

## SPECIAL COMMENT

# Corporate Default and Recovery Rates, 1920-2010

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**Summary**

This report comprises Moody's twenty-fourth annual default study in which we update statistics on the default, loss, and rating transition experience of corporate bond and loan issuers for 2010, as well as for the historical period since 1920. This study covers financial institutions, non-financial corporates, and regulated utilities which have long-term debt ratings. Briefly, we find that:

- » 57 Moody's-rated corporate issuers defaulted on a total of \$25.1 billion of bonds and \$14.0 billion of loans in 2010. Including issuers whose ratings were withdrawn prior to January 1, 2010 or newly rated in 2010, 61 corporate issuers defaulted on \$26.1 billion of bonds and \$15.0 billion of loans.
- » 2010's defaults were found in a variety of industries led by the Capital Industries and the Consumer Industries sectors, which saw thirteen and ten defaults, respectively. Across regions, defaults remained concentrated in North America with 45 issuers defaulting on \$23.4 billion of debt. In comparison, eight Moody's-rated corporate issuers defaulted on \$9.0 billion of debt in Europe. The remaining defaulters were Latin-American and Asian issuers.
- » Moody's global speculative-grade default rate ended 2010 at 3.2%, noticeably down from 2009's year-end level of 13.1%. The default rate for all Moody's-rated corporate issuers fell to 1.3% at the end of 2010 from 5.4% at year-end 2009. Both results correspond quite closely with our one-year-ago forecasts of 3.3% and 1.4%, respectively.
- » Measured on a dollar volume basis, Moody's global speculative-grade bond default rate ended 2010 at 1.6%, down from 16.8% at the end of 2009. Among all Moody's-rated issuers, the volume-weighted default rate dropped from 2.8% in 2009 to 0.3% in 2010.
- » Moody's global speculative-grade default rate forecasting model now predicts that the speculative-grade default rate will decline gradually to 1.4% by the fourth quarter of 2011, a level significantly below the long term average of 5% since 1983.
- » The quarterly downgrade-to-upgrade ratio declined to 1.1% in the second quarter of 2010, the lowest quarterly level in the past three years. The ratio finished the fourth quarter at 1.2%.
- » Measured by post-default trading prices, the average recovery rate for senior unsecured bonds rose to 49.5% in 2010 from 37.1% in 2009.

## Introduction

Moody's credit ratings facilitate the efficient functioning of capital markets by providing independent opinions on the creditworthiness of debt obligations issued by corporate issuers around the world. One of the primary purposes of Moody's corporate default study is to communicate the historical performance of Moody's ratings as predictors of default and loss severity for corporate issuers. In addition to providing useful data for investors and regulators, Moody's default studies also contribute to the transparency of the rating process and directly address the meaning of Moody's long-term debt ratings scale.

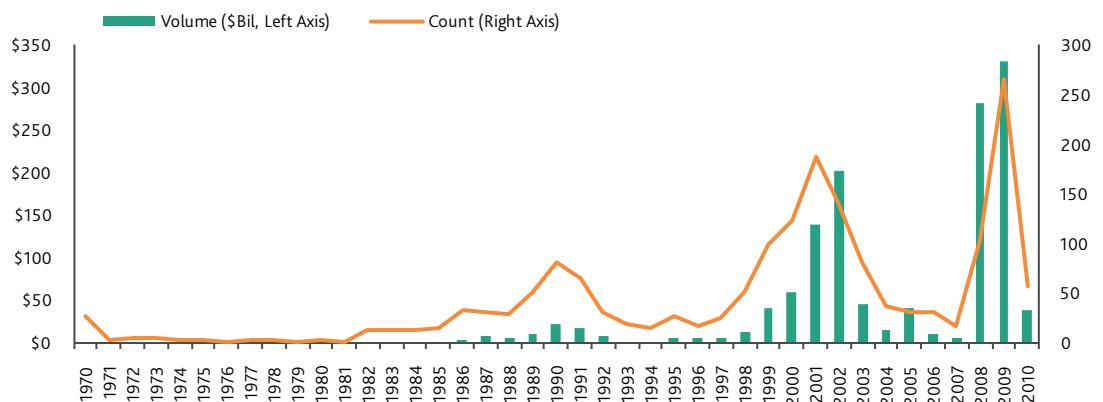
In this study, we first summarize corporate default experience and credit trends in 2010 and then discuss Moody's forecast for speculative-grade corporate default rates in 2011.<sup>1</sup> This is followed by a review of 2010 rating accuracy metrics and the historical statistics on corporate defaults, ratings transitions, ratings performance metrics, and recovery rates. Finally, this report also includes several detailed sections describing the methodologies used to generate the statistics as well as a guide to their reading and interpretation.

## Defaults Slowed Down Considerably in 2010

2010 was a good year for the high yield debt market with respect to above-average returns and below-average defaults. Indeed, defaults dropped significantly last year mainly due to ample liquidity which helped some lowly rated companies avoid default. World-wide, only 57 Moody's-rated corporate issuers defaulted on a total of \$39.1 billion of debt in 2010,<sup>2</sup> the lowest record in the past three years. In comparison, 265 companies defaulted on a total of \$330.0 billion of debt in 2009 while 103 defaults were registered in 2008, affecting \$280.9 billion of debt. From a geographic standpoint, defaults remained concentrated in North America with 45 issuers defaulting in 2010. Meanwhile, only eight defaults were recorded in Europe, the second largest region for defaults. On a volume basis, defaulted debt totaled \$23.4 billion in North America compared to \$9.0 billion in Europe. Exhibit 1 presents annual default counts and defaulted debt volumes for the period of 1970-2010.

EXHIBIT 1

### Default Count and Volume Off Their Unprecedented Levels



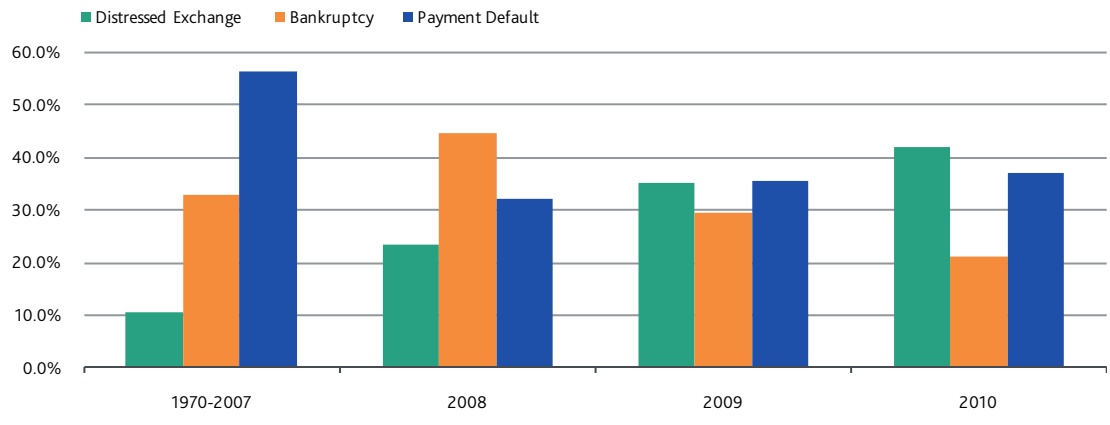
<sup>1</sup> The analysis of default and rating transitions in this report is limited to Moody's-rated financial and non-financial corporate issuers, including utility companies. Consistent with prior year studies, this report's default and transition rate statistics only cover issuers that have Moody's-rated bonds and/or loans and default refers to debt default as defined on page 61. Unless otherwise specified, ratings in this report are issuer level, senior unsecured equivalent ratings which are derived from [Moody's Senior Rating Algorithm](#). For more details, please see the Methodology and Data Sources section at the end of this report.

<sup>2</sup> Including companies whose ratings were withdrawn prior to January 1, 2010 or were newly rated sometime in 2010, a total of 61 companies defaulted in 2010 with \$41.1 billion of debt impacted.

Similar to what we observed in 2008 and 2009, distressed exchanges still played an active role in 2010, accounting for 42% of total initial defaults. To put this in context, distressed exchanges only accounted for approximately 11% of initial defaults on average from 1970 to 2007. Several factors accelerated the pace of distressed exchanges in this cycle including the inability of some speculative-grade issuers to access the debt markets and the unattractiveness of bankruptcy given a lack of DIP and exit financing. Between 2008 and 2010, the share of distressed exchanges increased from 23% to 42% while the share of bankruptcy filings fell from 45% to 21% (see Exhibit 2).

EXHIBIT 2

**Distressed Exchanges Remained Active**

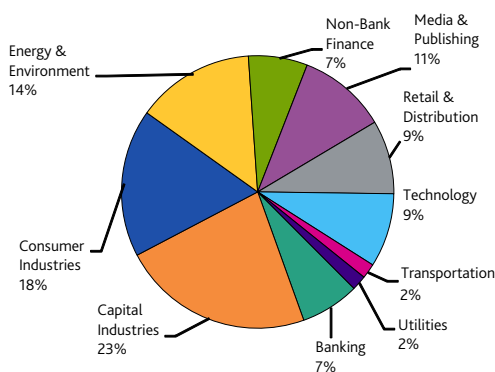


Of the 57 defaults in 2010, almost 23% were by issuers in the Capital Industries sector,<sup>3</sup> among which defaults were most notable in the Capital Equipment industry. Issuers in the Consumer Industries sector accounted for the next highest share of 2010 defaults with 18%. Measured by default volume, however, the Energy & Environment sector topped the list by contributing 17% of defaulted volume, followed by the Transportation, the Consumer Industries, the Banking, and the Media & Publishing sectors, each accounting for 12% of total default volume in 2010. Exhibit 3 shows the distribution of 2010 defaults by broad industries.

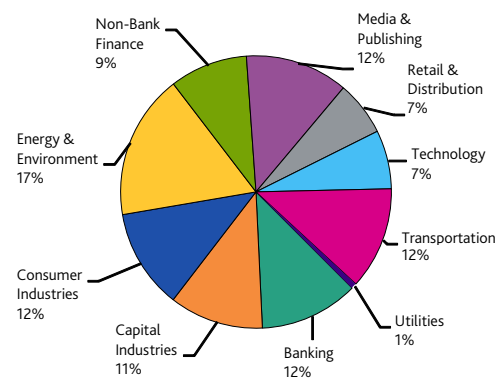
EXHIBIT 3

**2010 Defaults by Broad Industry**

Panel A Percent of Issuer Counts



Panel B Percent of Dollar Volume



<sup>3</sup> Capital industries sector includes automotive, capital equipment, chemicals, plastics & rubber, construction & building, containers, packaging, & glass, forest products & paper, metals & mining, and business service industries. Consumer industries sector includes beverage, food, & tobacco, durable & non-durable consumer goods, healthcare & pharmaceuticals, hotel, gaming, & leisure, and consumer service industries.

Although the Capital Industries sector accounted for 23% of defaults last year, it was not the sector with the highest rate of default. That distinction belongs to the Media & Publishing industry, which had a 3.6% default rate in 2010 (see Exhibit 4).

EXHIBIT 4

### Default Rate Highest in the Media & Publishing Sector

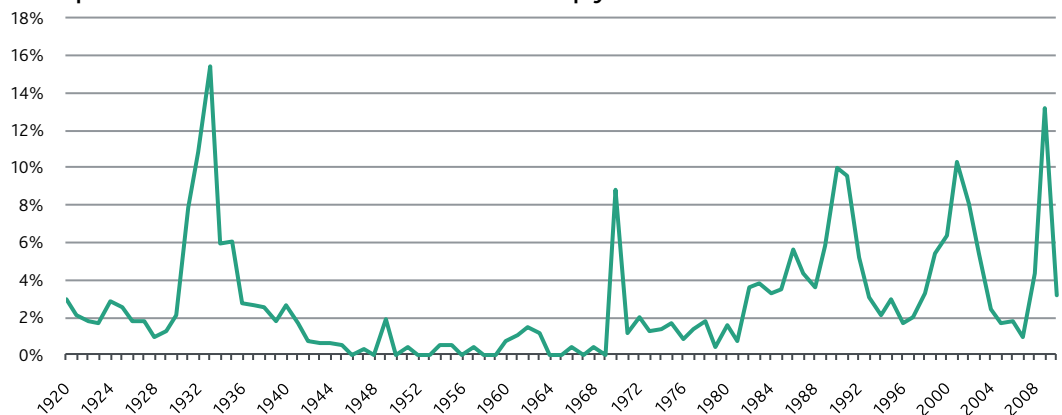
Broad Industry	Default Rates*
Banking	0.5%
Capital Industries	1.6%
Consumer Industries	1.9%
Energy & Environment	2.3%
Non-Bank Finance	0.8%
Media & Publishing	3.6%
Retail & Distribution	3.3%
Technology	1.3%
Transportation	0.9%
Utilities	0.2%

\* Issuer-weighted

As a result of the rapid decrease in defaults, the trailing twelve-month issuer-weighted default rate for all Moody's-rated issuers fell sharply to 1.3% in 2010 from 5.4% in 2009. Among speculative-grade issuers, the default rate dropped to 3.2% from 13.1% (see Exhibit 5). Measured on a dollar volume basis, Moody's speculative-grade corporate bond default rate declined more dramatically to 1.6% in 2010 from 16.8% in 2009. And the volume-weighted default rate for all Moody's-rated issuers ended 2010 at 0.3%, down from 2009's 2.8%.

EXHIBIT 5

### Global Speculative-Grade Default Rate Declined Sharply in 2010

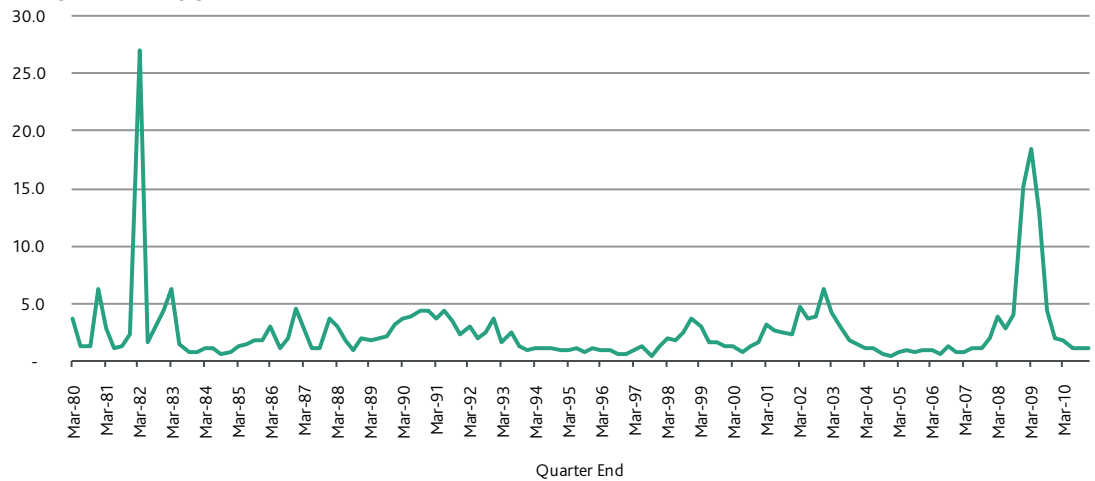


Consistent with gradually recovering credit quality and decreasing numbers of defaults, the quarterly downgrade-to-upgrade ratio for corporate issuers fell in 2010 resulting from both reduced numbers of downgrades and increased numbers of upgrades. The most noticeable improvement in credit quality was found in the second quarter of the year when the downgrade-to-upgrade ratio declined from 1.8

to 1.1.<sup>4</sup> The ratio then stabilized in the following two quarters and ended the year at 1.2, indicating that the number of rating downgrades was slightly higher than upgrades. For historical perspective, Exhibit 6 draws the quarterly downgrade-to-upgrade ratio for Moody's-rated corporate issuers since 1980.

EXHIBIT 6

## Downgrade-to-Upgrade Ratio Back to Normal



Historically, as shown by Moody's research, default rates and recovery rates are negatively correlated. In 2010, with default rates decreasing sharply, the inverse relationship between default rates and recovery rates was confirmed again as recovery rates for first lien loans and most bonds were noticeably higher than the comparable numbers in 2009 and the long-run historical averages as shown in Exhibit 7.

EXHIBIT 7

## Average Corporate Debt Recovery Rates Measured by Post-Default Trading Prices

Lien Position	Issuer-weighted			Value-weighted		
	2010	2009	1982-2010	2010	2009	1982-2010
1st Lien Bank Loan	70.9%	53.6%	65.8%	72.3%	56.3%	59.6%
2nd Lien Bank Loan	18.2%	16.0%	29.1%	18.4%	20.8%	27.9%
Sr. Unsecured Bank Loan	n.a.	32.6%	47.8%	n.a.	37.9%	39.9%
Sr. Secured Bond	62.5%	37.5%	50.8%	54.7%	29.6%	49.1%
Sr. Unsecured Bond	49.5%	37.1%	36.7%	63.8%	35.5%	37.4%
Sr. Subordinated Bond	33.5%	22.4%	30.7%	39.4%	18.0%	25.3%
Subordinated Bond*	33.7%	45.3%	31.3%	32.2%	25.1%	24.2%
Jr. Subordinated Bond	n.a.	n.a.	24.7%	n.a.	n.a.	17.1%

\* The recovery rate for 2010's subordinated bonds were based on four observations.

Among various default events, recovery rates generally tend to be higher on distressed exchanges as opposed to other types of default. As shown in Exhibit 8, this phenomenon held true in 2010 as

<sup>4</sup> We only include rating actions which result from a change in credit quality. Rating changes stemming from methodology changes (e.g. JDA, LGD) are not counted.

recovery rates were higher for distressed exchanges across all debt types. For example, the average senior unsecured bond recovery rate was 62.2% for distressed exchanges, compared to 40.7% for bankruptcy and payment defaults. The table also shows that the gap in recovery rates was smaller in first lien loans but larger for bonds. This stems from the fact that a majority of distressed exchanges only involve junior debt in the capital structure. As distressed exchanges accounted for a significant share of all defaults in 2010, they also contributed to the relatively high numbers reported in Exhibit 7.

## EXHIBIT 8

**2010 Recovery Rates: Distressed Exchanges vs. Non-Distressed Exchanges**

Lien Position	Distressed Exchange Defaults	Bankruptcies & Payment Defaults
1st Lien Bank Loan	74.8%	70.2%
2nd Lien Bank Loan	24.5%	15.7%
Sr. Secured Bond	87.2%	57.5%
Sr. Unsecured Bond	62.2%	40.7%
Sr. Subordinated Bond	60.0%	30.2%
Subordinated Bond	33.7%	n.a.

The recovery data discussed above are based on debt trading prices 30 days after the default date. An alternative recovery measure is based on ultimate recoveries, or the value creditors realize at the resolution of a default event. For example, for issuers filing for bankruptcy, the ultimate recovery is the present value of the cash and/or securities that the creditors actually receive when the issuer exits bankruptcy, typically 1-2 years following the initial default date.<sup>5</sup>

In Exhibit 9, we present data on ultimate recovery rates for North American companies included in Moody's Ultimate Recovery Database (URD).<sup>6</sup> In 2010, the URD has been expanded to include the ultimate resolutions for more than 950 default events. The average "firm-wide" recovery rate<sup>7</sup> for the 49 default resolutions in 2010 was 62.5% compared to 56.2% for the 74 default resolutions in 2009. Recent higher recovery rates can be attributed to the greater amount of distressed exchanges used as a method of debt reduction. As shown in Exhibit 9, 2010's recovery rates across debt classes were broadly similar to those in 2009 as well as their historical averages. For example, loans recovered 78.6% in 2010 as compared to 77.1% in 2009 while senior unsecured bonds recovered 51.0% in 2010 versus 48.3% in 2009.

<sup>5</sup> For details, see Moody's Special Comment "[Moody's Ultimate Recovery Database](#)," April 2007.

<sup>6</sup> The analysis on ultimate recovery is provided by David Keisman and Randy Lampert. The data is from Moody's Ultimate Recovery Database which includes robust detailed recovery information for over 4,500 loans and bonds from more than 950 North American non-financial corporate defaulters since 1987.

<sup>7</sup> For a given issuer, the firm-wide recovery rate is the weighted-average recovery rate across all of the issuer's debts where the weights are the size of the debts. Or in other words, it is the enterprise value of the issuer divided by the firm's total debts at the time of resolution.

## EXHIBIT 9

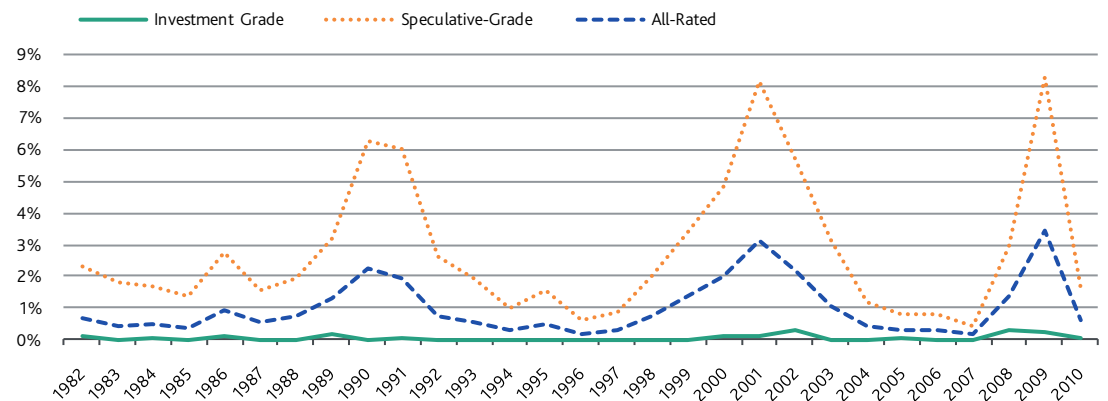
## Average Corporate Debt Recovery Rates Measured by Ultimate Recoveries, 1987-2010

Lien Position	Emergence Year			Default Year <sup>8</sup>		
	2010	2009	1987-2010	2010	2009	1987-2010
Loans	78.6%	77.1%	80.3%	80.2%	78.9%	80.3%
Bonds						
Sr. Secured	64.4%	59.0%	63.5%	56.3%	65.6%	63.5%
Sr. Unsecured	51.0%	48.3%	49.2%	26.5%	51.6%	49.2%
Sr. Subordinated	20.5%	26.2%	29.4%	21.7%	28.0%	29.4%
Subordinated	53.4%	34.3%	29.3%	0.0%	58.3%	29.3%
Jr. Subordinated	n.a.	0.5%	18.4%	n.a.	0.0%	18.4%

Moody's credit ratings are opinions of relative expected credit losses, which are a function of both the probability of default and severity of default (LGD). Exhibit 10 shows annual average credit loss rates from 1982 through 2010 for Moody's-rated corporate issuers. With the default rate falling and loss severity (i.e. 1-recovery rate) decreasing, the average credit loss rate among all Moody's-rated issuers dropped to 0.6% in 2010 from 3.4% in 2009. To put this in perspective, the average annual credit loss rate for Moody's-rated issuers since 1982 is 1.0%.

