment-Grade	0.00	0.00	0.00	0.11	0.33	0.51	0.99	1.30	1.43	1.43	1.43
Speculative-Grade	3.32	5.09	6.94	9.70	13.39	17.50	23.40	28.16	30.70	30.70	30.70
All Corporate	1.03	1.56	2.08	2.88	3.94	5.00	6.67	7.93	8.55	8.55	8.55

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years							
	1	2	3	4	5	6	7	8
<b>1996</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.00	0.11	0.34	0.58	0.71
Baa	0.00	0.00	0.17	0.71	1.27	2.62	3.22	3.64
Ba	0.00	0.72	2.35	5.36	7.63	11.07	13.30	14.99
B	1.44	4.43	9.24	13.02	19.08	26.79	34.54	38.68
Caa-C	13.99	20.24	27.41	40.61	46.55	67.11	72.17	72.17
Investment-Grade	0.00	0.00	0.05	0.19	0.40	0.87	1.14	1.31
Speculative-Grade	1.67	3.86	7.36	11.38	15.53	21.54	26.26	28.90
All Corporate	0.52	1.16	2.16	3.29	4.43	6.19	7.45	8.13
<b>1997</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.00	0.10	0.31	0.52	0.87	0.87
Baa	0.00	0.14	0.74	1.35	2.48	3.15	3.50	3.50
Ba	0.19	1.47	5.05	8.14	11.16	13.84	15.54	15.54
B	2.12	7.44	11.98	17.80	27.96	35.11	38.89	38.89
Caa-C	14.67	27.31	39.59	50.10	72.64	76.85	76.85	76.85
Investment-Grade	0.00	0.04	0.21	0.43	0.85	1.14	1.39	1.39
Speculative-Grade	2.05	6.00	10.50	15.23	22.39	27.18	29.72	29.72
All Corporate	0.65	1.87	3.25	4.68	6.84	8.24	9.01	9.01
<b>1998</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.09	0.29	0.49	0.82	0.82	0.82
Baa	0.12	0.48	0.98	2.01	3.22	3.51	3.51	3.51
Ba	0.63	2.87	6.04	9.99	12.80	14.78	14.78	14.78
B	4.24	11.58	18.89	29.82	37.15	41.89	41.89	41.89
Caa-C	15.09	31.32	40.96	62.67	67.54	69.64	69.64	69.64
Investment-Grade	0.04	0.15	0.35	0.76	1.23	1.46	1.46	1.46
Speculative-Grade	3.44	9.16	14.78	23.27	28.36	31.64	31.64	31.64
All Corporate	1.23	3.22	5.17	8.13	10.00	11.09	11.09	11.09

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years				
	1	2	3	4	5
<b>1999</b>					
Aaa	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00
A	0.00	0.00	0.18	0.38	0.68
Baa	0.10	0.63	1.41	2.68	3.05
Ba	1.01	3.34	6.63	9.13	10.95
B	5.83	14.84	25.78	35.20	39.78
Caa-C	20.44	31.50	53.16	59.60	65.37
Investment-Grade	0.04	0.22	0.55	1.06	1.31
Speculative-Grade	5.64	12.20	21.23	27.40	30.84
All Corporate	2.14	4.66	8.12	10.57	11.84
<b>2000</b>					
Aaa	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.00
A	0.00	0.17	0.35	0.63	
Baa	0.38	0.87	2.21	2.54	
Ba	0.89	2.78	4.63	6.00	
B	5.51	16.15	25.55	30.70	
Caa-C	20.04	43.79	54.11	60.81	
Investment-Grade	0.13	0.37	0.91	1.14	
Speculative-Grade	6.15	15.89	22.98	27.01	
All Corporate	2.40	6.14	9.02	10.53	
<b>2001</b>					
Aaa	0.00	0.00	0.00		
Aa	0.00	0.00	0.00		
A	0.16	0.40	0.66		
Baa	0.19	1.67	1.88		
Ba	1.57	3.47	4.87		
B	9.39	19.82	25.69		
Caa-C	34.51	46.56	57.31		
Investment-Grade	0.13	0.73	0.90		
Speculative-Grade	10.59	18.59	23.56		
All Corporate	3.81	6.92	8.65		

**Exhibit 32 - Cumulative Global Issuer-Weighted Default Rates from 1 to 20 Years by Annual Cohort, 1970-2003**

Cohort	Years	
	1	2
<b>2002</b>		
Aaa	0.00	0.00
Aa	0.00	0.00
A	0.16	0.32
Baa	1.21	1.39
Ba	1.54	3.21
B	4.99	10.56
Caa-C	30.05	43.29
Investment-Grade	0.49	0.62
Speculative-Grade	8.41	13.86
All Corporate	3.01	4.76
<b>2003</b>		
Aaa	0.00	
Aa	0.00	
A	0.00	
Baa	0.00	
Ba	0.95	
B	2.68	
Caa-C	21.20	
Investment-Grade	0.00	
Speculative-Grade	5.19	
All Corporate	1.66	

## **Related Research**

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### **Special Comment**

[The Performance Of Moody's Corporate Bond Ratings: January 2004 Quarterly Update, January 2004, #80988](#)

### **Default Report**

[Monthly Default Report - December 2003, January 2004, #80937](#)

### **Special Comment**

[Recovery Rates on Defaulted Corporate Bonds and Preferred Stocks, 1982-2003, December 2003, #80272](#)

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Report Number: 80989

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