## EXHIBIT 10

## Credit Loss Rates Fell Considerably in 2010



## Default Rate Outlook for 2011

At the beginning of 2010, reflecting the decline in the high yield bonds spreads, Moody's default rate forecasting model (Credit Transition Model or CTM) predicted that the global speculative-grade

<sup>8</sup> Please note that the ultimate recovery rates only apply to companies who have emerged from defaults. Therefore, some of the 2009 and 2010 defaults are not included in the ultimate recovery data under the Default Year panel if such defaults have not yet been resolved. These observations will be added when their resolution is concluded.



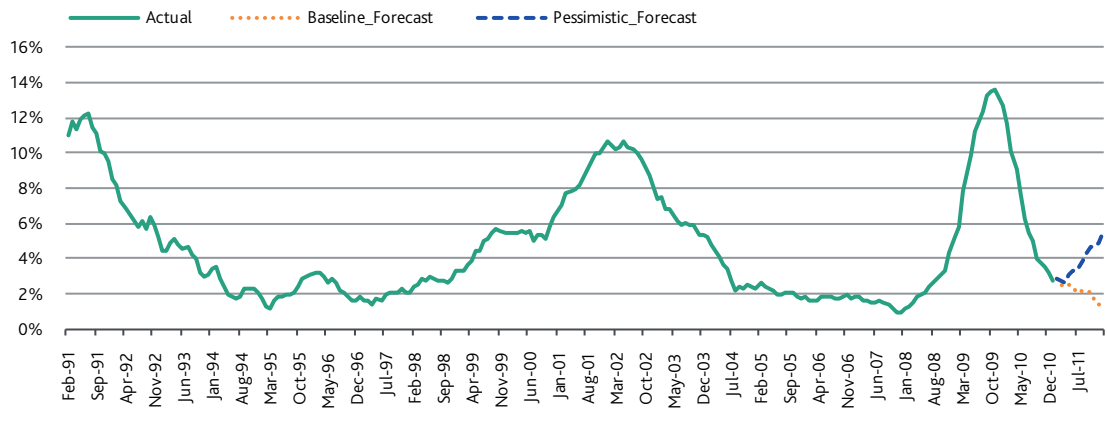
default rate would fall sharply to 3.3% by the end of the year. The model's prediction turned out to be quite accurate as the realized rate came in at 3.2%, just slightly below CTM's forecast.<sup>9</sup>

Looking into 2011, CTM forecasts that the global speculative-grade default rate will continue to slide this year. The downward pressure can be attributed to improved fundamentals (as reflected in improved ratings, momentum, and credit outlooks) as well as our expectations of stable economic conditions including further tightening in the high yield spread. This forecast is consistent with the declining number of distressed issuers as evidenced in Moody's Distressed Index and the reduced number of companies with the weakest Speculative-Grade Liquidity Rating as reflected in Moody's Liquidity-Stress Index (LSI). Generally speaking, LSI declines when corporate liquidity improves, and that signals a lower default rate in the near future.<sup>10</sup>

Based on the model's projection, the global speculative-grade default rate is expected to fall from 3.2% in 2010 to 1.4% in 2011, under the baseline scenario (see Exhibit 11). This forecast implies approximately 28 total defaults globally in 2011. Compared to 2010, the default rate is expected to decline more gradually in 2011 and may stabilize towards the end of the year.

The baseline forecast assumes that the unemployment rate will ease from its current level of 9.7% to 8.9% by the fourth quarter of 2011 and that the high yield spread will decline from 540 bps to 365 bps. Under a more pessimistic macroeconomic scenario, where the unemployment rate climbs to 13.4% and the high yield bond spread increases to 890 basis points, the global speculative-grade default rate is forecasted to rebound to 4.9% by the end of 2011.

EXHIBIT 11

**Speculative-Grade Default Rate Expected to Remain Low in 2011**

For U.S. and European speculative-grade issuers, Moody's forecasting model projects default rates dropping to 1.6% and 1.0%, respectively, by the end of 2011 under the baseline scenario. Across industries over the coming year, default rates are expected to be highest in the Consumer Transportation sector in the U.S. and the Media: Advertising, Printing & Publishing sector in Europe. Exhibit 12 shows the baseline one-year default rate forecasts across industries in both the U.S. and Europe, sorted from highest to lowest by the U.S. rates.

<sup>9</sup> For a thorough review of our forecast performance in 2010, please see "[Evaluating Moody's Corporate Default Forecasts for 2010](#)," Moody's Special Comment, February 2011.

<sup>10</sup> See Puchalla et al, [Liquidity Stress Hits Five-Year Low](#), Moody's SGL Monitor, Feb 2011



EXHIBIT 12

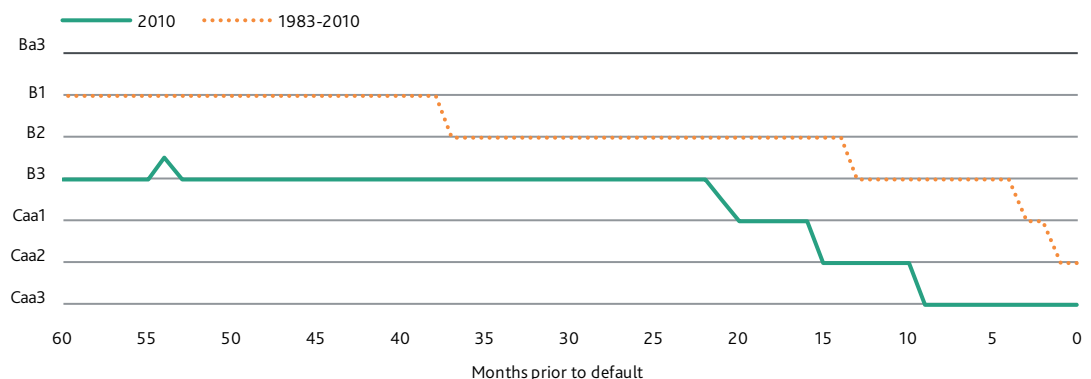
**One-Year Corporate Default Rate Forecasts by Industry**

Industry	US	Europe	Industry	US	Europe
Transportation: Consumer	3.5%	0.8%	Healthcare & Pharmaceuticals	1.1%	0.4%
Hotel, Gaming, & Leisure	3.3%	0.7%	Telecommunications	1.1%	0.6%
Wholesale	3.1%	0.2%	Consumer goods: non-durable	1.0%	0.0%
Media: Advertising, Printing & Publishing	2.8%	4.0%	Consumer goods: durable	1.0%	0.9%
Retail	2.5%	0.4%	High Tech Industries	1.0%	0.1%
Automotive	2.5%	0.3%	Metals & Mining	0.8%	0.3%
Transportation: Cargo	2.2%	0.5%	Beverage, Food, & Tobacco	0.8%	0.5%
Environmental Industries	2.2%	0.0%	Construction & Building	0.7%	0.2%
Services: Business	2.0%	2.2%	Chemicals, Plastics, & Rubber	0.7%	0.3%
Services: Consumer	1.9%	0.0%	FIRE: Finance	0.6%	0.2%
Containers, Packaging, & Glass	1.6%	1.7%	FIRE: Real Estate	0.5%	0.9%
Aerospace & Defense	1.5%	1.8%	FIRE: Insurance	0.3%	0.1%
Media: Broadcasting & Subscription	1.5%	0.5%	Banking	0.3%	0.2%
Energy: Electricity	1.4%	0.1%	Utilities: Electric	0.0%	0.0%
Capital Equipment	1.4%	0.2%	Utilities: Oil & Gas	0.0%	0.0%
Forest Products & Paper	1.4%	0.4%	Sovereign & Public Finance	0.0%	0.0%
Energy: Oil & Gas	1.2%	1.0%	Utilities: Water	0.0%	0.0%
Media: Diversified & Production	1.2%	0.4%			

**Rating Accuracy Metrics**

Moody's ratings have historically proven to be effective predictors of default. This can be seen in Exhibit 13, which plots the median ratings of roughly 1,700 corporate issuers that defaulted from 1983 to 2010. The chart shows that, historically, Moody's-rated issuers have been downgraded to the B1 level as early as five years prior to default. The comparable rating was B3 among issuers that defaulted in 2010. At one year prior to default, 2010 defaulters' ratings were lowered to Caa2, also below the B3 rating for companies that defaulted during the entire period of 1983-2010.

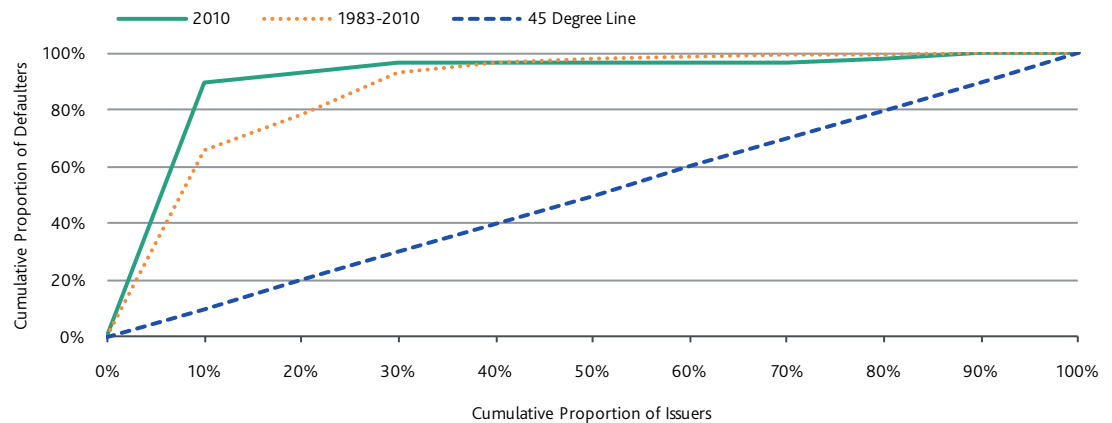
EXHIBIT 13

**Median Ratings Prior to Default**

As a valuable tool to measure credit risk, ratings are expected to differentiate strong credits from weaker ones. In other words, an effective rating system should not only assign low ratings to issuers that ultimately default but also assign high ratings to those that are remote from default. A metric designed to measure this aspect of ratings performance is the cumulative accuracy profile (CAP) plot as shown in Exhibit 14. A rating system that possessed no predictive information about default risk would lie on the 45° line; the further the CAP curve bows toward the northwest corner, the better it is at identifying defaults in the riskiest rating categories. Exhibit 14 shows that the CAP curve for 2010 bows towards the northwest corner more than the one for the 1983-2010 period, which suggests that the rating performance in 2010 is better than the historical average.

EXHIBIT 14

## One Year Cumulative Accuracy Plots, 2010 vs. Historical Average



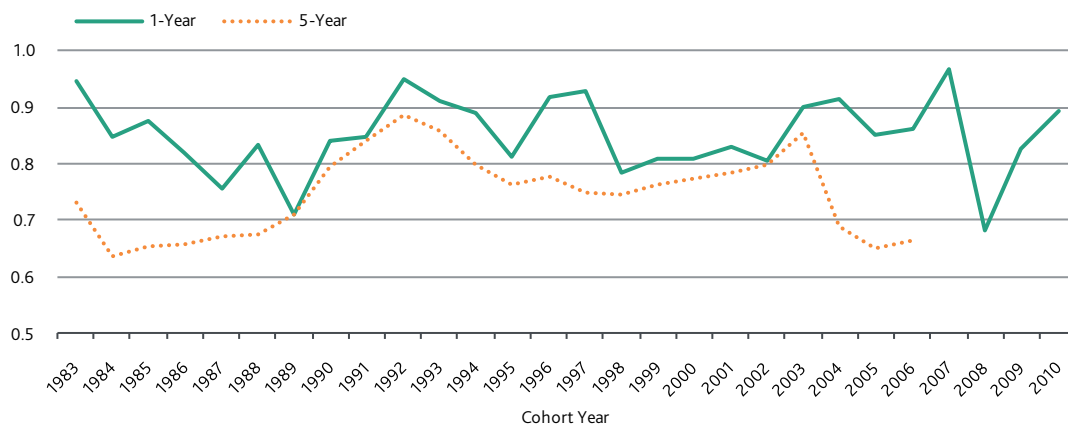
Another way to measure rating performance is the accuracy ratio, which is derived from the CAP curve. The accuracy ratio (AR) is the ratio of the area between the CAP curve and the 45° line to the maximum possible area above the 45° line, divided by survival rate (i.e. 1-default rate).<sup>11, 12</sup> AR values range from minus one to positive one and a higher AR indicates better rating accuracy. Exhibit 15 presents the one- and five-year horizon accuracy ratios for the period of 1983-2010. The chart shows that while the five-year ratio remains below the average level since 1983, the one-year ratio has recovered quickly from its 2008 cyclical low. The graph further suggests that the one-year accuracy ratio is positively correlated with the credit cycle: when defaults increase, the accuracy ratio falls. At the five-year horizon, this correlation is much less evident.

<sup>11</sup> Accuracy Ratio is defined in “[Benchmarking Quantitative Default Risk Models: A Validation Methodology](#)” (2000). The Accuracy Ratios from those reports published prior to 2010 were defined as the ratio between the CAP curve and the 45 degree line to the maximum possible area above the 45 degree line. In other words, the new AR equals the old AR divided by the survival rate (i.e., 1- default rate) for the cohort under consideration. The adjustment was made for the purposing of allowing Accuracy Ratios to be 100% when defaulters are perfectly differentiated from non-defaulters.

<sup>12</sup> The Accuracy Ratio is also equivalent to the Average Default Position, an arguably more intuitive measure of ordinal accuracy. See “[Measuring Ratings Accuracy Using the Average Default Position](#),” Moody’s Special Comment, February 2011.

EXHIBIT 15

**One- and Five-Year Accuracy Ratios by Cohort Year, 1983-2010**



## Moody's Related Research

### Special Comments:

- » Emery and Keisman, [Building the Better LGD Mousetrap, December 7, 2010 \(129319\)](#)
- » Emery and Ou, [Corporate Default and Recovery Rates, 1920-2009, February 2010 \(123042\)](#)
- » Keisman, [After Black Swans, Now What? Recoveries on Defaulted Debt as the New Normal Begins, May 2010 \(124964\)](#)
- » Keisman, [Cheating Death: Private Equity Manages Solid Recoveries When Sponsored Companies Default, November 2010 \(128561\)](#)
- » Keisman, [Hard Data for Hard Times II: The Crisis That Wasn't, February 2011 \(131330\)](#)
- » Mann, [Measuring Ratings Accuracy Using the Average Default Position, February 2011\(129451\)](#)
- » Zhang and Metz, [Evaluating Moody's Corporate Default Forecasts for 2010, February 2011 \(131027\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

## Data Tables and Charts

(A guide to some of the following data tables is available on page 60)

EXHIBIT 16

## Moody's-Rated 2010 Corporate Bond and Loan Defaults

Company	Country	Initial Default Type	Bonds <sup>1</sup>	Loans <sup>1</sup>	In Jan 2010 Cohort? <sup>2</sup>	Notes
ACIH, Inc.	United States	Missed interest payment	\$220		No	
Ahern Rentals Inc.	United States	Distressed exchange	\$53		Yes	
Ambac Financial Group, Inc.	United States	Chapter 11	\$1,222		Yes	
American Media Operations, Inc.	United States	Missed interest payment	\$381	\$466	No	
American Safety Razor Company	United States	Chapter 11		\$425	Yes	
Angiotech Pharmaceuticals, Inc.	Canada	Missed interest payment	\$250		Yes	
Anglo Irish Bank Corporation Limited	Ireland	Distressed exchange	\$1,947		Yes	
Atrium Companies, Inc.	United States	Missed interest payment	\$0	\$50	No	
Bank of Ireland	Ireland	Distressed exchange	\$1,794		Yes	
Bankruptcy Management Solutions, Inc.	United States	Distressed exchange		\$360	Yes	
Black Gaming, LLC	United States	Missed interest payment		\$15	No	
Blockbuster Inc.	United States	Missed principal payment	\$930		Yes	
BMS Holdings, Inc.	United States	Distressed exchange	\$213		Yes	
Brookstone Company, Inc.	United States	Distressed exchange	\$160		Yes	
Builders FirstSource, Inc.	United States	Distressed exchange	\$270		Yes	
Catalyst Paper Corporation	Canada	Distressed exchange	\$319		Yes	
Central Proteinaprima Tbk (P.T.)	Indonesia	Missed interest payment	\$325		Yes	
Chelsea Building Society	United Kingdom	Distressed exchange	\$306		Yes	
Cleveland Unlimited, Inc.	United States	Missed principal payment	\$150		Yes	
Compton Petroleum Corporation	Canada	Distressed exchange	\$450		Yes	
Contech Construction Products, Inc.	United States	Distressed exchange	\$240		Yes	
Electrical Components International, Inc.	United States	Prepackaged Chapter 11		\$305	Yes	
Energy Future Competitive Holdings Co.	United States	Distressed exchange	\$0		Yes	4
Energy Future Holdings Corp.	United States	Distressed exchange	\$3,594		Yes	
EnviroSolutions Holdings, Inc.	United States	Prepackaged Chapter 11		\$0	Yes	4
EnviroSolutions Real Property Holdings, Inc	United States	Prepackaged Chapter 11		\$211	Yes	
Gateway Casinos & Entertainment Inc.	Canada	Missed pri & int payments		\$1,105	Yes	
Golden Nugget, Inc.	United States	Distressed exchange		\$60	No	
Graceway Pharmaceuticals, LLC	United States	Missed interest payment		\$330	Yes	
Great Atlantic & Pacific Tea Co., Inc. (The)	United States	Chapter 11	\$693		Yes	
Green Valley Ranch Gaming, LLC	United States	Missed interest payment		\$773	Yes	
Haight's Cross Comm Operating Company	United States	Missed interest payment		\$108	No	
Hipotecaria Su Casita, S.A. de C.V.	Mexico	Missed pri & int payments	\$73		Yes	
Holdings Gaming Borrower, L.P.	United States	Distressed exchange		\$250	Yes	
Independencia International Ltd.	Brazil	Bankruptcy	\$165		No	
Independencia S/A	Brazil	Bankruptcy	\$0		No	4
Indianapolis Downs, LLC	United States	Missed interest payment	\$375		Yes	
International Industrial Bank	Russia	Missed pri & int payments	\$552		Yes	
Jacuzzi Brands Corp.	United States	Distressed exchange		\$175	Yes	

## EXHIBIT 16

## Moody's-Rated 2010 Corporate Bond and Loan Defaults

Company	Country	Initial Default Type	Bonds <sup>1</sup>	Loans <sup>1</sup>	In Jan 2010 Cohort? <sup>2</sup>	Notes
Japan Airlines International Co., Ltd.	Japan	Suspension of payments	\$735	\$3,838	No	
Local Insight Regatta Holdings, Inc.	United States	Chapter 11	\$211	\$327	Yes	
Loehmann's Capital Corporation	United States	Missed interest payment	\$110	\$31	Yes	
Marsico Parent Company, LLC	United States	Distressed exchange	\$600		Yes	
Marsico Parent Holdco, LLC	United States	Distressed exchange	\$556		Yes	
MEGA Brands Inc.	Canada	Distressed exchange	\$72	\$345	Yes	
Metrogas S.A.	Argentina	Bankruptcy	\$249		Yes	
Mobile-8 Telecom Tbk	Indonesia	Missed pri & int payments	\$68		No	
Motorsport Aftermarket Group, Inc.	United States	Distressed exchange	\$51		Yes	
Neenah Foundry Company	United States	Missed interest payment	\$225	\$42	No	
Neff Corp.	United States	Distressed exchange		\$531	No	
Network Communications, Inc.	United States	Missed interest payment	\$175		Yes	
Newark Group, Inc. (The)	United States	Missed interest payment		\$122	No	
Oriental Trading Company, Inc.	United States	Missed interest payment		\$624	Yes	
Penhall International, Corp.	United States	Missed interest payment	\$175		Yes	
Penton Media Inc.	United States	Prepackaged Chapter 11		\$965	Yes	
Radio One, Inc.	United States	Missed interest payment	\$297		Yes	
Regent Broadcasting LLC	United States	Missed pri & int payments		\$188	Yes	
Sagittarius Restaurants LLC	United States	Distressed exchange	\$156		Yes	
Securus Technologies, Inc.	United States	Distressed exchange	\$43		Yes	
Spheris Inc.	United States	Missed interest payment	\$125		Yes	
Spirit Finance Corporation	United States	Missed pri & int payments		\$50	No	
Takefuji Corporation	Japan	Distressed exchange	\$1,115		No	
TCO Funding Corporation	United States	Distressed exchange	\$55		Yes	
Texas Competitive Electric Holdings Co	United States	Distressed exchange	\$1,689		Yes	
Titan Petrochemicals Group Ltd.	China	Distressed exchange	\$209		Yes	
Trico Shipping AS	Norway	Missed interest payment	\$400		Yes	
Tristan Oil Ltd.	Kazakhstan	Missed interest payment	\$420		Yes	
Truvo Subsidiary Corp.	Begium	Chapter 11	\$692	\$976	Yes	
U.S. Concrete, Inc.	United States	Prepackaged Chapter 11	\$272	\$40	Yes	
United Site Services, Inc.	United States	Missed interest payment		\$265	No	
WasteQuip, Inc.	United States	Missed interest payment			Yes	3
Weather Finance III S.a.r.l.	Greece	Suspension of payments	\$1,595	\$311	Yes	
White Birch Paper Company	United States	Missed interest payment		\$70	No	
William Lyon Homes, Inc.	United States	Distressed exchange	\$11		No	
Wolverine Tube, Inc.	United States	Distressed exchange	\$131		No	
Workflow Management, Inc.	United States	Missed pri & int payments		\$30	No	
Xerium Technologies, Inc.	United States	Prepackaged Chapter 11		\$620	Yes	

1 Default volume in millions of USD

2 Only issuers included in the January 1 cohort are included in Moody's default rates

3 Default amount not publicly available

4 These companies failed to make payments on debts that they guaranteed. Guaranteed debts are only added to the issuers but not to the guarantors in order to avoid double counting

## EXHIBIT 17

## Annual Moody's-Rated Global Corporate Issuer Default Counts, 1920-2010

Year	Inv-Grade	Spec-Grade	All-Rated	Year	Inv-Grade	Spec-Grade	All-Rated	Year	Inv-Grade	Spec-Grade	All-Rated
1920	8	25	33	1951	0	1	1	1982	2	11	13
1921	7	24	31	1952	0	0	0	1983	0	13	13
1922	10	23	33	1953	0	0	0	1984	1	12	13
1923	5	22	27	1954	0	1	1	1985	0	15	15
1924	3	37	40	1955	0	1	1	1986	3	30	33
1925	7	34	41	1956	0	0	0	1987	0	31	31
1926	4	18	22	1957	0	1	1	1988	0	29	29
1927	1	15	16	1958	0	0	0	1989	4	48	52
1928	0	8	8	1959	0	0	0	1990	0	82	82
1929	3	12	15	1960	0	2	2	1991	1	65	66
1930	2	21	23	1961	0	3	3	1992	0	31	31
1931	6	79	85	1962	0	4	4	1993	0	19	19
1932	10	108	118	1963	0	3	3	1994	0	16	16
1933	9	188	197	1964	0	0	0	1995	0	27	27
1934	5	60	65	1965	0	0	0	1996	0	17	17
1935	9	51	60	1966	0	1	1	1997	0	25	25
1936	3	19	22	1967	0	0	0	1998	1	50	51
1937	4	17	21	1968	0	1	1	1999	1	99	100
1938	9	17	26	1969	0	0	0	2000	4	120	124
1939	2	13	15	1970	2	25	27	2001	4	183	187
1940	2	22	24	1971	0	3	3	2002	14	127	141
1941	0	10	10	1972	0	5	5	2003	0	82	82
1942	0	4	4	1973	2	3	5	2004	0	38	38
1943	0	3	3	1974	0	3	3	2005	2	29	31
1944	0	3	3	1975	0	4	4	2006	0	31	31
1945	0	2	2	1976	0	2	2	2007	0	18	18
1946	0	0	0	1977	1	3	4	2008	14	89	103
1947	0	1	1	1978	0	4	4	2009	11	254	265
1948	0	0	0	1979	0	1	1	2010	2	55	57
1949	0	5	5	1980	0	4	4				
1950	0	0	0	1981	0	2	2				



EXHIBIT 18

**Annual Rated Global Corporate Bond and Loan Default Volumes, 1970-2010\***

Year	Investment Grade			Speculative Grade			All Ratings		
	Bond	Loan	Total	Bond	Loan	Total	Bond	Loan	Total
1970	\$154	\$0	\$154	\$756	\$0	\$756	\$910	\$0	\$910
1971	\$0	\$0	\$0	\$132	\$0	\$132	\$132	\$0	\$132
1972	\$0	\$0	\$0	\$215	\$0	\$215	\$215	\$0	\$215
1973	\$17	\$0	\$17	\$94	\$0	\$94	\$112	\$0	\$112
1974	\$0	\$0	\$0	\$69	\$0	\$69	\$69	\$0	\$69
1975	\$0	\$0	\$0	\$176	\$0	\$176	\$176	\$0	\$176
1976	\$0	\$0	\$0	\$34	\$0	\$34	\$34	\$0	\$34
1977	\$68	\$0	\$68	\$179	\$0	\$179	\$247	\$0	\$247
1978	\$0	\$0	\$0	\$112	\$0	\$112	\$112	\$0	\$112
1979	\$0	\$0	\$0	\$18	\$0	\$18	\$18	\$0	\$18
1980	\$0	\$0	\$0	\$302	\$0	\$302	\$302	\$0	\$302
1981	\$0	\$0	\$0	\$47	\$0	\$47	\$47	\$0	\$47
1982	\$243	\$0	\$243	\$515	\$0	\$515	\$758	\$0	\$758
1983	\$0	\$0	\$0	\$1,110	\$0	\$1,110	\$1,110	\$0	\$1,110
1984	\$183	\$0	\$183	\$399	\$0	\$399	\$582	\$0	\$582
1985	\$0	\$0	\$0	\$1,344	\$0	\$1,344	\$1,344	\$0	\$1,344
1986	\$138	\$0	\$138	\$3,986	\$0	\$3,986	\$4,124	\$0	\$4,124
1987	\$0	\$0	\$0	\$8,940	\$242	\$9,182	\$8,940	\$242	\$9,182
1988	\$0	\$0	\$0	\$5,425	\$361	\$5,786	\$5,425	\$361	\$5,786
1989	\$1,506	\$0	\$1,506	\$10,021	0	\$10,021	\$11,527	\$0	\$11,527
1990	\$0	\$0	\$0	\$19,559	\$1,603	\$21,161	\$19,559	\$1,603	\$21,161
1991	\$1,348	\$0	\$1,348	\$15,485	\$570	\$16,055	\$16,833	\$570	\$17,403
1992	\$0	\$0	\$0	\$6,601	\$698	\$7,299	\$6,601	\$698	\$7,299
1993	\$0	\$0	\$0	\$1,871	\$424	\$2,295	\$1,871	\$424	\$2,295
1994	\$0	\$0	\$0	\$2,100	\$299	\$2,399	\$2,100	\$299	\$2,399
1995	\$0	\$0	\$0	\$4,788	\$27	\$4,816	\$4,788	\$27	\$4,816
1996	\$0	\$0	\$0	\$4,053	\$1,435	\$5,488	\$4,053	\$1,435	\$5,488
1997	\$0	\$0	\$0	\$5,104	\$948	\$6,052	\$5,104	\$948	\$6,052
1998	\$399	\$0	\$399	\$9,630	\$3,017	\$12,647	\$10,029	\$3,017	\$13,046
1999	\$461	\$1,225	\$1,686	\$24,980	\$14,107	\$39,088	\$25,441	\$15,332	\$40,773
2000	\$4,115	\$3,950	\$8,065	\$24,723	\$26,136	\$50,858	\$28,838	\$30,086	\$58,924
2001	\$22,351	\$5,363	\$27,714	\$78,299	\$33,850	\$112,149	\$100,650	\$39,213	\$139,863
2002	\$47,900	\$13,122	\$61,022	\$105,191	\$37,162	\$142,352	\$153,091	\$50,284	\$203,375
2003	\$0	\$870	\$870	\$35,181	\$10,123	\$45,304	\$35,181	\$10,992	\$46,174
2004	\$0	\$0	\$0	\$11,810	\$4,197	\$16,008	\$11,810	\$4,197	\$16,008
2005	\$2,155	\$2,825	\$4,980	\$26,633	\$8,745	\$35,378	\$28,788	\$11,570	\$40,358
2006	\$0	\$0	\$0	\$7,758	\$2,630	\$10,388	\$7,758	\$2,630	\$10,388
2007	\$0	\$0	\$0	\$4,755	\$1,983	\$6,738	\$4,755	\$1,983	\$6,738
2008	\$183,155	\$10,380	\$193,535	\$55,060	\$32,322	\$87,382	\$238,215	\$42,701	\$280,916
2009	\$38,945	\$21,931	\$60,876	\$145,405	\$123,686	\$269,091	\$184,350	\$145,617	\$329,966
2010	\$4,856	\$0	\$4,856	\$20,261	\$14,007	\$34,268	\$25,117	\$14,007	\$39,124

\* Default volume in millions of USD

EXHIBIT 19

**Annual Issuer Default Counts and Volume Totals by Geographical Region, 1986-2010**

Year	Issuer Counts					Dollar Volumes*				
	Africa & Middle East	Asia-Pacific	Europe	Latin America	North America	Africa & Middle East	Asia-Pacific	Europe	Latin America	North America
1986	0	0	0	0	33	\$0	\$0	\$0	\$0	\$4,124
1987	0	0	1	0	30	\$0	\$0	\$125	\$0	\$9,057
1988	0	0	0	0	29	\$0	\$0	\$0	\$0	\$5,786
1989	0	4	0	0	48	\$0	\$969	\$0	\$0	\$10,558
1990	0	1	0	0	81	\$0	\$200	\$0	\$0	\$20,961
1991	0	0	1	0	65	\$0	\$0	\$999	\$0	\$16,404
1992	0	0	0	0	31	\$0	\$0	\$0	\$0	\$7,299
1993	0	0	0	0	19	\$0	\$0	\$0	\$0	\$2,295
1994	0	0	1	0	15	\$0	\$0	\$774	\$0	\$1,625
1995	0	0	0	1	26	\$0	\$0	\$0	\$0	\$4,816
1996	0	0	0	1	16	\$0	\$0	\$0	\$218	\$5,270
1997	0	2	0	2	21	\$0	\$614	\$0	\$310	\$5,129
1998	0	3	3	0	45	\$0	\$626	\$1,018	\$0	\$11,402
1999	0	6	11	6	77	\$0	\$4,004	\$4,347	\$1,608	\$30,814
2000	0	1	4	1	118	\$0	\$3,743	\$938	\$177	\$54,065
2001	4	11	18	7	147	\$2,758	\$5,887	\$11,449	\$2,547	\$117,221
2002	0	1	26	18	96	\$0	\$1,434	\$47,385	\$16,163	\$138,392
2003	0	2	7	10	63	\$0	\$550	\$3,210	\$3,852	\$38,561
2004	1	0	3	1	33	\$183	\$0	\$1,873	\$576	\$13,377
2005	0	0	1	1	29	\$0	\$0	\$207	\$100	\$40,050
2006	0	0	7	2	22	\$0	\$0	\$1,601	\$167	\$8,620
2007	0	0	3	0	15	\$0	\$0	\$771	\$0	\$5,967
2008	0	3	12	2	86	\$0	\$625	\$53,374	\$555	\$226,361
2009	1	12	37	14	201	\$650	\$5,445	\$29,506	\$3,808	\$290,557
2010	0	1	8	3	45	\$0	\$6,081	\$8,993	\$696	\$23,354

\* Default volume in millions of USD

EXHIBIT 20

**2010 Defaulted Corporate Bond and Loan Recoveries**

Company	Initial Default Type	Bank Loan		Bond			
		1st Lien	2nd Lien	Sr. Sec.	Sr. Unsec.	Sr. Sub.	Sub.
ACIH, Inc.	Payment default					1.5%	
Ahern Rentals Inc.	Distressed exchange			75.0%			
Ambac Financial Group, Inc.	Bankruptcy				16.9%		
American Media Operations, Inc.	Payment default	98.1%				35.0%	
American Safety Razor Company	Bankruptcy	93.3%	8.7%				
Angiotech Pharmaceuticals, Inc.	Payment default					49.5%	
Anglo Irish Bank Corporation Limited	Distressed exchange						18.7%
Anthracite Capital, Inc.	Payment default				10.0%		
Arpeni Pratama Ocean Line, Tbk (P.T.)	Payment default			51.1%			
Atrium Companies, Inc.	Payment default	89.0%					
Bank of Ireland	Distressed exchange						50.4%
Bankruptcy Management Solutions, Inc.	Distressed exchange	65.4%	22.0%				
Blockbuster Inc.	Payment default			64.5%		1.0%	
Brookstone Company, Inc.	Distressed exchange			88.5%			
Builders FirstSource, Inc.	Distressed exchange			98.0%			
Catalyst Paper Corporation	Distressed exchange				84.3%		
Chelsea Building Society	Distressed exchange						60.5%
Chem Rx Corporation	Bankruptcy	50.4%	9.5%				
Cleveland Unlimited, Inc.	Payment default			90.0%			
Compton Petroleum Corporation	Distressed exchange				87.0%		
Electrical Components International, Inc.	Bankruptcy	76.0%	15.0%				
Energy Future Holdings Corp.	Distressed exchange				61.8%		
EnviroSolutions Real Property Holdings, Inc.	Bankruptcy	79.0%					
Frontera Copper Corporation	Payment default				65.3%		
Gateway Casinos & Entertainment Inc.	Payment default	90.5%	23.7%				
Golden Nugget, Inc.	Distressed exchange		40.0%				
Graceway Pharmaceuticals, LLC	Payment default		15.5%				
Great Atlantic & Pacific Tea Co., Inc. (The)	Bankruptcy			88.5%	33.8%		
Green Valley Ranch Gaming, LLC	Payment default	80.2%	7.1%				
Independencia International Ltd.	Bankruptcy			61.0%			
Indianapolis Downs, LLC	Payment default			83.0%			
InSight Health Services Holdings Corp.	Payment default			22.5%			
International Aluminum Corporation	Bankruptcy	59.8%					
International Industrial Bank	Payment default				40.4%		
Jacuzzi Brands Corp.	Distressed exchange		13.3%				
Japan Airlines International Co., Ltd.	Payment default				96.5%		
Local Insight Regatta Holdings, Inc.	Bankruptcy	36.8%					4.0%

EXHIBIT 20

**2010 Defaulted Corporate Bond and Loan Recoveries**

Company	Initial Default Type	Bank Loan		Bond			
		1st Lien	2nd Lien	Sr. Sec.	Sr. Unsec.	Sr. Sub.	Sub.
Marsico Parent Company, LLC	Distressed exchange					60.0%	
Marsico Parent Holdco, LLC	Distressed exchange						5.1%
MEGA Brands Inc.	Distressed exchange	68.3%					
Metrogas S.A.	Bankruptcy				44.0%		
Movie Gallery, Inc.	Bankruptcy	18.4%	13.5%				
Neenah Foundry Company	Payment default			51.0%			
Neff Corp.	Distressed exchange	96.3%	22.8%				
Network Communications, Inc.	Payment default				50.0%		
Oriental Trading Company, Inc.	Payment default	84.6%	18.3%				
Orleans Homebuilders, Inc.	Bankruptcy	34.5%					
Palm Harbor Homes, Inc.	Bankruptcy				20.0%		
Penhall International, Corp.	Payment default			62.5%			
Penton Media Inc.	Bankruptcy	71.1%	13.7%				
Radio One, Inc.	Payment default					86.8%	
Regent Broadcasting LLC	Payment default	81.9%					
RHI Entertainment, Inc.	Bankruptcy	43.0%					
Spheris Inc.	Payment default					10.0%	
Spirit Finance Corporation	Payment default	84.2%					
SuperMedia Inc.	Distressed exchange	69.3%					
Takefuji Corporation	Distressed exchange				15.8%		
TerreStar Networks, Inc.	Bankruptcy			101.0%			
Texas Competitive Electric Holdings Co LLC	Distressed exchange				59.7%		
Thompson Publishing Group Inc.	Bankruptcy	59.1%					
Titan Petrochemicals Group Ltd.	Distressed exchange				44.0%		
Trico Marine Services, Inc.	Payment default				30.0%		
Trico Shipping AS	Payment default			83.5%			
Tristan Oil Ltd.	Payment default			45.0%			
Truvo Subsidiary Corp.	Bankruptcy			3.7%			
U.S. Concrete, Inc.	Bankruptcy					53.7%	
United Site Services, Inc.	Payment default		32.0%				
Universal Building Products, Inc.	Bankruptcy	34.9%					
Vertis, Inc.	Bankruptcy	92.4%		25.0%			
Weather Finance III S.a.r.l.	Payment default	86.5%		30.8%			
William Lyon Homes, Inc.	Distressed exchange				83.0%		
Workflow Management, Inc.	Bankruptcy	77.4%					
Xerium Technologies, Inc.	Bankruptcy	93.4%					

\* Based on post default trading prices

EXHIBIT 21

**Annual Defaulted Corporate Bond and Loan Recoveries\***

Year	Loan	Bond					All Bonds
	1st Lien	Sr. Sec.	Sr. Unsec.	Sr. Sub.	Sub.	Jr. Sub.	
1982	n.a.	72.5%	35.8%	48.1%	30.0%	n.a.	35.3%
1983	n.a.	40.0%	52.7%	43.5%	41.1%	n.a.	44.5%
1984	n.a.	n.a.	49.4%	67.9%	44.3%	n.a.	45.5%
1985	n.a.	83.6%	60.2%	29.6%	39.7%	48.5%	43.6%
1986	n.a.	59.2%	51.1%	46.8%	41.4%	n.a.	47.4%
1987	n.a.	71.0%	63.8%	46.5%	46.9%	n.a.	51.3%
1988	n.a.	55.4%	45.2%	33.4%	33.8%	36.5%	38.8%
1989	n.a.	46.5%	45.1%	34.6%	26.4%	16.9%	32.3%
1990	72.0%	33.8%	37.0%	25.6%	19.1%	10.7%	25.5%
1991	67.9%	48.4%	36.7%	41.8%	24.4%	7.8%	35.5%
1992	60.6%	62.1%	49.2%	49.4%	38.0%	13.5%	45.9%
1993	53.4%	n.a.	37.1%	51.9%	44.2%	n.a.	43.1%
1994	67.6%	69.3%	53.7%	29.6%	38.0%	40.0%	45.6%
1995	75.4%	62.0%	47.6%	34.3%	41.5%	n.a.	43.3%
1996	85.5%	47.6%	62.8%	43.8%	22.6%	n.a.	41.5%
1997	78.8%	75.5%	56.1%	44.7%	33.1%	30.6%	48.8%
1998	56.7%	46.8%	39.5%	45.0%	18.2%	62.0%	38.3%
1999	73.6%	36.0%	38.0%	26.9%	35.6%	n.a.	33.8%
2000	68.8%	38.7%	24.2%	20.8%	31.9%	7.0%	25.3%
2001	64.9%	35.0%	21.2%	19.8%	15.9%	47.0%	21.6%
2002	58.8%	49.0%	29.5%	21.4%	24.5%	n.a.	29.7%
2003	73.4%	66.3%	41.9%	37.2%	12.3%	n.a.	40.4%
2004	87.7%	73.3%	52.1%	42.3%	94.0%	n.a.	58.5%
2005	83.8%	71.9%	54.9%	26.1%	51.3%	n.a.	56.0%
2006	83.6%	74.6%	55.0%	41.4%	56.1%	n.a.	55.0%
2007	68.6%	80.5%	53.3%	54.5%	n.a.	n.a.	54.7%
2008	61.7%	54.9%	33.2%	23.3%	23.6%	n.a.	33.9%
2009	53.6%	37.6%	37.1%	22.4%	45.3%	n.a.	33.9%
2010	70.9%	62.5%	49.6%	33.5%	33.7%	n.a.	50.0%

\* Issuer-weighted, based on post default trading prices

## EXHIBIT 22

**Average Sr. Unsecured Bond Recovery Rates by Year Prior to Default, 1982-2010**

	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa	n.a.	3.33%**	n.a.	97.00%	85.55%
Aa	37.24%	40.15%	36.30%	50.43%	38.80%
A	31.77%	47.56%	45.71%	39.90%	41.82%
Baa	41.47%	43.02%	43.00%	44.57%	42.69%
Ba	47.11%	44.61%	42.77%	40.81%	40.80%
B	37.90%	36.06%	36.74%	38.06%	41.35%
Caa-C	35.50%	34.81%	33.41%	35.33%	34.96%
Investment Grade	38.98%	43.90%	43.86%	44.10%	43.15%
Speculative Grade	37.27%	36.80%	37.00%	38.20%	40.34%
All Rated	37.36%	37.48%	37.92%	39.24%	40.97%

\* Issuer-weighted, based on post default trading prices

\*\* Based on three observations

## EXHIBIT 23

**Average Cumulative Credit Loss Rates by Letter Rating, 1982-2010\***

	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa	0.00%	0.01%	n.a.	0.00%	0.02%
Aa	0.01%	0.04%	0.07%	0.10%	0.18%
A	0.04%	0.10%	0.22%	0.37%	0.49%
Baa	0.12%	0.32%	0.57%	0.84%	1.19%
Ba	0.64%	1.91%	3.54%	5.41%	6.90%
B	2.77%	6.73%	10.45%	13.49%	15.57%
Caa-C	11.66%	19.62%	26.40%	30.64%	35.08%
Investment Grade	0.06%	0.15%	0.28%	0.43%	0.60%
Speculative Grade	3.09%	6.42%	9.56%	12.13%	14.00%
All Rated	1.13%	2.31%	3.38%	4.22%	4.85%

\* Based on average default rates and senior unsecured bond recoveries measured on issuer-weighted basis

## EXHIBIT 24

**Annual Credit Loss Rates by Letter Rating, 1982-2010**

Year	Aaa	Aa	A	Baa	Ba	B	Caa-C	Inv-Grade	Spec-Grade	All Rated
1982	0.00%	0.00%	0.16%	0.20%	1.79%	1.51%	16.05%	0.14%	2.31%	0.67%
1983	0.00%	0.00%	0.00%	0.00%	0.43%	3.01%	19.91%	0.00%	1.81%	0.46%
1984	0.00%	0.00%	0.00%	0.18%	0.42%	3.42%	50.59%	0.05%	1.68%	0.47%
1985	0.00%	0.00%	0.00%	0.00%	0.56%	2.98%	0.00%	0.00%	1.37%	0.38%
1986	0.00%	0.00%	0.00%	0.49%	1.00%	5.67%	11.51%	0.12%	2.76%	0.91%
1987	0.00%	0.00%	0.00%	0.00%	0.99%	2.35%	7.25%	0.00%	1.58%	0.56%
1988	0.00%	0.00%	0.00%	0.00%	0.69%	3.40%	15.65%	0.00%	1.96%	0.75%
1989	0.00%	0.34%	0.00%	0.33%	1.67%	4.79%	13.74%	0.16%	3.18%	1.30%
1990	0.00%	0.00%	0.00%	0.00%	2.14%	9.74%	36.47%	0.00%	6.29%	2.26%
1991	0.00%	0.00%	0.00%	0.17%	3.10%	7.83%	30.00%	0.04%	6.04%	1.91%
1992	0.00%	0.00%	0.00%	0.00%	0.16%	4.68%	15.13%	0.00%	2.64%	0.73%
1993	0.00%	0.00%	0.00%	0.00%	0.36%	2.86%	18.40%	0.00%	1.95%	0.53%
1994	0.00%	0.00%	0.00%	0.00%	0.11%	1.88%	2.44%	0.00%	0.97%	0.28%
1995	0.00%	0.00%	0.00%	0.00%	0.38%	2.23%	4.85%	0.00%	1.55%	0.49%
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.51%	5.21%	0.00%	0.61%	0.20%
1997	0.00%	0.00%	0.00%	0.00%	0.08%	0.85%	6.50%	0.00%	0.90%	0.31%
1998	0.00%	0.00%	0.00%	0.07%	0.61%	2.30%	6.89%	0.02%	1.98%	0.76%
1999	0.00%	0.00%	0.00%	0.07%	0.82%	3.03%	11.51%	0.02%	3.37%	1.37%
2000	0.00%	0.00%	0.00%	0.30%	0.55%	4.57%	14.83%	0.11%	4.83%	1.99%
2001	0.00%	0.00%	0.14%	0.16%	1.09%	7.54%	25.13%	0.11%	8.13%	3.13%
2002	0.00%	0.00%	0.12%	0.77%	0.97%	3.19%	20.34%	0.33%	5.68%	2.16%
2003	0.00%	0.00%	0.00%	0.00%	0.58%	1.23%	13.01%	0.00%	3.12%	1.07%
2004	0.00%	0.00%	0.00%	0.00%	0.20%	0.40%	5.89%	0.00%	1.17%	0.41%
2005	0.00%	0.00%	0.00%	0.08%	0.00%	0.46%	3.01%	0.03%	0.79%	0.30%
2006	0.00%	0.00%	0.00%	0.00%	0.09%	0.53%	2.72%	0.00%	0.79%	0.29%
2007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.80%	0.00%	0.45%	0.17%
2008	0.00%	0.37%	0.31%	0.32%	0.78%	1.38%	9.88%	0.31%	2.92%	1.36%
2009	0.00%	0.00%	0.11%	0.54%	1.51%	4.66%	21.61%	0.23%	8.26%	3.41%
2010	0.00%	0.00%	0.10%	0.00%	0.00%	0.24%	6.06%	0.04%	1.60%	0.65%
Average	0.00%	0.02%	0.03%	0.13%	0.73%	3.01%	13.70%	0.06%	2.78%	1.01%
Max	0.00%	0.37%	0.31%	0.77%	3.10%	9.74%	50.59%	0.33%	8.26%	3.41%
Min	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.45%	0.17%

\* Based on issuer-weighted average default rates and issuer-weighted senior unsecured bond recovery rates



## EXHIBIT 25

**2010 One-Year Letter Migration Rates\***

From/To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	WR	Default
Aaa	75.248%	5.941%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	18.812%	0.000%
Aa	0.175%	61.189%	7.343%	0.524%	0.000%	0.000%	0.000%	0.000%	30.769%	0.000%
A	0.000%	1.237%	75.707%	3.975%	0.795%	0.177%	0.000%	0.000%	17.933%	0.177%
Baa	0.086%	0.086%	1.809%	86.477%	1.378%	0.086%	0.086%	0.000%	9.991%	0.000%
Ba	0.000%	0.000%	0.000%	5.567%	79.920%	4.573%	0.000%	0.000%	9.940%	0.000%
B	0.000%	0.000%	0.000%	0.000%	5.499%	75.870%	4.602%	0.000%	13.580%	0.449%
Caa	0.000%	0.000%	0.000%	0.000%	0.251%	12.030%	68.922%	1.253%	9.023%	8.521%
Ca-C	0.000%	0.000%	0.000%	0.000%	2.083%	2.083%	14.583%	27.083%	18.750%	35.417%

\* In August 2010, approximately 400 issuers' rating were withdrawn as their Medium Term Note Program ratings became provisional ratings. This led to higher withdrawal rate in 2010 .

## EXHIBIT 26

**Average One-Year Letter Rating Migration Rates, 1920-2010**

From/To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	WR	Default
Aaa	86.556%	8.214%	0.827%	0.162%	0.032%	0.001%	0.001%	0.000%	4.206%	0.000%
Aa	1.195%	84.152%	7.238%	0.740%	0.167%	0.037%	0.006%	0.005%	6.392%	0.068%
A	0.079%	2.917%	84.575%	5.549%	0.683%	0.121%	0.029%	0.009%	5.946%	0.092%
Baa	0.041%	0.286%	4.467%	81.252%	4.996%	0.789%	0.131%	0.015%	7.742%	0.280%
Ba	0.007%	0.083%	0.474%	5.923%	73.373%	6.838%	0.576%	0.068%	11.367%	1.292%
B	0.006%	0.050%	0.154%	0.592%	5.768%	71.304%	5.551%	0.534%	12.260%	3.781%
Caa	0.000%	0.021%	0.029%	0.189%	0.808%	8.067%	62.742%	3.841%	11.945%	12.358%
Ca-C	0.000%	0.026%	0.113%	0.061%	0.468%	3.265%	7.691%	51.801%	13.225%	23.350%

## EXHIBIT 27

**Average One-Year Transition Rates, 1970-2010**

From/To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	WR	Default
Aaa	87.395%	8.626%	0.602%	0.010%	0.027%	0.002%	0.002%	0.000%	3.336%	0.000%
Aa	0.971%	85.616%	7.966%	0.359%	0.045%	0.018%	0.008%	0.001%	4.996%	0.020%
A	0.062%	2.689%	86.763%	5.271%	0.488%	0.109%	0.032%	0.004%	4.528%	0.054%
Baa	0.043%	0.184%	4.525%	84.517%	4.112%	0.775%	0.173%	0.019%	5.475%	0.176%
Ba	0.008%	0.056%	0.370%	5.644%	75.759%	7.239%	0.533%	0.080%	9.208%	1.104%
B	0.010%	0.034%	0.126%	0.338%	4.762%	73.524%	5.767%	0.665%	10.544%	4.230%
Caa	0.000%	0.021%	0.021%	0.142%	0.463%	8.263%	60.088%	4.104%	12.176%	14.721%
Ca-C	0.000%	0.000%	0.000%	0.000%	0.324%	2.374%	8.880%	36.270%	16.701%	35.451%

EXHIBIT 28

**Average Five-Year Letter Rating Migration Rates, 1970-2006**

From/To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca-C	WR	Default
Aaa	54.130%	24.062%	5.209%	0.357%	0.253%	0.038%	0.038%	0.000%	15.832%	0.081%
Aa	3.243%	50.038%	21.225%	3.220%	0.521%	0.150%	0.030%	0.012%	21.374%	0.186%
A	0.202%	8.545%	52.504%	14.337%	2.617%	0.831%	0.143%	0.023%	20.247%	0.551%
Baa	0.231%	1.132%	13.513%	46.508%	8.794%	2.827%	0.517%	0.083%	24.763%	1.631%
Ba	0.043%	0.181%	2.325%	12.105%	26.621%	10.741%	1.286%	0.129%	38.668%	7.900%
B	0.038%	0.062%	0.295%	1.828%	6.931%	22.064%	4.665%	0.677%	43.918%	19.523%
Caa	0.000%	0.000%	0.028%	0.759%	2.065%	7.138%	8.234%	1.034%	44.365%	36.378%
Ca-C	0.000%	0.000%	0.000%	0.000%	0.208%	2.033%	1.94%	2.633%	44.352%	48.833%

## EXHIBIT 29

## 2010 One-Year Alphanumeric Rating Migration Rates\*

From/To	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca-C	WR	Default
Aaa	75.248	4.950	0.990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.812	0.000
Aa1	0.000	43.114	10.778	3.593	0.599	4.790	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	37.126	0.000
Aa2	0.000	1.093	60.656	6.011	5.464	0.000	0.546	0.546	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	25.683	0.000
Aa3	0.450	0.450	0.450	57.658	8.559	0.901	0.450	0.450	0.000	0.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	30.180	0.000
A1	0.000	0.318	0.000	2.866	61.465	11.465	0.955	0.318	0.000	0.637	0.637	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.019	0.318
A2	0.000	0.000	0.000	1.034	5.943	65.116	6.718	2.326	0.258	0.775	1.292	0.000	0.000	0.000	0.258	0.000	0.000	0.000	0.000	0.000	16.279	0.000
A3	0.000	0.000	0.000	0.000	0.000	2.088	73.086	4.640	1.160	0.928	0.464	0.000	0.000	0.232	0.000	0.000	0.000	0.000	0.000	0.000	17.169	0.232
Baa1	0.000	0.000	0.000	0.250	0.000	0.500	4.750	79.000	4.250	1.500	0.250	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.750	0.000
Baa2	0.236	0.000	0.000	0.000	0.000	0.000	0.000	3.546	79.196	4.728	0.000	0.000	0.000	0.000	0.000	0.000	0.236	0.000	0.000	0.000	12.057	0.000
Baa3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.183	9.467	76.627	2.367	0.296	0.888	0.296	0.000	0.000	0.000	0.000	0.000	0.000	8.876	0.000
Ba1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.704	10.563	77.465	3.521	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.746	0.000
Ba2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.786	4.762	11.905	66.071	5.952	0.595	0.595	0.000	0.000	0.000	0.000	0.000	8.333	0.000
Ba3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.518	0.518	11.917	63.212	6.218	4.145	0.518	0.000	0.000	0.000	0.000	12.953	0.000
B1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.353	10.196	65.882	5.098	0.784	0.000	0.392	0.000	0.000	14.510	0.784
B2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.733	0.000	3.297	14.286	57.509	8.425	1.099	0.733	0.000	0.000	13.919	0.000
B3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.826	0.826	1.102	11.019	63.361	7.438	1.928	0.275	0.000	12.672	0.551
Caa1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.446	0.893	3.125	12.054	66.071	5.357	0.893	0.000	8.929	2.232
Caa2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.877	7.018	9.649	55.263	6.140	0.000	0.000	9.649	11.404
Caa3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.639	3.279	6.557	16.393	29.508	8.197	8.197	8.197	26.230
Ca-C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.083	0.000	0.000	0.000	2.083	4.167	6.250	4.167	27.083	18.750	35.417

\* Data in percent

In August 2010, approximately 400 issuers' rating were withdrawn as their Medium Term Note Program ratings became provisional ratings. This led to higher withdrawal rate in 2010.

## EXHIBIT 30

## Average One-Year Alphanumeric Rating Migration Rates, 1983-2010\*

From/To	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca-C	WR	Default
Aaa	86.236	5.828	2.914	0.552	0.306	0.128	0.014	0.012	0.000	0.000	0.017	0.017	0.000	0.002	0.000	0.000	0.000	0.002	0.000	0.000	3.972	0.000
Aa1	2.188	74.914	8.364	6.413	1.600	0.528	0.129	0.165	0.033	0.006	0.000	0.000	0.003	0.000	0.000	0.012	0.000	0.000	0.000	0.000	5.645	0.000
Aa2	1.062	4.739	74.219	9.255	3.458	1.320	0.450	0.110	0.114	0.008	0.024	0.000	0.000	0.016	0.008	0.006	0.000	0.024	0.000	0.004	5.183	0.000
Aa3	0.214	1.491	4.375	74.940	8.841	2.909	0.995	0.267	0.215	0.083	0.022	0.029	0.016	0.016	0.000	0.000	0.003	0.000	0.000	0.000	5.537	0.047
A1	0.063	0.114	1.338	5.348	75.430	8.043	2.908	0.697	0.386	0.159	0.227	0.120	0.041	0.071	0.020	0.010	0.000	0.006	0.000	0.000	4.960	0.060
A2	0.078	0.037	0.230	1.130	5.190	75.750	7.976	2.863	0.840	0.397	0.185	0.104	0.116	0.052	0.041	0.012	0.034	0.029	0.006	0.000	4.866	0.064
A3	0.050	0.057	0.143	0.248	1.870	6.707	73.370	6.762	3.224	1.060	0.446	0.178	0.178	0.101	0.052	0.023	0.008	0.004	0.007	0.014	5.442	0.057
Baa1	0.030	0.043	0.084	0.152	0.271	1.845	6.808	72.636	7.382	2.969	0.783	0.405	0.297	0.365	0.071	0.045	0.056	0.031	0.007	0.021	5.556	0.142
Baa2	0.046	0.073	0.040	0.084	0.169	0.712	2.631	5.867	73.603	6.747	1.642	0.634	0.569	0.480	0.241	0.111	0.119	0.018	0.028	0.011	6.005	0.171
Baa3	0.049	0.012	0.037	0.046	0.128	0.254	0.583	2.735	8.738	69.997	5.019	2.589	1.126	0.835	0.375	0.270	0.193	0.096	0.103	0.044	6.481	0.292
Ba1	0.026	0.002	0.028	0.050	0.178	0.143	0.355	0.574	3.058	9.795	63.002	4.747	3.869	1.493	1.092	0.668	0.126	0.150	0.046	0.056	9.868	0.674
Ba2	0.000	0.000	0.027	0.000	0.027	0.080	0.066	0.304	0.747	3.176	8.678	62.466	7.005	2.943	2.251	1.030	0.208	0.194	0.084	0.112	9.841	0.760
Ba3	0.000	0.019	0.011	0.028	0.022	0.146	0.132	0.161	0.292	0.716	2.535	6.180	63.876	5.948	4.429	2.142	0.499	0.329	0.071	0.118	10.618	1.729
B1	0.029	0.013	0.016	0.008	0.039	0.083	0.091	0.065	0.126	0.278	0.452	2.450	6.541	63.918	6.685	3.973	1.257	0.548	0.262	0.366	10.421	2.381
B2	0.000	0.000	0.007	0.016	0.019	0.000	0.039	0.096	0.094	0.139	0.276	0.604	1.883	6.961	61.573	7.892	3.312	1.617	0.507	0.598	10.593	3.775
B3	0.000	0.005	0.041	0.000	0.008	0.020	0.069	0.042	0.047	0.096	0.083	0.225	0.575	2.341	6.338	59.094	6.346	3.909	1.202	1.160	11.240	7.158
Caa1	0.000	0.041	0.000	0.000	0.000	0.033	0.000	0.066	0.000	0.004	0.066	0.037	0.254	0.792	2.232	8.529	51.079	8.512	4.361	2.761	11.885	9.349
Caa2	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.012	0.061	0.232	0.104	0.086	0.440	0.763	1.252	3.720	7.176	46.051	5.106	5.014	12.075	17.895
Caa3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140	0.105	0.000	0.175	0.350	1.419	2.698	6.694	38.549	7.692	14.824	27.352
Ca-C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070	0.052	0.209	0.226	0.556	1.633	1.738	3.423	3.875	35.778	16.994	35.447

\* Data in percent

EXHIBIT 31

**Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2010\***

Year	Aaa	Aa	A	Baa	Ba	B	Caa-C	Inv Grade	Spec Grade	All rated
1920	0.000	0.000	0.334	0.962	2.157	4.368		0.439	3.010	1.244
1921	0.000	0.185	0.340	0.639	0.447	2.693	12.270	0.380	2.066	1.031
1922	0.000	0.189	0.170	1.108	1.077	1.733	7.692	0.515	1.776	1.019
1923	0.000	0.000	0.000	0.614	0.910	2.320	5.952	0.242	1.713	0.805
1924	0.000	0.371	0.000	0.118	2.041	2.788	12.414	0.138	2.846	1.152
1925	0.000	0.000	0.147	0.709	1.714	2.545	14.634	0.325	2.557	1.177
1926	0.000	0.464	0.177	0.142	1.395	2.050	5.195	0.225	1.756	0.784
1927	0.000	0.000	0.222	0.000	1.269	1.869	13.043	0.073	1.781	0.726
1928	0.000	0.000	0.000	0.000	0.183	1.252	11.111	0.000	0.897	0.373
1929	0.000	0.303	0.000	0.434	0.752	0.877	9.434	0.240	1.294	0.688
1930	0.000	0.000	0.000	0.421	0.922	2.902	7.813	0.159	2.131	1.024
1931	0.000	0.000	0.281	1.039	2.959	9.220	32.468	0.490	7.845	3.811
1932	0.000	0.677	0.873	0.898	5.973	13.785	23.392	0.780	10.811	5.434
1933	0.000	0.000	0.266	1.808	11.111	15.916	25.668	0.806	15.391	8.424
1934	0.000	0.610	0.348	0.817	2.632	4.309	16.040	0.578	5.929	3.462
1935	0.000	0.000	1.345	1.899	4.826	4.173	13.072	1.253	6.090	3.857
1936	0.000	0.803	0.510	0.344	1.225	2.358	7.930	0.465	2.736	1.643
1937	0.000	0.000	0.545	1.101	0.651	2.697	9.040	0.661	2.595	1.666
1938	0.000	0.870	1.719	1.988	0.985	1.468	12.739	1.579	2.593	2.122
1939	0.000	0.000	0.000	0.950	0.597	1.875	5.714	0.402	1.751	1.210
1940	0.000	0.000	0.000	1.325	0.418	1.097	11.823	0.572	2.606	1.868
1941	0.000	0.000	0.000	0.000	0.955	0.766	5.063	0.000	1.698	1.087
1942	0.000	0.000	0.000	0.000	0.000	0.818	1.980	0.000	0.750	0.468
1943	0.000	0.000	0.000	0.000	0.000	1.345	0.000	0.000	0.615	0.374
1944	0.000	0.000	0.000	0.000	0.000	0.512	2.532	0.000	0.679	0.401
1945	0.000	0.000	0.000	0.000	0.000	0.000	3.226	0.000	0.525	0.294
1946	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1947	0.000	0.000	0.000	0.000	0.000	0.000	2.439	0.000	0.314	0.156
1948	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1949	0.000	0.000	0.000	0.000	1.370	1.111	7.407	0.000	1.901	0.835
1950	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1951	0.000	0.000	0.000	0.000	0.000	0.000	4.651	0.000	0.450	0.180
1952	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1954	0.000	0.000	0.000	0.000	0.000	0.000	7.143	0.000	0.471	0.165
1955	0.000	0.000	0.000	0.000	0.000	1.504	0.000	0.000	0.505	0.163
1956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1957	0.000	0.000	0.000	0.000	0.000	1.274	0.000	0.000	0.452	0.144

EXHIBIT 31

**Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2010\***

Year	Aaa	Aa	A	Baa	Ba	B	Caa-C	Inv Grade	Spec Grade	All rated
1958	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1959	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1960	0.000	0.000	0.000	0.000	1.231	0.000	0.000	0.000	0.737	0.243
1961	0.000	0.000	0.000	0.000	0.581	0.000	8.696	0.000	1.070	0.353
1962	0.000	0.000	0.000	0.000	1.700	1.361	0.000	0.000	1.463	0.463
1963	0.000	0.000	0.000	0.000	1.153	1.563	0.000	0.000	1.156	0.351
1964	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1966	0.000	0.000	0.000	0.000	0.000	2.273	0.000	0.000	0.415	0.119
1967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1968	0.000	0.000	0.000	0.000	0.000	0.000	5.405	0.000	0.387	0.107
1969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1970	0.000	0.000	0.000	0.541	4.264	19.718	53.333	0.271	8.772	2.641
1971	0.000	0.000	0.000	0.000	0.881	0.000	14.286	0.000	1.152	0.285
1972	0.000	0.000	0.000	0.000	0.000	7.018	42.857	0.000	1.957	0.455
1973	0.000	0.000	0.000	0.459	0.000	3.774	44.444	0.231	1.277	0.454
1974	0.000	0.000	0.000	0.000	0.514	7.143	0.000	0.000	1.336	0.275
1975	0.000	0.000	0.000	0.000	1.023	6.154	0.000	0.000	1.739	0.360
1976	0.000	0.000	0.000	0.000	0.990	0.000	0.000	0.000	0.868	0.175
1977	0.000	0.000	0.000	0.290	0.525	3.279	50.000	0.109	1.345	0.351
1978	0.000	0.000	0.000	0.000	1.090	5.556	0.000	0.000	1.806	0.352
1979	0.000	0.000	0.000	0.000	0.496	0.000	0.000	0.000	0.424	0.087
1980	0.000	0.000	0.000	0.000	0.000	4.938	40.000	0.000	1.626	0.343
1981	0.000	0.000	0.000	0.000	0.000	4.598	0.000	0.000	0.708	0.163
1982	0.000	0.000	0.255	0.317	2.783	2.353	25.000	0.211	3.595	1.036
1983	0.000	0.000	0.000	0.000	0.911	6.364	42.105	0.000	3.835	0.967
1984	0.000	0.000	0.000	0.362	0.832	6.751	100.000	0.096	3.324	0.927
1985	0.000	0.000	0.000	0.000	1.413	7.483	0.000	0.000	3.448	0.950
1986	0.000	0.000	0.000	1.010	2.047	11.602	23.529	0.240	5.644	1.855
1987	0.000	0.000	0.000	0.000	2.730	6.489	20.000	0.000	4.357	1.558
1988	0.000	0.000	0.000	0.000	1.259	6.202	28.571	0.000	3.582	1.365
1989	0.000	0.618	0.000	0.596	3.040	8.720	25.000	0.291	5.797	2.361
1990	0.000	0.000	0.000	0.000	3.405	15.470	57.895	0.000	9.982	3.588
1991	0.000	0.000	0.000	0.275	4.892	12.361	47.368	0.066	9.531	3.009
1992	0.000	0.000	0.000	0.000	0.309	9.218	29.787	0.000	5.197	1.434
1993	0.000	0.000	0.000	0.000	0.572	4.555	29.268	0.000	3.107	0.836
1994	0.000	0.000	0.000	0.000	0.246	4.056	5.263	0.000	2.090	0.614
1995	0.000	0.000	0.000	0.000	0.726	4.260	9.259	0.000	2.956	0.935

EXHIBIT 31

**Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2010\***

Year	Aaa	Aa	A	Baa	Ba	B	Caa-C	Inv Grade	Spec Grade	All rated
1996	0.000	0.000	0.000	0.000	0.000	1.369	13.986	0.000	1.649	0.533
1997	0.000	0.000	0.000	0.000	0.192	1.943	14.815	0.000	2.049	0.698
1998	0.000	0.000	0.000	0.121	1.002	3.808	11.404	0.039	3.274	1.255
1999	0.000	0.000	0.000	0.106	1.316	4.895	18.575	0.037	5.440	2.214
2000	0.000	0.000	0.000	0.391	0.721	6.026	19.549	0.140	6.373	2.622
2001	0.000	0.000	0.172	0.198	1.390	9.570	31.902	0.137	10.327	3.978
2002	0.000	0.000	0.172	1.096	1.377	4.534	28.862	0.461	8.063	3.059
2003	0.000	0.000	0.000	0.000	1.005	2.112	22.385	0.000	5.368	1.844
2004	0.000	0.000	0.000	0.000	0.409	0.844	12.288	0.000	2.445	0.855
2005	0.000	0.000	0.000	0.182	0.000	1.025	6.667	0.068	1.745	0.674
2006	0.000	0.000	0.000	0.000	0.197	1.177	6.041	0.000	1.764	0.654
2007	0.000	0.000	0.000	0.000	0.000	0.000	5.980	0.000	0.959	0.367
2008	0.000	0.556	0.456	0.472	1.163	2.066	14.778	0.460	4.373	2.028
2009	0.000	0.000	0.181	0.862	2.405	7.411	34.359	0.372	13.137	5.422
2010	0.000	0.000	0.194	0.000	0.000	0.482	12.014	0.074	3.173	1.283
Mean	0.000	0.062	0.096	0.270	1.070	3.408	13.862	0.150	2.784	1.146
Median	0.000	0.000	0.000	0.000	0.651	2.050	8.313	0.000	1.764	0.698
St Dev	0.000	0.185	0.264	0.463	1.612	4.044	17.054	0.276	3.098	1.418
Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Max	0.000	0.870	1.719	1.988	11.111	19.718	100.000	1.579	15.391	8.424

\* Data in percent



EXHIBIT 32

## Annual Issuer-Weighted Corporate Default Rates by Alphanumeric Rating, 1983-2010

Year	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca-C	Inv Grade	Spec Grade	All rated
1983	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.614	0.000	12.245	21.053	n.a.	53.333	n.a.	0.000	0.000	3.835	0.967
1984	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.064	1.163	1.613	0.000	5.926	11.321	4.082	n.a.	n.a.	n.a.	100.000	0.096	3.324	0.927
1985	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.626	2.857	4.444	8.451	11.364	n.a.	0.000	n.a.	0.000	0.000	3.448	0.950
1986	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.488	0.893	1.183	3.436	7.821	16.216	14.679	n.a.	28.571	n.a.	0.000	0.240	5.644	1.855
1987	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.788	0.943	2.978	4.240	7.547	10.370	n.a.	22.222	n.a.	0.000	0.000	4.357	1.558
1988	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.575	4.178	6.780	11.111	n.a.	23.529	n.a.	50.000	0.000	3.582	1.365
1989	0.000	0.000	0.000	1.356	0.000	0.000	0.000	0.000	0.826	1.020	0.813	1.852	4.793	5.621	9.032	18.605	n.a.	27.273	n.a.	0.000	0.291	5.797	2.361
1990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.738	2.844	3.509	7.843	22.619	28.378	n.a.	57.143	0.000	75.000	0.000	9.982	3.588
1991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.743	0.000	0.000	1.136	0.000	9.143	3.521	11.043	27.174	n.a.	51.852	0.000	44.444	0.066	9.531	3.009
1992	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.735	0.976	1.471	26.582	n.a.	31.579	0.000	28.571	0.000	5.197	1.434
1993	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.885	0.000	0.791	2.479	3.279	10.084	n.a.	25.000	0.000	57.143	0.000	3.107	0.836
1994	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.623	1.905	3.593	8.805	n.a.	7.018	0.000	0.000	0.000	2.090	0.614
1995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.835	4.425	5.882	1.980	n.a.	2.740	0.000	24.242	0.000	2.956	0.935
1996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.158	0.000	3.306	0.000	14.953	0.000	12.500	0.000	1.649	0.533
1997	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.467	0.000	1.183	7.018	0.000	13.592	0.000	18.868	0.000	2.049	0.698
1998	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.319	0.000	0.000	1.887	1.232	2.133	5.425	4.923	5.825	12.048	26.667	16.667	0.039	3.274	1.255
1999	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.344	0.525	0.576	2.459	2.560	5.153	8.126	12.048	21.849	21.429	46.154	0.037	5.440	2.214
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.295	0.000	0.998	0.510	0.629	1.000	3.081	4.911	12.062	11.307	29.487	20.690	40.000	0.140	6.373	2.622
2001	0.000	0.000	0.000	0.000	0.000	0.454	0.000	0.292	0.276	0.000	0.000	1.351	2.841	3.150	10.406	18.072	25.954	33.333	47.619	42.105	0.137	10.327	3.978
2002	0.000	0.000	0.000	0.000	0.000	0.000	0.452	0.803	0.733	1.923	2.388	0.631	1.096	2.206	4.739	7.629	16.878	25.758	33.766	48.951	0.461	8.063	3.059
2003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.717	1.481	0.355	2.389	4.372	9.662	21.898	33.708	37.500	0.000	5.368	1.844
2004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.924	0.000	0.604	2.375	8.065	9.174	15.094	32.258	0.000	2.445	0.855
2005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.248	0.327	0.000	0.000	0.000	0.000	0.589	2.465	3.077	6.283	21.053	21.739	0.068	1.745	0.674
2006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.484	0.780	0.557	2.194	2.279	6.742	18.182	17.778	0.000	1.764	0.654
2007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.210	8.333	14.815	33.333	0.000	0.959	0.367
2008	0.000	0.000	0.000	1.754	1.201	0.259	0.000	0.271	0.794	0.321	0.000	0.000	2.715	1.783	0.825	3.198	7.600	18.812	32.877	54.054	0.460	4.373	2.028
2009	0.000	0.000	0.000	0.000	0.000	0.000	0.521	1.144	0.736	0.698	2.273	0.597	4.010	4.098	8.681	8.516	17.012	39.298	57.143	69.421	0.372	13.137	5.422

EXHIBIT 32

**Annual Issuer-Weighted Corporate Default Rates by Alphanumeric Rating, 1983-2010**

Year	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca-C	Inv Grade	Spec Grade	All rated
2010	0.000	0.000	0.000	0.000	0.356	0.000	0.254	0.000	0.000	0.000	0.000	0.000	0.000	0.846	0.000	0.588	2.336	11.982	27.350	39.080	0.074	3.173	1.283
Mean	0.000	0.000	0.000	0.111	0.056	0.025	0.044	0.127	0.140	0.364	0.670	0.587	1.950	2.697	5.891	9.968	8.284	22.363	17.638	32.493	0.089	4.750	1.710
Media	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.357	2.343	5.032	8.321	7.600	21.898	18.182	32.796	0.000	3.709	1.324
StDev	0.000	0.000	0.000	0.411	0.234	0.097	0.134	0.292	0.277	0.773	1.097	0.788	1.967	2.291	5.492	8.238	7.400	15.212	17.212	25.467	0.143	3.023	1.212
Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.959	0.367
Max	0.000	0.000	0.000	1.754	1.201	0.454	0.521	1.144	0.826	3.488	3.788	2.844	9.143	7.843	22.619	28.378	25.954	57.143	57.143	100.00	0.461	13.137	5.422

EXHIBIT 33

**Average Cumulative Issuer-Weighted Global Default Rates, 1920-2010\***

Rating	1	2	3	4	5	6	7	8	9	10
Aaa	0	0.008	0.029	0.084	0.163	0.249	0.359	0.51	0.669	0.854
Aa	0.07	0.205	0.319	0.489	0.748	1.053	1.354	1.644	1.919	2.237
A	0.095	0.29	0.584	0.908	1.244	1.602	1.988	2.382	2.813	3.242
Baa	0.293	0.867	1.546	2.28	3.061	3.839	4.581	5.337	6.121	6.907
Ba	1.369	3.258	5.362	7.559	9.658	11.654	13.464	15.225	16.922	18.698
B	4.028	9.051	13.937	18.245	22.009	25.351	28.453	31.107	33.434	35.488
Caa-C	14.694	24.432	31.521	36.954	41.28	44.421	46.762	48.864	50.937	52.862
Inv Grade	0.156	0.463	0.84	1.259	1.717	2.189	2.659	3.134	3.629	4.132
Spec Grade	3.91	7.896	11.608	14.924	17.835	20.395	22.672	24.727	26.621	28.455
All rated	1.542	3.153	4.659	6.011	7.218	8.293	9.256	10.143	10.987	11.811
Rating	11	12	13	14	15	16	17	18	19	20
Aaa	1.012	1.142	1.28	1.321	1.359	1.435	1.511	1.574	1.648	1.698
Aa	2.608	3.015	3.424	3.838	4.151	4.391	4.588	4.828	5.144	5.416
A	3.691	4.135	4.531	4.912	5.356	5.764	6.12	6.478	6.814	7.139
Baa	7.665	8.424	9.197	9.904	10.537	11.179	11.763	12.269	12.748	13.275
Ba	20.256	21.822	23.348	24.713	25.977	27.148	28.314	29.397	30.355	31.282
B	37.407	39.22	40.928	42.543	43.978	45.346	46.568	47.567	48.283	48.75
Caa-C	54.825	56.754	58.496	60.348	62.29	64.135	65.768	67.232	68.583	69.911
Inv Grade	4.643	5.156	5.654	6.118	6.561	6.979	7.35	7.705	8.058	8.411
Spec Grade	30.118	31.748	33.306	34.749	36.09	37.351	38.553	39.633	40.556	41.397
All rated	12.588	13.351	14.08	14.751	15.38	15.969	16.508	17.007	17.47	17.917

\*Data in percent

EXHIBIT 34

**Average Cumulative Issuer-Weighted Global Default Rates, 1970-2010\***

Rating	1	2	3	4	5	6	7	8	9	10
Aaa	0	0.013	0.013	0.037	0.104	0.172	0.244	0.321	0.404	0.494
Aa	0.021	0.059	0.103	0.184	0.273	0.363	0.443	0.512	0.559	0.619
A	0.055	0.177	0.362	0.549	0.756	0.984	1.239	1.535	1.844	2.136
Baa	0.181	0.51	0.933	1.427	1.953	2.504	3.031	3.575	4.195	4.904
Ba	1.157	3.191	5.596	8.146	10.453	12.581	14.44	16.295	18.178	20.101
B	4.465	10.432	16.334	21.51	26.173	30.562	34.721	38.353	41.646	44.573
Caa-C	18.163	30.204	39.709	47.317	53.768	58.079	61.181	64.813	68.506	72.384
Inv Grade	0.087	0.253	0.476	0.73	1.006	1.296	1.587	1.895	2.225	2.574
Spec Grade	4.673	9.564	14.195	18.27	21.804	24.89	27.595	30.038	32.313	34.445
All rated	1.63	3.308	4.86	6.188	7.314	8.281	9.116	9.872	10.585	11.266

## EXHIBIT 34

**Average Cumulative Issuer-Weighted Global Default Rates, 1970-2010\***

Rating	11	12	13	14	15	16	17	18	19	20
Aaa	0.589	0.69	0.795	0.854	0.918	0.987	1.063	1.09	1.09	1.09
Aa	0.703	0.825	0.985	1.138	1.26	1.393	1.566	1.8	2.187	2.596
A	2.428	2.713	3.006	3.299	3.657	4.062	4.545	5.067	5.543	6.019
Baa	5.619	6.374	7.184	8.029	8.845	9.697	10.47	11.165	11.778	12.411
Ba	22.005	23.984	25.898	27.797	29.702	31.473	33.049	34.354	35.706	36.867
B	47.182	49.727	52.082	54.399	56.345	57.91	59.279	60.682	61.669	62.693
Caa-C	74.847	74.97	74.97	74.97	76.162	78.415	78.993	78.993	78.993	78.993
Inv Grade	2.927	3.295	3.687	4.081	4.489	4.928	5.386	5.846	6.292	6.747
Spec Grade	36.409	38.34	40.155	41.929	43.628	45.164	46.497	47.634	48.733	49.704
All rated	11.904	12.531	13.145	13.745	14.337	14.925	15.494	16.034	16.556	17.068

\*Data in percent

## EXHIBIT 35

**Average Cumulative Issuer-Weighted Global Default Rates, 1983-2010\***

Rating	1	2	3	4	5	6	7	8	9	10
Aaa	0	0.016	0.016	0.048	0.086	0.132	0.182	0.186	0.186	0.186
Aa	0.023	0.066	0.116	0.202	0.291	0.351	0.388	0.419	0.447	0.501
A	0.062	0.2	0.414	0.623	0.853	1.099	1.371	1.677	1.969	2.216
Baa	0.202	0.561	0.998	1.501	2.06	2.636	3.175	3.71	4.26	4.89
Ba	1.197	3.437	6.183	9.067	11.51	13.757	15.76	17.679	19.526	21.337
B	4.466	10.524	16.526	21.774	26.524	31.034	35.301	39.032	42.312	45.194
Caa	15.529	27.592	37.251	45.146	51.803	56.26	59.232	62.759	67.199	73.035
Ca-C	38.739	50.58	59.678	66.353	71.652	73.385	75.92	78.884	78.884	78.884
Inv Grade	0.095	0.274	0.508	0.769	1.054	1.343	1.622	1.907	2.185	2.467
Spec Grade	4.944	10.195	15.233	19.671	23.477	26.82	29.79	32.433	34.804	39.967
All rated	1.819	3.717	5.485	6.988	8.241	9.303	10.212	11.006	11.706	12.344

Rating	11	12	13	14	15	16	17	18	19	20
Aaa	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186
Aa	0.586	0.722	0.869	0.993	1.126	1.262	1.445	1.763	2.268	2.754
A	2.449	2.673	2.934	3.241	3.633	4.125	4.762	5.519	6.104	6.641
Baa	5.541	6.225	7.079	8.004	8.881	9.845	10.738	11.492	12.165	12.72
Ba	23.033	24.843	26.653	28.663	30.722	32.449	33.992	35.325	37.036	38.372
B	47.76	50.361	52.884	55.42	57.456	58.903	60.602	62.768	64.315	65.936
Caa	77.147	77.369	77.369	77.369	79.539	83.436	84.472	84.472	84.472	84.472
Ca-C	78.884	78.884	78.884	78.884	78.884					
Inv Grade	2.75	3.045	3.394	3.768	4.167	4.627	5.14	5.703	6.222	6.688
Spec Grade	38.877	40.781	42.631	44.574	46.411	47.908	49.294	50.636	52.066	53.292
All rated	12.918	13.48	14.056	14.653	15.245	15.829	16.435	17.074	17.688	18.235

\*Data in percent

## EXHIBIT 36

## Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983-2010\*

Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	0	0.016	0.016	0.048	0.086	0.132	0.182	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186
Aa1	0	0	0	0.094	0.141	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.312	0.504	0.723	0.806	0.806	0.806	0.806	0.806
Aa2	0	0.014	0.088	0.192	0.334	0.431	0.495	0.561	0.635	0.718	0.812	0.919	0.985	1.012	1.044	1.179	1.392	1.638	2.039	2.328
Aa3	0.048	0.127	0.182	0.254	0.327	0.38	0.415	0.435	0.444	0.502	0.614	0.822	1.021	1.184	1.35	1.51	1.744	2.239	3.022	3.849
A1	0.061	0.217	0.461	0.672	0.855	0.992	1.089	1.18	1.297	1.468	1.661	1.857	2.096	2.396	2.689	3.101	3.525	4.002	4.193	4.382
A2	0.065	0.174	0.351	0.578	0.788	1.073	1.463	1.918	2.324	2.642	2.877	3.044	3.22	3.455	3.768	4.214	5.067	5.938	6.694	7.343
A3	0.058	0.214	0.439	0.627	0.923	1.235	1.55	1.907	2.255	2.5	2.777	3.113	3.516	3.928	4.553	5.21	5.808	6.74	7.548	8.332
Baa1	0.146	0.38	0.643	0.897	1.204	1.501	1.801	2.016	2.207	2.473	2.842	3.417	4.085	4.886	5.938	7.199	7.987	8.325	8.325	8.325
Baa2	0.176	0.486	0.897	1.519	2.078	2.686	3.226	3.723	4.337	5.098	5.99	6.873	7.657	8.468	9.303	10.052	10.893	11.752	12.571	12.977
Baa3	0.302	0.876	1.558	2.219	3.099	3.993	4.84	5.847	6.79	7.735	8.442	9.007	10.189	11.405	12.118	12.971	14.049	15.158	16.402	17.702
Ba1	0.709	1.986	3.721	5.546	7.226	9.012	10.455	11.506	12.537	13.694	14.804	16.262	17.257	18.085	19.505	20.585	21.774	23.288	25.714	27.53
Ba2	0.8	2.286	4.198	6.249	8.077	9.538	10.953	12.522	13.97	15.243	16.997	18.987	21.154	23.141	25.735	27.848	29.7	30.375	30.667	30.667
Ba3	1.826	5.291	9.371	13.66	17.163	20.379	23.342	26.385	29.384	32.311	34.619	36.725	39.272	42.941	45.543	48.002	49.971	51.734	53.574	55.247
B1	2.512	6.969	11.678	15.866	20.159	24.509	29.191	33.167	36.694	39.935	42.811	45.991	49.303	52.636	54.412	55.884	58.32	60.551	63.076	65.886
B2	3.986	9.863	15.713	21.076	25.701	29.903	33.774	37.281	40.724	43.516	45.95	47.937	50.187	52.736	56.664	59.499	60.985	64.384	64.895	64.895
B3	7.584	16.097	24.299	31.262	37.199	42.764	47.117	51.039	53.727	56.154	58.428	60.844	62.107	63.086	63.702	63.702	64.049	64.713	64.713	64.713
Caa1	9.94	21.715	32.211	40.782	48.782	54.343	57.144	60.441	65.864	70.904	75.409	76.229	76.229							
Caa2	19.045	30.446	39.104	46.371	51.475	55.336	58.498	61.973	65.153	70.38	74.745	74.745	74.745	74.745	77.166	81.516	82.671	82.671	82.671	82.671
Caa3	29.542	45.41	54.642	61.612	67.565	69.136	71.854	75.593	80.516	92.822										
Ca-C	38.739	50.58	59.678	66.353	71.652	73.385	75.92	78.884	78.884	78.884	78.884	78.884	78.884	78.884	78.884					
Inv Grade	0.095	0.274	0.508	0.769	1.054	1.343	1.622	1.907	2.185	2.467	2.75	3.045	3.394	3.768	4.167	4.627	5.14	5.703	6.222	6.688
Spec Grade	4.944	10.195	15.233	19.671	23.477	26.82	29.79	32.433	34.804	36.967	38.877	40.781	42.631	44.574	46.411	47.908	49.294	50.636	52.066	53.292
All rated	1.819	3.717	5.485	6.988	8.241	9.303	10.212	11.006	11.706	12.344	12.918	13.48	14.056	14.653	15.245	15.829	16.435	17.074	17.688	18.235

\*Data in percent

EXHIBIT 37

**Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1998-2010\***

Rating	1	2	3	4	5	6	7	8	9	10
Aaa	0	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
Aa1	0	0	0	0	0	0	0	0	0	0
Aa2	0	0.009	0.097	0.191	0.304	0.442	0.486	0.526	0.577	0.646
Aa3	0.052	0.131	0.167	0.215	0.268	0.323	0.407	0.421	0.441	0.497
A1	0.116	0.299	0.515	0.756	1.02	1.181	1.321	1.481	1.685	2.112
A2	0.114	0.277	0.506	0.701	0.917	1.275	1.808	2.569	3.449	4.404
A3	0.083	0.273	0.531	0.777	1.173	1.465	1.818	2.296	2.929	3.643
Baa1	0.19	0.454	0.693	0.885	1.102	1.386	1.654	1.973	2.212	2.727
Baa2	0.226	0.546	0.958	1.521	1.98	2.509	2.958	3.344	3.934	4.608
Baa3	0.364	0.981	1.694	2.339	3.171	3.8	4.617	5.928	7.365	9.484
Ba1	0.459	1.691	3.282	4.561	5.992	7.378	8.744	9.972	11.802	14.194
Ba2	0.778	1.817	3.288	5.026	6.439	7.783	8.966	11.137	12.753	15.251
Ba3	1.197	3.636	6.481	9.635	11.831	13.925	15.894	19.076	23.552	27.965
B1	1.742	5.783	10.25	14.055	17.177	20.312	23.918	27.506	31.478	35.782
B2	3.535	9.127	14.944	20.47	24.573	28.362	32.013	35.446	39.077	42.178
B3	5.864	14.276	23.143	30.428	36.322	41.959	46.774	52.011	57.49	62.171
Caa1	9.985	21.769	32.25	40.683	48.701	54.445	57.346	60.726	65.184	70.734
Caa2	19.193	32.018	41.632	48.96	54.657	58.212	60.563	63.049	63.049	63.049
Caa3	30.037	45.982	55.399	62.335	68.164	68.318	69.411	71.255	71.255	71.255
Ca-C	43.446	56.688	66.734	72.545	75.897	76.111	76.111	76.111	76.111	
Inv Grade	0.137	0.354	0.612	0.873	1.169	1.456	1.774	2.175	2.641	3.252
Spec Grade	5.309	10.979	16.418	20.994	24.56	27.57	30.237	33.07	36.139	39.275
All rated	2.085	4.263	6.282	7.911	9.165	10.188	11.091	12.05	13.078	14.215

\*Data in percent

EXHIBIT 38

**Average Cumulative Issuer-Weighted Global Default Rates by Broad Industry Group, 1970-2010\***

Industry\Year	1	2	3	4	5	6	7	8	9	10
Banking	0.434	0.899	1.386	1.834	2.209	2.529	2.788	3.057	3.308	3.571
Capital Industries	2.248	4.672	6.995	9.083	10.904	12.515	13.983	15.385	16.706	17.932
Consumer Industries	2.628	5.361	7.88	10.045	11.845	13.386	14.714	15.861	16.97	17.963
Energy & Environment	1.5	2.973	4.251	5.297	6.219	7.064	7.746	8.289	8.819	9.338
FIRE	0.709	1.474	2.224	2.911	3.537	4.151	4.736	5.323	5.946	6.616
Media & Publishing	3.883	8.006	11.986	15.399	18.494	21.151	23.267	25.047	26.64	28.195
Retail & Distribution	2.806	5.737	8.513	10.854	12.878	14.645	16.109	17.482	18.865	20.173
GRI**	0.315	0.668	0.878	1.029	1.201	1.218	1.218	1.218	1.218	1.218
Technology	1.904	3.846	5.529	6.815	7.754	8.444	9.044	9.512	9.884	10.245
Transportation	2.343	4.323	6.034	7.504	8.778	9.883	10.825	11.755	12.643	13.589
Utilities	0.173	0.347	0.506	0.659	0.808	0.952	1.084	1.203	1.323	1.451

\*Data in percent

\*\* Government Related Issuers



## EXHIBIT 39

## Annual Default Rates by Broad Industry Groups, 1970-2010\*

Year	Banking	Capital Industries	Consumer Industries	Energy and Environment	FIRE	Media & Publishing	Retail & Distribution	GRI**	Technology	Transportation	Utilities
1970	n.a.	0.000	0.948	0.000	16.667	0.000	0.000	0.000	0.833	15.686	0.000
1971	n.a.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.308	0.000
1972	n.a.	0.362	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.113	0.000
1973	n.a.	0.359	0.000	0.000	0.000	0.000	2.941	0.000	0.000	1.613	0.000
1974	0.000	0.362	0.000	0.000	0.000	0.000	3.030	0.000	0.000	0.000	0.000
1975	0.000	0.364	0.775	0.000	0.000	4.255	1.527	0.000	0.000	0.000	0.000
1976	0.000	0.359	0.735	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1977	0.000	0.000	0.749	0.000	0.000	4.000	0.000	0.000	0.000	1.770	0.000
1978	0.000	0.000	0.749	1.156	0.000	0.000	1.563	0.000	0.725	0.000	0.000
1979	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.702	0.000	0.000
1980	0.000	0.380	0.000	1.075	0.000	0.000	0.000	0.000	0.694	0.930	0.000
1981	0.000	0.370	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.930	0.000
1982	0.000	1.107	0.000	0.885	0.000	3.774	4.839	0.000	1.840	2.000	0.000
1983	0.000	1.081	0.570	2.353	0.000	0.000	0.000	0.000	0.608	3.941	0.417
1984	0.000	0.705	1.078	3.802	0.000	0.000	0.000	0.000	1.770	1.020	0.000
1985	0.000	1.220	1.370	3.333	1.136	0.000	0.000	0.000	0.548	0.971	0.000
1986	0.000	3.361	1.578	6.993	0.000	3.478	1.020	0.000	0.503	2.691	0.000
1987	0.399	2.400	2.431	5.387	0.000	1.250	1.747	0.000	0.461	0.897	0.412
1988	2.034	0.788	2.585	1.394	0.604	3.297	1.633	0.000	1.186	0.000	0.418
1989	2.134	3.175	4.167	0.000	3.352	6.486	0.758	11.111	1.156	1.835	0.000
1990	2.688	4.897	8.293	0.639	0.000	5.882	5.536	0.000	2.339	5.505	0.409
1991	2.073	3.576	3.745	1.266	0.506	4.000	9.630	0.000	1.616	9.184	1.240
1992	0.506	1.989	2.806	0.639	0.490	7.042	2.429	0.000	1.190	0.000	0.823
1993	0.472	1.565	1.149	1.205	0.000	2.778	2.353	0.000	0.387	0.000	0.000
1994	0.000	0.415	0.924	0.575	0.000	1.198	2.597	0.000	1.091	1.778	0.000
1995	0.000	1.254	2.681	0.518	1.113	0.000	1.786	0.000	0.669	0.851	0.000
1996	0.000	0.498	1.244	0.930	0.000	2.390	0.573	0.000	0.616	0.000	0.360
1997	0.000	0.445	2.193	0.000	0.282	1.299	3.209	0.000	0.555	0.794	0.000
1998	0.130	1.150	2.376	1.384	0.925	2.695	6.091	0.000	0.710	0.727	0.000
1999	0.247	2.228	4.526	5.354	0.620	2.850	2.784	2.632	1.891	5.263	0.315
2000	0.000	4.047	6.396	1.282	0.805	1.782	5.923	0.000	2.597	4.013	0.000
2001	0.120	7.044	5.532	1.920	1.224	4.018	7.767	0.000	7.540	4.082	0.570
2002	0.603	2.823	2.078	4.573	0.198	10.138	3.235	0.000	8.604	5.882	0.535
2003	0.122	2.446	2.141	1.236	0.588	3.694	4.469	0.000	4.376	3.200	0.528
2004	0.000	1.476	2.107	0.307	0.197	1.622	1.238	0.000	0.742	1.619	0.257
2005	0.114	1.297	0.501	0.902	0.189	0.509	1.923	0.000	0.246	3.922	0.253
2006	0.000	1.281	0.969	0.000	0.365	1.429	1.194	0.000	0.743	2.362	0.000
2007	0.000	0.712	0.654	0.000	0.000	0.928	1.813	0.000	0.488	0.000	0.000
2008	0.956	3.054	3.794	1.690	1.650	4.186	2.247	0.000	1.176	3.008	0.000
2009	1.463	10.132	7.827	1.994	3.307	22.167	3.625	0.000	5.372	5.645	0.238
2010	0.457	1.563	1.850	2.270	0.773	3.593	3.279	0.000	1.272	0.873	0.231

\*Data in percent

\*\* Government Related Issuers

EXHIBIT 40

**Annual Volume-Weighted Corporate Bond Default Rates by Letter Rating, 1994-2010\***

Year	Aaa	Aa	A	Baa	Ba	B	Caa-C	Inv-Grade	Spec-Grade	All Rated
1994	0.000	0.000	0.000	0.000	0.141	1.971	13.136	0.000	1.631	0.333
1995	0.000	0.000	0.000	0.000	0.567	4.651	6.876	0.000	3.088	0.716
1996	0.000	0.000	0.000	0.000	0.000	1.624	22.529	0.000	2.309	0.659
1997	0.000	0.000	0.000	0.000	0.051	3.064	7.111	0.000	1.950	0.504
1998	0.000	0.000	0.000	0.000	0.747	3.023	13.225	0.000	2.908	0.863
1999	0.000	0.000	0.000	0.140	1.143	5.483	20.515	0.031	5.783	1.114
2000	0.000	0.000	0.000	0.623	1.039	6.069	20.723	0.137	5.857	1.350
2001	0.000	0.000	0.728	0.957	1.178	13.898	55.132	0.548	15.614	3.014
2002	0.000	0.000	2.718	2.529	4.872	15.699	79.565	1.931	22.468	5.070
2003	0.000	0.000	0.000	0.000	3.622	2.560	17.062	0.000	5.669	0.991
2004	0.000	0.000	0.000	0.000	0.000	0.258	9.190	0.000	1.879	0.328
2005	0.000	0.000	0.000	0.201	0.000	1.639	16.337	0.073	3.762	0.749
2006	0.000	0.000	0.000	0.000	0.033	1.062	4.008	0.000	1.050	0.212
2007	0.000	0.000	0.000	0.000	0.000	0.000	3.655	0.000	0.602	0.117
2008	0.000	0.816	2.370	1.108	8.097	1.287	11.019	1.466	5.807	2.221
2009	0.000	0.000	0.014	0.642	2.599	6.416	40.360	0.187	16.774	2.810
2010	0.000	0.000	0.147	0.000	0.000	0.083	6.046	0.070	1.635	0.332
Mean	0.000	0.048	0.352	0.365	1.417	4.046	20.382	0.261	5.811	1.258
Median	0.000	0.000	0.000	0.000	0.567	2.560	13.225	0.000	3.088	0.749
StDev	NA	0.198	0.846	0.668	2.232	4.529	20.264	0.564	6.330	1.315
Min	0.000	0.000	0.000	0.000	0.000	0.000	3.655	0.000	0.602	0.117
Max	0.000	0.816	2.718	2.529	8.097	15.699	79.565	1.931	22.468	5.070

\*Data in percent

EXHIBIT 41

**Average Volume-Weighted Corporate Bond Default Rates by Letter Rating, 1994-2010\***

Rating	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa	0.000	0.057	0.057	0.057	0.057
Aa	0.037	0.097	0.106	0.116	0.128
A	0.483	0.961	1.344	1.618	2.010
Baa	0.381	0.840	1.202	1.783	2.617
Ba	1.377	3.528	5.735	7.836	9.078
B	4.585	10.583	15.395	19.639	22.284
Caa-C	20.539	33.953	44.222	47.937	49.726
Inv-Grade	0.331	0.688	0.962	1.260	1.691
Spec-Grade	6.153	11.839	16.471	19.798	21.768
All Rated	1.400	2.749	3.860	4.743	5.472

\*Data in percent

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/70																						
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Aaa	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.703	2.703	2.703	
Aa	78	0	0	0	0	0	0	0	0	0	0	0	0	0	1.439	1.439	1.439	2.921	2.921	2.921	2.921	
A	253	0	0	0	0.413	0.413	0.835	0.835	0.835	0.835	0.835	1.292	1.292	1.292	1.292	1.292	1.292	1.793	1.793	2.878	2.878	
Baa	372	0.541	0.541	0.541	1.118	1.412	1.412	1.722	2.363	3.03	3.03	3.392	3.392	4.573	4.983	5.405	5.845	7.243	8.26	9.378	9.981	
Ba	239	4.264	5.143	5.6	6.077	7.058	8.079	8.618	9.195	10.426	10.426	10.426	11.99	14.505	15.4	15.4	17.451	20.775	23.29	23.29	24.794	
B	36	19.718	19.718	22.586	22.586	22.586	22.586	22.586	22.586	22.586	22.586	22.586	22.586	31.187	31.187	31.187	31.187	36.48	36.48	36.48	36.48	
Caa-C	15	53.333	60	80	88	88	88	88	100													
IG	742	0.271	0.271	0.271	0.696	0.84	0.987	1.136	1.44	1.752	1.752	2.083	2.083	2.606	2.963	3.145	3.332	4.293	4.901	5.761	5.985	
SG	290	8.772	9.854	11.72	12.498	13.302	14.142	14.585	15.526	16.526	16.526	16.526	17.781	21.123	21.834	21.834	23.445	26.945	28.92	28.92	30.135	
All	1032	2.641	2.938	3.445	3.964	4.281	4.606	4.829	5.287	5.76	5.76	6.016	6.281	7.375	7.799	7.944	8.392	9.79	10.615	11.32	11.69	
1/1/71																						
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Aaa	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.703	2.703	2.703	2.703
Aa	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.786
A	282	0	0	0.364	0.364	0.736	0.736	0.736	0.736	0.736	1.135	1.135	1.547	1.963	1.963	1.963	2.398	2.398	3.336	3.336	3.336	3.336
Baa	398	0	0	0.531	0.801	1.079	1.369	1.97	2.595	2.595	2.935	2.935	4.055	4.443	4.844	5.261	6.583	7.539	8.584	9.141	10.314	10.314
Ba	229	0.881	1.339	1.817	2.801	3.827	4.369	4.948	6.187	6.187	6.187	7.744	10.248	11.141	11.141	13.173	17.569	20.086	20.086	21.594	21.594	21.594
B	27	0	3.846	3.846	3.846	3.846	3.846	3.846	3.846	3.846	3.846	3.846	16.253	16.253	16.253	16.253	22.953	22.953	22.953	22.953	22.953	22.953
Caa-C	7	14.286	57.143	74.286	74.286	74.286	74.286	100														
IG	795	0	0	0.391	0.524	0.795	0.933	1.216	1.506	1.506	1.813	1.813	2.462	2.795	2.965	3.139	3.856	4.421	5.218	5.427	6.075	6.075
SG	263	1.152	3.141	3.97	4.829	5.727	6.201	7.21	8.282	8.282	8.282	9.626	13.212	13.97	13.97	15.674	20.282	22.366	22.366	23.649	23.649	23.649
All	1058	0.285	0.77	1.266	1.57	1.986	2.2	2.641	3.097	3.097	3.343	3.598	4.786	5.193	5.333	5.764	7.107	7.898	8.572	8.927	9.482	9.482

## EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/72																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.632	2.632	2.632	2.632	2.632
Aa	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.667	1.667
A	304	0	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.715	1.098	1.098	1.098	1.497	1.497	2.363	2.363	2.838	3.33
Baa	431	0	0.487	0.735	1.246	1.51	2.061	2.638	2.638	3.27	3.27	3.966	4.327	5.07	5.456	6.673	7.553	8.516	9.541	11.162	13.982
Ba	225	0	0.471	1.439	2.45	2.983	3.549	4.751	4.751	4.751	6.233	9.412	10.258	10.258	13.107	17.196	19.513	19.513	20.877	22.329	28.42
B	29	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	18.288	18.288	18.288	18.288	24.825	24.825	24.825	24.825	24.825	24.825
Caa-C	7	42.857	59.184	59.184	59.184	59.184	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592	79.592
IG	855	0	0.362	0.485	0.735	0.863	1.124	1.392	1.392	1.678	1.678	2.13	2.439	2.753	2.915	3.579	4.102	4.842	5.23	6.238	7.485
SG	261	1.957	2.769	3.609	4.487	4.95	5.927	6.961	6.961	6.961	8.231	12.295	13.011	13.011	15.427	19.764	21.709	21.709	22.886	24.151	29.473
All	1116	0.455	0.92	1.205	1.594	1.794	2.206	2.632	2.632	2.861	3.1	4.208	4.588	4.848	5.383	6.631	7.366	7.993	8.488	9.522	11.303
1/1/73																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.632	2.632	2.632	2.632	2.632	2.632
Aa	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.587	1.587	1.587
A	310	0	0	0	0	0	0	0	0	0	0.366	0.737	0.737	0.737	1.126	1.126	1.969	1.969	2.428	2.906	3.418
Baa	441	0.459	0.693	1.174	1.422	1.941	2.482	2.482	3.077	3.077	3.734	4.417	5.12	5.85	7	7.83	8.738	9.709	11.767	13.932	13.932
Ba	206	0	1.008	2.061	2.617	3.206	4.447	4.447	4.447	5.951	9.936	10.778	10.778	12.647	16.686	20.134	20.134	21.465	22.88	30.225	31.81
B	27	3.774	3.774	3.774	3.774	3.774	3.774	3.774	3.774	3.774	15.437	15.437	15.437	15.437	22.202	22.202	22.202	22.202	22.202	22.202	22.202
Caa-C	5	44.444	44.444	44.444	44.444	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222	72.222
IG	874	0.231	0.348	0.586	0.708	0.957	1.214	1.214	1.486	1.486	1.92	2.363	2.665	2.975	3.614	4.117	4.828	5.2	6.363	7.367	7.581
SG	238	1.277	2.156	3.077	3.563	4.586	5.661	5.661	5.661	6.962	11.769	12.489	12.489	14.095	18.433	21.364	21.364	22.529	23.778	30.293	31.687
All	1112	0.454	0.731	1.11	1.305	1.705	2.119	2.119	2.341	2.573	3.765	4.255	4.507	5.024	6.234	7.089	7.695	8.174	9.341	11.067	11.437

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/74																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	44	0	0	0	0	0	0	0	0	0	0	0	0	0	2.439	2.439	2.439	2.439	2.439	2.439	2.439
Aa	90	0	0	0	0	0	0	0	0	1.242	1.242	1.242	1.242	1.242	1.242	1.242	1.242	2.739	2.739	2.739	2.739
A	308	0	0	0	0	0	0	0	0	0.365	0.734	0.734	0.734	1.119	1.119	1.949	1.949	2.397	2.863	3.368	3.368
Baa	431	0	0.48	0.728	1.245	1.784	1.784	2.378	2.378	3.035	3.717	4.42	5.152	5.538	6.375	7.291	8.267	9.817	11.99	11.99	11.99
Ba	198	0.514	1.593	2.165	2.771	4.05	4.05	4.05	4.821	8.871	9.726	9.726	11.597	17.625	21.033	21.033	22.395	25.269	32.668	34.271	36.097
B	29	7.143	7.143	7.143	7.143	7.143	7.143	7.143	12.03	22.379	22.379	22.379	22.379	29.772	29.772	29.772	29.772	29.772	29.772	29.772	29.772
Caa-C	2	0	0	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
IG	873	0	0.235	0.355	0.6	0.852	0.852	1.12	1.12	1.69	2.128	2.425	2.73	3.045	3.541	4.24	4.605	5.555	6.538	6.748	6.748
SG	229	1.336	2.272	2.766	3.809	4.905	4.905	4.905	6.221	11.066	11.798	11.798	13.431	19.584	22.544	22.544	23.744	26.329	33.088	34.543	36.179
All	1102	0.275	0.651	0.844	1.241	1.65	1.65	1.87	2.099	3.398	3.884	4.133	4.646	5.843	6.689	7.288	7.761	8.912	10.614	10.979	11.178
1/1/75																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	52	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2
Aa	105	0	0	0	0	0	0	0	1.026	1.026	1.026	1.026	1.026	1.026	2.204	2.204	3.426	3.426	3.426	3.426	3.426
A	321	0	0	0	0	0	0	0	0	0.355	0.355	0.355	0.726	0.726	1.526	1.526	1.961	2.871	3.365	3.899	3.899
Baa	412	0	0	0.265	0.819	0.819	1.429	1.429	2.431	3.123	3.833	4.57	4.957	5.794	6.253	7.232	9.288	11.428	11.428	11.428	11.428
Ba	201	1.023	2.105	3.246	3.847	3.847	3.847	4.57	8.403	9.21	9.21	10.99	16.733	19.977	21.171	22.463	23.824	29.415	30.916	32.581	32.581
B	33	6.154	6.154	6.154	9.566	9.566	9.566	13.677	22.309	22.309	22.309	22.309	28.525	28.525	28.525	28.525	37.459	47.883	47.883	47.883	47.883
Caa-C	2	0	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
IG	890	0	0	0.118	0.361	0.361	0.618	0.618	1.163	1.581	1.864	2.155	2.454	2.924	3.586	3.932	5.007	6.118	6.316	6.531	6.531
SG	236	1.739	2.655	4.101	5.113	5.113	5.113	6.33	10.836	11.517	11.517	13.049	18.818	21.586	22.598	23.695	26.043	32.155	33.46	34.891	34.891
All	1126	0.36	0.545	0.925	1.316	1.316	1.526	1.744	2.979	3.44	3.677	4.163	5.298	6.099	6.806	7.251	8.485	10.24	10.581	10.953	10.953

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/76																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	66	0	0	0	0	0	0	0	0	0	0	0	1.667	1.667	1.667	1.667	1.667	1.667	1.667	1.667	1.667
Aa	113	0	0	0	0	0	0	0.948	0.948	0.948	0.948	0.948	0.948	2.048	2.048	3.187	3.187	3.187	3.187	3.187	3.187
A	368	0	0	0	0	0	0	0	0.615	0.615	0.615	1.276	1.276	2.357	2.357	3.135	4.358	4.358	4.843	4.843	5.364
Baa	371	0	0.284	0.583	0.583	0.91	0.91	2.338	3.078	3.838	4.628	5.042	5.934	5.934	6.979	9.181	10.895	11.493	11.493	11.493	11.493
Ba	207	0.99	2.032	3.124	3.124	3.731	4.384	7.155	7.886	7.886	9.488	14.612	17.49	18.555	19.694	20.892	27.121	28.458	29.919	29.919	29.919
B	27	0	0	4.082	4.082	4.082	9.13	19.821	19.821	19.821	19.821	28.261	28.261	28.261	28.261	41.304	58.074	58.074	58.074	58.074	58.074
Caa-C	2	0	50	50	50	50	50	50	50												
IG	918	0	0.112	0.227	0.227	0.349	0.349	0.989	1.514	1.781	2.056	2.484	2.932	3.562	3.891	5.081	6.135	6.323	6.528	6.528	6.754
SG	236	0.868	2.235	3.666	3.666	4.199	5.343	8.984	9.627	9.627	11.067	16.457	19.041	19.994	21.019	23.198	30.076	31.313	32.66	32.66	32.66
All	1154	0.175	0.535	0.906	0.906	1.104	1.309	2.472	3.016	3.239	3.7	4.899	5.661	6.333	6.755	8.072	9.888	10.212	10.566	10.566	10.76
1/1/77																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	67	0	0	0	0	0	0	0	0	0	0	1.667	1.667	1.667	1.667	1.667	1.667	1.667	1.667	1.667	1.667
Aa	120	0	0	0	0	0	0.889	0.889	0.889	0.889	0.889	0.889	1.927	1.927	2.993	2.993	2.993	2.993	2.993	2.993	2.993
A	389	0	0	0	0	0	0	0.578	0.578	0.578	1.198	1.198	2.896	2.896	3.997	5.154	5.154	5.613	5.613	6.11	6.11
Baa	355	0.29	0.594	0.594	0.594	0.594	2.042	2.793	3.565	4.368	4.79	5.695	5.695	6.758	8.433	10.16	10.763	10.763	10.763	10.763	10.763
Ba	196	0.525	1.627	1.627	2.242	2.903	5.697	6.433	6.433	8.04	13.172	16.051	17.107	18.227	19.403	25.556	26.885	28.347	28.347	28.347	28.347
B	31	3.279	6.733	6.733	10.788	15.249	25.219	25.219	25.219	25.219	33.091	33.091	33.091	33.091	45.256	60.897	60.897	60.897	60.897	60.897	60.897
Caa-C	2	50	50	50	50	50	50	50													
IG	931	0.109	0.221	0.221	0.221	0.221	0.842	1.35	1.61	1.877	2.292	2.728	3.644	3.962	5.116	6.138	6.32	6.52	6.52	6.74	6.74
SG	229	1.345	2.758	2.758	3.815	4.953	8.586	9.227	9.227	10.657	16.002	18.56	19.496	20.496	22.617	29.346	30.564	31.899	31.899	31.899	31.899
All	1160	0.351	0.712	0.712	0.905	1.104	2.237	2.767	2.985	3.434	4.603	5.345	6.26	6.67	7.948	9.711	10.026	10.372	10.372	10.562	10.562

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/78																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	71	0	0	0	0	0	0	0	0	0	1.538	1.538	1.538	3.101	3.101	3.101	3.101	3.101	3.101	3.101	3.101
Aa	132	0	0	0	0	0.81	0.81	0.81	0.81	0.81	0.81	1.728	1.728	1.728	1.728	1.728	1.728	1.728	1.728	1.728	1.728
A	381	0	0	0	0	0	0.584	0.584	0.584	1.212	1.212	2.601	2.601	4.108	4.901	4.901	5.372	5.372	5.88	5.88	5.88
Baa	341	0	0	0	0	1.406	1.77	2.522	2.913	3.324	4.639	5.113	6.131	7.736	9.946	10.525	10.525	10.525	10.525	10.525	10.525
Ba	188	1.09	1.09	1.09	1.752	4.559	6.038	6.038	9.251	15.188	17.083	18.132	19.254	21.611	27.784	29.121	32.074	32.074	32.074	32.074	32.074
B	37	5.556	5.556	11.852	15.242	22.612	22.612	26.912	26.912	32.534	38.667	38.667	38.667	47.429	60.572	60.572	60.572	60.572	60.572	60.572	60.572
Caa-C	2	0	0	0	0	0	0	0	0	100											
IG	925	0	0	0	0	0.605	0.977	1.23	1.361	1.765	2.331	3.223	3.533	4.817	5.812	5.989	6.183	6.183	6.397	6.397	6.397
SG	227	1.806	1.806	2.823	3.918	7.412	8.643	9.298	12.025	18.569	21	21.892	22.851	25.916	32.502	33.707	36.359	36.359	36.359	36.359	36.359
All	1152	0.352	0.352	0.54	0.734	1.836	2.351	2.669	3.215	4.579	5.418	6.306	6.704	8.221	9.938	10.245	10.749	10.749	10.934	10.934	10.934
1/1/79																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	75	0	0	0	0	0	0	0	0	1.449	1.449	1.449	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
Aa	133	0	0	0	0.797	0.797	0.797	0.797	0.797	0.797	1.699	1.699	1.699	1.699	1.699	1.699	1.699	1.699	1.699	1.699	1.699
A	377	0	0	0	0	0.576	0.576	0.576	1.194	1.194	2.571	2.571	3.685	4.464	4.464	4.929	4.929	5.427	5.427	5.427	5.427
Baa	336	0	0.317	0.317	1.69	2.046	2.413	2.794	2.794	4.076	4.54	5.545	8.205	10.404	10.978	10.978	10.978	10.978	10.978	10.978	10.978
Ba	208	0.496	0.496	1.066	3.465	5.98	9.303	12.062	18.602	20.198	21.075	22.015	24.995	31.334	32.469	34.924	34.924	34.924	34.924	34.924	34.924
B	34	0	6.452	9.916	17.423	17.423	21.769	26.659	38.393	45.239	45.239	45.239	56.191	56.191	56.191						
Caa-C	2	0	0	0	0	0	0	0	100												
IG	921	0	0.113	0.113	0.706	1.07	1.194	1.321	1.585	2.138	3.012	3.317	4.736	5.713	5.888	6.078	6.078	6.288	6.288	6.288	6.288
SG	244	0.424	1.329	2.299	5.368	7.519	10.954	13.953	21.63	23.748	24.522	25.356	28.932	34.773	35.842	38.175	38.175	38.175	38.175	38.175	38.175
All	1165	0.087	0.358	0.545	1.604	2.297	3.009	3.639	5.167	5.973	6.828	7.212	8.944	10.605	10.902	11.389	11.389	11.567	11.567	11.567	11.567

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/80																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	88	0	0	0	0	0	0	0	1.258	1.258	1.258	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54
Aa	130	0	0	0	0	0	0	0	0.893	1.794	1.794	1.794	1.794	1.794	1.794	1.794	1.794	1.794	1.794	1.794	1.794
A	382	0	0	0.274	0.832	0.832	0.832	1.731	2.045	3.045	3.045	4.128	4.884	4.884	5.334	5.334	5.817	5.817	5.817	5.817	6.909
Baa	336	0	0	1.002	1.349	1.706	2.448	2.448	3.278	4.169	5.593	8.103	10.685	11.761	11.761	11.761	11.761	11.761	11.761	11.761	11.761
Ba	208	0	0.533	3.877	5.042	8.73	11.921	17.995	20.212	21.034	23.742	26.601	32.804	35.101	37.574	37.574	37.574	37.574	39.009	39.009	39.009
B	41	4.938	7.579	15.981	21.775	28.033	31.544	43.99	48.658	48.658	48.658	60.067	68.054	68.054	68.054	68.054	68.054	68.054	68.054	68.054	68.054
Caa-C	5	40	40	40	40	40	40	70	70	70	70	70	70	70	70	70	70	70	70	70	70
IG	936	0	0	0.458	0.809	0.929	1.175	1.556	2.222	3.062	3.5	4.86	5.951	6.284	6.467	6.467	6.669	6.669	6.669	6.669	7.127
SG	254	1.626	2.495	6.586	8.487	12.521	15.692	23.048	25.53	26.217	28.464	32.46	38.681	40.692	42.868	42.868	42.868	42.868	44.124	44.124	44.124
All	1190	0.343	0.521	1.71	2.367	3.236	4.033	5.691	6.674	7.484	8.211	9.976	11.812	12.377	12.839	12.839	13.01	13.01	13.191	13.191	13.578
1/1/81																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	93	0	0	0	0	0	0	1.227	1.227	1.227	2.493	2.493	2.493	2.493	2.493	2.493	2.493	2.493	2.493	2.493	2.493
Aa	134	0	0	0	0	0	0	0.83	2.504	2.504	2.504	2.504	2.504	2.504	2.504	2.504	2.504	2.504	2.504	2.504	3.839
A	387	0	0.267	0.267	0.267	0.267	1.16	1.475	2.143	2.143	3.226	3.987	3.987	4.442	4.442	4.931	4.931	4.931	4.931	6.026	6.587
Baa	339	0	0.632	1.961	2.65	3.365	3.365	3.763	4.617	5.98	8.378	10.343	11.356	11.356	11.356	11.356	11.356	11.356	11.356	11.356	12.144
Ba	242	0	3.62	5.044	8.051	11.708	18.392	20.847	21.535	24.568	28.667	35.11	37.22	39.503	39.503	39.503	39.503	40.863	42.271	42.271	42.271
B	45	4.598	11.986	17.015	25.046	27.985	41.383	41.383	41.383	41.383	51.153	57.259	57.259	57.259	57.259	57.259	57.259	57.259	57.259	57.259	57.259
Caa-C	6	0	0	0	0	0	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40
IG	953	0	0.328	0.779	1.01	1.248	1.618	2.137	2.955	3.381	4.705	5.614	5.938	6.116	6.116	6.312	6.312	6.312	6.312	6.312	6.758
SG	293	0.709	4.815	6.77	10.491	13.958	21.865	24.418	24.984	27.475	32.242	38.437	40.221	42.165	42.165	42.165	42.165	43.31	44.491	44.491	44.491
All	1246	0.163	1.348	2.135	3.128	4.06	6.007	6.935	7.701	8.504	10.422	12.173	12.712	13.154	13.154	13.317	13.317	13.491	13.671	14.042	14.617



## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/82																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	96	0	0	0	0	0	1.198	1.198	1.198	2.448	2.448	2.448	2.448	2.448	2.448	2.448	2.448	2.448	2.448	2.448	2.448
Aa	146	0	0	0	0	0	0.752	2.285	2.285	2.285	2.285	2.285	2.285	2.285	3.395	3.395	3.395	3.395	3.395	4.65	4.65
A	398	0.255	0.255	0.255	0.255	1.118	1.118	1.766	1.766	3.169	3.905	3.905	4.338	4.338	4.338	4.338	4.338	4.338	4.865	5.406	8.764
Baa	326	0.317	0.317	1.369	2.097	2.477	3.291	4.164	5.55	7.99	10.007	11.057	11.057	11.057	11.057	11.057	11.057	11.057	11.833	12.639	12.639
Ba	255	2.783	5.303	7.977	11.676	18.565	20.729	21.332	24.01	28.437	32.622	34.547	36.625	36.625	36.625	36.625	37.973	39.416	39.416	39.416	42.563
B	43	2.353	9.676	14.838	17.63	30.063	30.063	30.063	30.063	35.443	54.81	54.81	54.81	54.81	54.81	54.81	54.81	54.81	54.81	54.81	54.81
Caa-C	12	25	51.471	51.471	51.471	61.176	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882	70.882
IG	966	0.211	0.211	0.546	0.777	1.257	1.763	2.563	2.98	4.423	5.32	5.639	5.813	5.813	6.007	6.007	6.007	6.007	6.444	7.121	8.519
SG	310	3.595	7.726	10.65	14.079	21.816	24.05	24.548	26.775	31.101	36.754	38.386	40.159	40.159	40.159	40.159	41.288	42.487	42.487	42.487	45.131
All	1276	1.036	2.029	2.97	3.943	6.073	6.958	7.69	8.462	10.43	12.131	12.654	13.084	13.084	13.242	13.242	13.412	13.588	13.951	14.513	16.061
1/1/83																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	98	0	0	0	0	2.395	2.395	2.395	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697	3.697
Aa	222	0	0	0	0	0.487	1.994	1.994	1.994	1.994	1.994	1.994	1.994	2.707	2.707	2.707	2.707	2.707	2.707	3.542	4.411
A	426	0	0	0	0.262	0.262	0.843	0.843	2.102	3.416	4.117	4.497	4.497	4.497	4.497	4.497	4.497	4.497	4.993	6.534	7.082
Baa	272	0	1.167	1.575	3.302	3.776	4.299	5.395	6.546	7.748	7.748	7.748	7.748	7.748	7.748	7.748	7.748	8.694	10.657	12.7	14.829
Ba	230	0.911	2.394	4.516	12.154	14.205	17.368	21	26.13	31.769	31.769	33.236	33.236	33.236	33.236	35.066	36.948	38.918	40.954	45.098	49.321
B	113	6.364	11.117	18.03	25.386	28.702	29.891	32.613	40.541	48.603	53.743	56.634	56.634	56.634	56.634	56.634	56.634	56.634	56.634	56.634	56.634
Caa-C	10	42.105	65.263	65.263	65.263	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842	76.842
IG	1018	0	0.305	0.41	0.958	1.423	2.16	2.415	3.344	4.17	4.465	4.626	4.626	4.804	4.804	4.804	4.804	5.008	5.636	6.933	7.84
SG	353	3.835	6.998	10.691	18.027	20.91	23.23	26.417	32.473	38.739	40.383	42.232	42.232	42.232	42.232	43.423	44.694	46.011	47.378	50.185	53.072
All	1371	0.967	1.968	2.927	5.033	6.026	7.088	7.904	9.732	11.426	11.915	12.316	12.316	12.465	12.465	12.625	12.79	13.132	13.837	15.291	16.433

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/84																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	80	0	0	0	1.449	1.449	1.449	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078	3.078
Aa	238	0	0	0	0.899	1.832	1.832	1.832	1.832	1.832	1.832	1.832	2.482	2.482	2.482	2.482	2.482	2.482	3.238	4.024	4.024
A	454	0	0.228	0.467	0.718	1.504	1.775	2.909	4.091	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	5.166	6.543	7.033	7.568
Baa	281	0.362	0.362	0.77	1.225	1.729	2.789	3.909	5.085	5.085	5.77	5.77	5.77	5.77	5.77	5.77	6.703	8.667	11.729	13.868	13.868
Ba	247	0.832	3.488	11.671	14.397	18.146	21.69	27.255	32.482	33.468	34.577	34.577	34.577	34.577	36.116	36.116	37.82	39.571	41.375	45.039	45.039
B	120	6.751	12.851	20.268	24.182	27.363	32.372	42.663	48.124	50.43	55.648	55.648	55.648	55.648	55.648	59.872	59.872	59.872	59.872	59.872	59.872
Caa-C	2	100																			
IG	1053	0.096	0.195	0.402	0.951	1.65	2.013	2.899	3.688	3.97	4.124	4.124	4.296	4.296	4.296	4.296	4.492	5.097	6.552	7.427	7.661
SG	369	3.324	7.121	15.006	18.147	21.68	25.743	32.937	38.186	39.544	41.84	41.84	41.84	41.84	42.898	44.063	45.266	46.51	47.799	50.442	50.442
All	1422	0.927	1.962	4.065	5.233	6.574	7.713	9.821	11.407	11.865	12.367	12.367	12.508	12.508	12.66	12.818	13.143	13.814	15.199	16.288	16.483
1/1/85																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	81	0	0	0	0	0	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626	1.626
Aa	296	0	0	0	0.789	0.789	0.789	0.789	0.789	0.789	0.789	1.394	1.394	1.394	1.394	1.394	1.394	2.101	2.84	2.84	2.84
A	518	0	0.21	1.337	2.296	2.547	3.866	4.968	5.258	5.258	5.258	5.258	5.258	5.258	5.258	5.258	5.68	6.547	7.468	7.966	7.966
Baa	275	0	0.813	1.272	1.788	2.876	3.447	4.643	5.287	5.997	5.997	5.997	5.997	5.997	5.997	8.051	10.215	13.603	14.787	14.787	14.787
Ba	292	1.413	6.753	9.361	12.866	18.452	24.098	29.643	31.181	32.041	32.041	33.071	33.071	34.266	34.266	35.65	37.112	40.218	43.364	43.364	43.364
B	149	7.483	16.843	22.974	26.36	30.568	42.248	47.198	49.445	54.767	54.767	54.767	54.767	54.767	54.767	59.075	59.075	59.075	59.075	59.075	59.075
Caa-C	5	0	0	0	33.333	33.333	33.333	33.333	33.333	33.333	33.333	100									
IG	1170	0	0.277	0.876	1.629	1.968	2.797	3.537	3.802	3.948	3.948	4.112	4.112	4.112	4.112	4.491	5.078	6.287	7.134	7.36	7.36
SG	446	3.448	10.116	13.976	17.729	22.781	30.274	35.527	37.195	39.079	39.079	40.565	40.565	41.426	42.394	43.432	44.531	46.866	49.254	49.254	49.254
All	1616	0.95	2.966	4.431	5.948	7.405	9.689	11.333	11.858	12.322	12.322	12.717	12.717	12.859	13.008	13.473	14.114	15.439	16.481	16.666	16.666

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/86																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	292	0	0	0.789	0.789	1.23	1.23	1.23	1.23	1.23	1.828	1.828	1.828	1.828	1.828	1.828	2.55	3.289	3.289	3.289	3.289
A	576	0	0.19	0.79	1.207	1.865	2.549	2.549	2.549	2.549	2.549	2.549	2.549	2.549	2.549	3.254	3.986	4.773	5.198	5.198	5.647
Baa	308	1.01	1.387	3.077	3.962	5.813	7.269	8.317	8.905	8.905	8.905	8.905	8.905	8.905	10.608	11.497	13.331	15.216	15.216	15.216	15.216
Ba	357	2.047	5.965	8.572	13.639	20.319	26.802	28.671	30.789	32.327	33.158	33.158	35.168	35.168	35.168	37.761	43.294	44.729	44.729	44.729	46.355
B	187	11.602	17.495	21.44	25.408	34.91	40.67	46.458	49.913	49.913	49.913	49.913	49.913	53.144	60.953	60.953	60.953	60.953	60.953	60.953	60.953
Caa-C	10	23.529	23.529	40.523	40.523	40.523	40.523	40.523	40.523	40.523	100										
IG	1284	0.24	0.412	1.239	1.625	2.431	3.062	3.288	3.412	3.412	3.552	3.552	3.552	3.552	3.88	4.387	5.256	6.167	6.361	6.361	6.57
SG	554	5.644	10.207	13.493	18.111	25.598	31.723	34.701	37.146	38.235	39.434	39.434	40.859	41.68	43.489	45.388	49.434	50.487	50.487	50.487	51.666
All	1838	1.855	3.313	4.829	6.317	8.739	10.589	11.378	11.961	12.17	12.503	12.503	12.747	12.874	13.408	14.097	15.377	16.271	16.429	16.429	16.771
1/1/87																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	312	0	0	0	0.394	0.394	0.394	0.394	0.394	0.945	0.945	0.945	0.945	0.945	0.945	1.612	2.293	2.293	2.293	2.293	2.293
A	543	0	0	0.409	1.262	1.925	1.925	1.925	1.925	1.925	1.925	1.925	1.925	1.925	2.271	2.99	3.758	4.583	4.583	5.017	5.017
Baa	338	0	1.049	1.42	3.372	5.006	6.31	7.269	7.269	7.269	7.269	7.922	7.922	9.333	10.067	11.572	12.341	12.341	12.341	12.341	12.341
Ba	462	2.73	4.252	9.068	15.816	22.846	25.454	28.518	30.233	31.496	32.206	33.83	34.775	34.775	37.005	40.571	44.324	44.324	44.324	45.809	45.809
B	270	6.489	14.02	20.744	32.026	40.224	46.118	48.151	48.151	48.151	48.151	48.151	50.145	54.677	59.326	61.791	67.452	67.452	67.452	67.452	67.452
Caa-C	10	20	30.667	30.667	30.667	30.667	30.667	30.667	30.667	65.333	65.333	65.333	65.333	65.333	65.333	65.333	65.333	65.333	65.333	65.333	65.333
IG	1325	0	0.249	0.511	1.422	2.087	2.39	2.612	2.612	2.738	2.738	2.876	2.876	3.172	3.479	4.269	4.928	5.275	5.275	5.462	5.462
SG	742	4.357	8.248	13.692	21.96	29.28	32.935	35.598	36.731	37.996	38.468	39.533	40.78	42.173	45.101	48.216	52.392	52.392	52.392	53.427	53.427
All	2067	1.558	3.075	5.052	8.239	10.786	11.956	12.77	13.035	13.412	13.511	13.827	14.049	14.514	15.236	16.355	17.526	17.801	17.801	18.099	18.099

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/88																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	333	0	0.657	1.001	1.001	1.001	1.001	1.001	1.482	1.482	1.482	1.482	1.482	2.05	2.631	3.222	3.222	3.222	3.222	3.222	3.222
A	543	0	0.195	0.803	1.431	1.431	1.431	1.431	1.431	1.431	1.431	1.431	1.431	1.431	2.121	2.487	3.271	3.271	3.689	3.689	3.689
Baa	330	0	0.333	1.384	2.837	3.991	5.263	5.263	5.263	5.263	5.83	5.83	6.454	7.106	9.118	10.511	10.511	10.511	10.511	10.511	10.511
Ba	503	1.259	6.609	12.567	20.234	22.673	25.575	26.523	27.577	28.754	30.092	30.856	31.705	33.526	38.45	42.695	42.695	42.695	44.012	44.012	47.211
B	337	6.202	13.086	25.333	33.786	39.494	43.032	44.72	46.694	46.694	47.92	53.872	57.42	61.291	63.503	68.537	68.537	68.537	68.537	68.537	68.537
Caa-C	11	28.571	28.571	28.571	28.571	28.571	28.571	28.571	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286	64.286
IG	1345	0	0.319	0.902	1.508	1.785	2.088	2.088	2.203	2.203	2.328	2.328	2.464	2.744	3.616	4.223	4.542	4.542	4.714	4.714	4.714
SG	851	3.582	9.48	17.836	25.712	29.341	32.43	33.623	35.304	36.058	37.328	39.786	41.451	43.841	47.759	52.023	52.023	52.023	52.929	52.929	55.068
All	2196	1.365	3.733	7.028	9.986	11.258	12.325	12.637	13.136	13.313	13.686	14.178	14.591	15.238	16.584	17.761	18.01	18.01	18.28	18.28	18.577
1/1/89																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	332	0.618	0.618	0.618	0.618	0.618	0.618	1.071	1.071	1.071	1.071	1.071	1.601	2.147	2.698	2.698	2.698	2.698	2.698	2.698	4.183
A	573	0	0.185	0.758	0.758	0.758	0.758	0.758	0.758	0.758	0.758	0.758	0.758	1.7	2.032	2.387	2.387	2.767	2.767	2.767	4.081
Baa	346	0.596	1.224	1.876	2.911	3.289	3.289	3.289	3.289	3.773	3.773	4.308	4.869	7.176	8.984	9.625	9.625	9.625	9.625	9.625	10.421
Ba	479	3.04	9.752	17.576	20.06	23.007	23.439	24.415	26.052	27.289	29.428	30.225	32.794	37.429	43.436	43.436	43.436	43.436	43.436	46.535	49.93
B	374	8.72	22.848	31.087	37.312	41.127	43.744	46.826	46.826	49.894	53.606	56.461	59.627	61.462	65.629	65.629	65.629	68.273	68.273	68.273	70.916
Caa-C	12	25	43.75	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813	57.813
IG	1405	0.291	0.519	0.914	1.166	1.259	1.259	1.364	1.364	1.477	1.477	1.599	1.852	2.901	3.584	3.872	3.872	4.029	4.029	4.029	5.104
SG	865	5.801	15.802	23.843	27.808	31.055	32.337	34.094	35.088	36.969	39.605	41.09	43.768	47.301	52.442	52.442	52.442	53.241	53.241	55.13	58.155
All	2270	2.362	6.101	9.068	10.49	11.509	11.861	12.387	12.627	13.13	13.661	14.033	14.711	16.125	17.5	17.724	17.724	17.969	17.969	18.24	19.509

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/90																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	377	0	0	0	0	0	0.368	0.368	0.368	0.368	0.368	0.368	0.824	1.29	1.29	1.29	1.29	1.29	1.29	2.535	4.511
A	600	0	0	0	0	0	0	0	0	0	0	0.28	0.569	0.872	1.195	1.195	1.54	1.54	1.54	2.736	4.402
Baa	340	0	0.629	0.629	0.629	0.629	0.629	0.629	0.629	0.629	1.16	1.719	4.592	7	7.646	7.646	7.646	7.646	7.646	8.486	11.076
Ba	466	3.405	11.805	14.42	17.495	18.292	19.631	20.606	21.682	23.54	24.228	26.457	32.114	36.522	36.522	36.522	36.522	36.522	39.195	43.487	43.487
B	387	15.47	24.827	32.44	36.116	38.319	40.972	41.775	45.625	49.21	52.032	56.75	58.63	64.995	64.995	64.995	67.795	67.795	67.795	70.723	76.887
Caa-C	20	57.895	71.93	71.93	71.93	71.93	71.93	71.93	71.93	71.93	100										
IG	1492	0	0.142	0.142	0.142	0.142	0.236	0.236	0.236	0.236	0.347	0.577	1.41	2.152	2.413	2.413	2.556	2.556	2.556	3.539	5.243
SG	873	9.982	18.878	23.546	26.795	28.149	29.964	30.842	32.827	35.157	36.909	39.766	43.993	48.636	48.636	48.636	49.397	49.397	51.127	54.781	56.813
All	2365	3.589	6.687	8.171	9.142	9.52	10.061	10.277	10.734	11.217	11.641	12.348	13.732	15.085	15.289	15.289	15.515	15.515	15.764	17.063	18.693
1/1/91																					
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aaa	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	422	0	0	0	0	0.316	0.316	0.316	0.316	0.316	0.316	0.724	1.148	1.148	1.148	1.148	1.148	1.148	2.297	4.709	4.709
A	589	0	0	0	0	0	0	0	0	0	0.274	0.556	0.851	1.163	1.163	1.496	1.496	1.496	2.655	4.274	4.716
Baa	370	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.712	1.167	3.503	5.467	5.994	5.994	5.994	6.612	7.275	7.972	9.41	9.41
Ba	367	4.892	6.202	8.097	8.535	9.527	10.61	11.21	13.291	14.079	16.67	22.32	26.435	26.435	27.682	27.682	27.682	27.682	32.503	34.303	34.303
B	336	12.361	22.016	27.379	30.059	33.874	34.643	39.278	42.715	45.38	49.869	51.659	59.552	59.552	59.552	62.441	62.441	65.571	68.85	76.179	76.179
Caa-C	20	47.368	47.368	47.368	47.368	47.368	47.368	47.368	47.368	73.684	73.684	100									
IG	1543	0.066	0.066	0.066	0.066	0.153	0.153	0.153	0.153	0.255	0.466	1.231	1.916	2.156	2.156	2.288	2.427	2.573	3.489	5.078	5.249
SG	723	9.531	14.604	17.988	19.394	21.554	22.47	24.551	27.011	28.895	32.009	36.638	41.707	41.707	42.49	43.348	43.348	44.308	48.322	51.692	51.692
All	2266	3.009	4.496	5.434	5.798	6.385	6.594	7.033	7.499	7.907	8.588	9.921	11.226	11.424	11.529	11.748	11.863	12.106	13.372	15.096	15.239

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/92																				
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Aaa	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	434	0	0	0	0.284	0.284	0.284	0.284	0.284	0.284	0.655	0.655	0.655	0.655	0.655	0.655	0.655	0.655	1.759	2.369
A	662	0	0	0	0	0	0	0	0	0.236	0.479	0.987	1.254	1.254	1.254	1.254	1.254	2.903	4.984	5.745
Baa	383	0	0	0	0	0	0	0	0.401	0.817	2.978	4.36	4.86	4.86	5.408	5.988	6.601	7.232	8.525	8.525
Ba	348	0.309	1.035	1.035	1.978	2.495	3.069	5.02	6.504	8.138	13.387	19.005	19.005	20.146	21.403	21.403	21.403	26.474	28.409	28.409
B	266	9.218	16.183	20.03	24.695	27.086	30.949	34.552	37.307	43.577	45.457	51.632	51.632	51.632	51.632	51.632	51.632	54.968	66.226	66.226
Caa-C	26	29.787	35.404	35.404	35.404	35.404	44.632	44.632	63.088	63.088	81.544	81.544	81.544	81.544	81.544	81.544	100			
IG	1624	0	0	0	0.078	0.078	0.078	0.078	0.171	0.361	1.054	1.574	1.794	1.794	1.914	2.041	2.175	3.004	4.442	4.909
SG	640	5.201	8.734	10.35	12.74	13.94	15.985	18.374	20.66	23.702	28.157	33.546	33.546	34.284	35.095	35.095	36.05	40.243	45.024	45.024
All	2264	1.435	2.357	2.75	3.353	3.609	4.018	4.45	4.904	5.536	6.775	7.993	8.178	8.275	8.48	8.589	8.816	10.003	11.742	12.146
1/1/93																				
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Aaa	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.495	1.04	
A	716	0	0	0	0	0	0	0	0.201	0.618	1.053	1.284	1.284	1.284	1.284	1.284	2.449	3.982	4.321	
Baa	449	0	0	0.262	0.262	0.547	0.844	1.472	2.12	3.799	4.868	5.629	5.629	6.047	6.488	6.953	8.871	10.874	11.411	
Ba	374	0.572	0.572	2.749	3.54	4.427	5.944	8.197	9.45	13.475	17.765	17.765	17.765	18.705	19.696	19.696	23.319	25.963	25.963	
B	255	4.555	9.292	14.21	16.116	19.208	22.043	26.286	34.412	38.387	42.736	44.349	46.144	46.144	48.436	51.014	53.983	64.602	64.602	
Caa-C	23	29.268	29.268	36.714	45.152	45.152	45.152	72.576	72.576	100										
IG	1731	0	0	0.067	0.067	0.141	0.218	0.378	0.625	1.226	1.676	1.961	1.961	2.066	2.176	2.291	3.25	4.502	4.913	
SG	652	3.107	4.979	8.362	9.777	11.408	13.316	16.533	20.093	24.401	28.563	29.078	29.65	30.265	31.587	32.314	35.576	40.113	40.113	
All	2383	0.836	1.316	2.185	2.51	2.915	3.347	4.058	4.869	6.073	7.116	7.432	7.516	7.692	7.971	8.166	9.393	11.004	11.357	

## EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/94																		
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Aaa	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	406	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.539
A	850	0	0	0	0	0	0	0.159	0.489	0.832	1.194	1.194	1.194	1.194	1.194	2.126	3.6	3.872
Baa	514	0	0.209	0.209	0.436	0.673	1.91	2.425	3.771	4.625	5.237	5.237	5.579	5.943	6.33	8.398	10.616	11.089
Ba	425	0.246	1.859	2.151	3.13	4.989	8.315	11.115	14.154	17.424	18.047	18.047	18.828	19.696	19.696	22.951	28.924	28.924
B	343	4.056	8.266	11.409	13.259	16.683	21.483	27.582	32.576	37.97	42.004	45.45	45.45	48.247	49.84	53.422	57.304	57.304
Caa-C	40	5.263	11.184	21.633	21.633	21.633	33.243	33.243	57.518	57.518	57.518	57.518	57.518	57.518	57.518	57.518	57.518	57.518
IG	1888	0	0.057	0.057	0.119	0.184	0.519	0.727	1.234	1.612	1.933	1.933	2.022	2.117	2.216	3.147	4.347	4.706
SG	808	2.09	4.985	6.901	8.176	10.531	14.715	18.585	22.838	26.787	28.659	29.945	30.415	31.979	32.568	35.841	40.887	40.887
All	2696	0.614	1.469	1.988	2.358	2.952	4.106	5.042	6.258	7.293	7.88	8.089	8.236	8.549	8.715	9.935	11.594	11.898
1/1/95																		
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Aaa	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	447	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.432	0.918	
A	920	0	0	0	0	0	0.139	0.427	0.876	1.193	1.193	1.193	1.193	1.193	2.029	3.133	3.379	
Baa	532	0	0	0	0.44	1.583	2.06	3.559	4.086	4.368	4.368	4.687	5.032	5.403	7.394	9.533	9.989	
Ba	432	0.726	0.988	2.158	3.825	7.538	10.015	13.141	16.052	17.742	17.742	18.47	19.278	19.278	21.321	30.443	30.443	
B	462	4.26	6.734	9.547	12.819	16.651	22.713	31.722	38.882	43.451	46.037	46.747	48.348	49.279	52.384	54.652	54.652	
Caa-C	60	9.259	18.221	18.221	26.83	37.537	42.534	65.521	77.014	77.014								
IG	2012	0	0	0	0.116	0.414	0.601	1.118	1.457	1.672	1.672	1.753	1.839	1.93	2.787	3.893	4.226	
SG	954	2.956	4.762	6.66	9.467	13.574	17.805	24.212	29.257	32.285	33.556	34.259	35.437	35.884	38.388	43.939	43.939	
All	2966	0.935	1.487	2.038	2.878	4.127	5.259	7.096	8.457	9.243	9.485	9.679	9.954	10.101	11.188	12.918	13.192	

## EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)

1/1/96																
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Aaa	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	479	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0.846
A	992	0	0	0	0	0.122	0.377	0.641	0.923	0.923	0.923	0.923	0.923	1.853	2.838	3.057
Baa	615	0	0	0.181	0.743	1.327	2.753	3.397	3.856	4.102	4.366	4.944	4.944	6.603	8.742	9.128
Ba	462	0	0.736	2.404	6.445	8.513	12.62	15.478	17.372	17.372	18.606	19.298	20.078	21.835	29.603	29.603
B	541	1.369	4.234	9.06	12.018	18.447	26.431	34.198	38.898	41.953	42.636	44.252	45.23	49.612	54.411	55.835
Caa-C	75	13.986	20.13	27.151	42.374	48.439	61.33	66.486	66.486	66.486	66.486	66.486	66.486	66.486	66.486	66.486
IG	2209	0	0	0.051	0.208	0.425	0.935	1.231	1.483	1.55	1.622	1.773	1.773	2.613	3.679	3.973
SG	1078	1.648	3.807	7.386	11.628	15.962	22.2	27.361	30.427	31.81	32.74	33.804	34.624	37.386	43.47	44.05
All	3287	0.533	1.202	2.276	3.534	4.787	6.666	8.07	8.903	9.22	9.447	9.751	9.88	10.981	12.731	13.055
1/1/97																
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Aaa	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aa	522	0	0	0	0	0	0	0	0	0	0	0	0	0.344	0.728	
A	1057	0	0	0	0.109	0.336	0.573	1.079	1.079	1.079	1.079	1.079	2.094	2.992	3.192	
Baa	709	0	0.15	0.775	1.266	2.472	3.202	3.594	3.805	4.262	4.766	4.766	5.955	8.209	8.562	
Ba	557	0.192	1.721	5.903	9.443	12.393	15.632	17.507	17.507	18.483	19.03	19.65	21.048	27.21	27.21	
B	646	1.943	6.475	10.432	16.38	26.515	33.28	37.414	40.533	41.037	43.481	45.019	50.255	57.016	58.148	
Caa-C	85	14.815	25.096	38.37	48.642	65.209	69.302	69.302	69.302	69.302	69.302	69.302	69.302	69.302	69.302	
IG	2412	0	0.044	0.228	0.419	0.868	1.182	1.517	1.576	1.703	1.838	1.838	2.597	3.641	3.908	
SG	1288	2.049	5.667	10.235	15.288	22.348	27.295	30.156	31.633	32.346	33.718	34.688	37.607	43.645	44.098	
All	3700	0.698	1.895	3.399	4.966	7.204	8.706	9.628	9.992	10.236	10.606	10.776	11.867	13.671	13.958	



EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/98														
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	13
Aaa	113	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	563	0	0	0	0	0	0	0.247	0.247	0.247	0.247	0.247	0.559	0.913
A	1070	0	0	0.102	0.316	0.54	1.021	1.021	1.021	1.021	1.021	1.987	3.017	3.21
Baa	847	0.121	0.627	1.019	2.117	3.283	3.597	3.937	4.306	4.709	4.709	5.694	7.313	7.608
Ba	631	1.002	3.793	6.883	10.688	13.918	16.245	16.919	18.057	18.491	18.998	20.139	26.235	26.235
B	854	3.813	10.08	17.636	28.496	34.987	40.415	44.326	44.94	47.202	49.518	53.277	57.95	58.587
Caa-C	122	11.404	28.326	39.525	55.904	61.594	65.434	68.44	68.44	73.295	73.295	86.648	86.648	86.648
IG	2593	0.039	0.203	0.373	0.816	1.284	1.585	1.746	1.86	1.982	1.982	2.674	3.633	3.88
SG	1607	3.277	8.962	15.026	23.461	28.564	32.588	35.072	35.866	37.37	38.722	41.297	46.281	46.585
All	4200	1.255	3.403	5.598	8.693	10.624	12.012	12.807	13.094	13.539	13.83	14.872	16.596	16.843
1/1/99														
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11	12	
Aaa	101	0	0	0	0	0	0	0	0	0	0	0	0	
Aa	600	0	0	0	0	0	0.223	0.223	0.223	0.223	0.223	0.501	1.136	
A	1080	0	0	0.203	0.309	0.759	0.759	0.759	0.759	0.759	1.668	2.628	2.628	
Baa	961	0.106	0.546	1.468	2.698	3.1	3.391	3.704	4.215	4.215	5.257	7.103	7.357	
Ba	643	1.316	3.319	5.689	8.55	10.852	11.441	12.434	13.179	13.603	15.486	21.086	21.656	
B	1021	4.895	13.602	24.086	32.63	37.442	40.955	42.106	44.098	46.614	50.058	55.241	55.753	
Caa-C	239	18.575	29.4	48.821	55.772	61.783	66.795	66.795	69.009	69.009	74.644	74.644	74.644	
IG	2742	0.037	0.191	0.594	1.061	1.379	1.524	1.627	1.792	1.792	2.483	3.488	3.713	
SG	1903	5.44	12.198	21.081	27.461	31.466	33.981	34.954	36.388	37.763	40.348	45.112	45.592	
All	4645	2.214	4.94	8.541	11.129	12.671	13.548	13.901	14.399	14.735	15.826	17.625	17.897	

## EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/00												
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	11
Aaa	116	0	0	0	0	0	0	0	0	0	0	0
Aa	600	0	0	0	0	0	0	0	0	0	0	0.613
A	1146	0	0.186	0.38	0.793	0.903	0.903	0.903	0.903	2.02	3.35	3.35
Baa	1046	0.391	0.903	1.997	2.592	2.848	3.262	3.71	3.71	4.243	6.386	6.601
Ba	580	0.721	2.3	4.51	6.281	6.281	7.596	7.965	8.387	11.243	19.144	19.743
B	1106	6.026	16.616	25.709	31.063	34.574	36.124	39.252	41.384	44.278	50.185	50.622
Caa-C	276	19.549	42.176	52.456	59.396	66.164	67.545	69.399	69.399	73.771	79.6	79.6
IG	2908	0.14	0.397	0.862	1.234	1.367	1.508	1.658	1.658	2.284	3.499	3.704
SG	1962	6.373	15.974	23.135	27.512	30.151	31.555	33.479	34.72	37.428	43.596	44.044
All	4870	2.622	6.489	9.425	11.185	12.123	12.635	13.264	13.57	14.645	16.909	17.159
1/1/01												
Rating	n(0)	1	2	3	4	5	6	7	8	9	10	
Aaa	114	0	0	0	0	0	0	0	0	0	0	
Aa	661	0	0	0	0	0	0	0	0	0	0.557	
A	1185	0.172	0.442	0.729	0.729	0.729	0.729	0.729	2.139	3.226	3.378	
Baa	1034	0.198	1.569	2.142	2.39	2.791	3.224	3.224	3.568	5.799	5.799	
Ba	522	1.39	3.153	4.66	4.949	6.285	6.671	7.116	9.654	17.66	18.318	
B	1068	9.575	19.495	25.341	28.72	30.406	33.638	35.68	39.157	47.142	47.562	
Caa-C	260	31.902	43.875	55.355	62.866	65.223	66.841	66.841	69.999	73.999	73.999	
IG	2994	0.137	0.713	1.021	1.103	1.235	1.375	1.375	2.065	3.195	3.386	
SG	1850	10.33	18.133	23.31	26.131	27.722	29.765	31.006	33.923	41.231	41.689	
All	4844	3.979	7.168	9.132	10.076	10.625	11.259	11.551	12.698	15.073	15.311	

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/02										
Rating	n(0)	1	2	3	4	5	6	7	8	9
Aaa	132	0	0	0	0	0	0	0	0	0
Aa	668	0	0	0	0	0	0	0	0	0.533
A	1193	0.172	0.355	0.355	0.355	0.355	0.355	1.682	2.571	2.853
Baa	1135	1.096	1.489	1.595	1.824	1.949	1.949	2.397	4.485	4.485
Ba	541	1.377	3.367	4.366	5.506	6.49	6.876	8.662	14.785	15.377
B	817	4.534	9.895	12.558	14.696	18.057	19.648	24.905	35.894	37.211
Caa-C	315	28.862	42.698	52.006	54.367	58.662	61.562	63.484	70.124	70.124
IG	3128	0.461	0.672	0.71	0.789	0.832	0.832	1.512	2.544	2.775
SG	1673	8.066	13.72	16.761	18.518	20.985	22.181	25.523	33.754	34.636
All	4801	3.059	5.028	5.967	6.51	7.168	7.444	8.674	11.147	11.505
1/1/03										
Rating	n(0)	1	2	3	4	5	6	7	8	
Aaa	128	0	0	0	0	0	0	0	0	
Aa	607	0	0	0	0	0	0	0	0.572	
A	1171	0	0	0	0	0	1.285	2.025	2.3	
Baa	1109	0	0	0.213	0.329	0.329	0.466	1.795	1.795	
Ba	524	1.005	1.458	2.227	2.816	3.155	5.814	11.28	12.234	
B	807	2.114	3.809	5.83	8.668	9.995	14.401	26.042	27.522	
Caa-C	304	22.385	35.62	38.085	42.909	45.084	47.865	55.646	55.646	
IG	3015	0	0	0.078	0.119	0.119	0.685	1.437	1.662	
SG	1635	5.368	8.448	10.076	12.322	13.35	16.783	25.309	26.404	
All	4650	1.845	2.833	3.375	4.029	4.29	5.532	8.075	8.501	

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/04								
Rating	n(0)	1	2	3	4	5	6	7
Aaa	135	0	0	0	0	0	0	0
Aa	570	0	0	0	0	0.231	0.231	0.809
A	1142	0	0	0	0	1.355	1.714	1.98
Baa	1130	0	0.194	0.194	0.194	0.316	1.896	1.896
Ba	517	0.409	0.641	1.453	1.767	3.903	9.428	9.874
B	889	0.844	2.103	4.246	5.258	8.633	20.414	21.559
Caa-C	262	12.288	18.789	24.226	27.67	32.95	47.066	48.406
IG	2977	0	0.073	0.073	0.073	0.695	1.404	1.617
SG	1668	2.446	4.097	6.226	7.299	10.442	20.232	21.151
All	4645	0.855	1.447	2.098	2.397	3.671	6.684	7.077
1/1/05								
Rating	n(0)	1	2	3	4	5	6	
Aaa	135	0	0	0	0	0	0	
Aa	582	0	0	0	0.21	0.21	1.005	
A	1175	0	0	0	0.941	1.388	1.639	
Baa	1133	0.182	0.182	0.182	0.637	1.986	1.986	
Ba	516	0	0.721	1.003	3.505	9.231	9.978	
B	944	1.025	2.91	3.902	7.609	20.057	21.011	
Caa-C	322	6.667	11.106	14.544	22.395	41.02	45.032	
IG	3025	0.068	0.068	0.068	0.645	1.305	1.554	
SG	1782	1.745	3.741	4.943	8.943	20.14	21.489	
All	4807	0.674	1.347	1.72	3.291	6.958	7.523	

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/06						
Rating	n(0)	1	2	3	4	5
Aaa	135	0	0	0	0	0
Aa	610	0	0	0.19	0.19	0.898
A	1201	0	0	0.857	1.265	1.496
Baa	1136	0	0	0.32	1.238	1.238
Ba	551	0.197	0.197	2.74	9.873	9.873
B	1014	1.177	2.084	7.102	18.965	20.838
Caa-C	342	6.041	10.321	20.155	40.116	46.638
IG	3082	0	0	0.493	0.98	1.209
SG	1907	1.764	2.993	8.049	19.732	21.772
All	4989	0.654	1.075	3.047	7.102	7.91
1/1/07						
Rating	n(0)	1	2	3	4	
Aaa	147	0	0	0	0	
Aa	642	0	0.17	0.17	0.805	
A	1201	0	0.804	1.185	1.399	
Baa	1118	0	0.299	1.372	1.372	
Ba	551	0	1.768	8.309	8.578	
B	1163	0	4.661	17.066	20.666	
Caa-C	328	5.98	18.438	41.432	45.843	
IG	3108	0	0.456	0.98	1.191	
SG	2042	0.959	6.045	18.456	21.245	
All	5150	0.367	2.509	7.288	8.424	

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/08				
Rating	n(0)	1	2	3
Aaa	176	0	0	0
Aa	734	0.556	0.556	1.081
A	1127	0.456	1.039	1.258
Baa	1096	0.472	1.082	1.082
Ba	538	1.163	7.082	7.317
B	1162	2.07	13.851	17.052
Caa-C	422	14.778	38.752	45.574
IG	3133	0.46	0.879	1.077
SG	2122	4.373	17.071	20.211
All	5255	2.029	7.282	8.642
1/1/09				
Rating	n(0)	1	2	
Aaa	155	0	0	
Aa	675	0	0.181	
A	1136	0.181	0.387	
Baa	1082	0.862	0.862	
Ba	521	2.405	2.847	
B	970	7.411	8.981	
Caa-C	526	34.359	43.535	
IG	3048	0.372	0.487	
SG	2017	13.137	16.336	
All	5065	5.423	6.76	

EXHIBIT 42

**Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2010 (Data in Percent)**

1/1/10

Rating	n(0)	1
Aaa	101	0
Aa	572	0
A	1132	0.194
Baa	1161	0
Ba	503	0
B	891	0.482
Caa-C	447	12.014
IG	2966	0.074
SG	1841	3.174
All	4807	1.283

## Guide to Data Tables and Charts

In this section we briefly describe the interpretation of some of the Exhibits contained in this report. Methodological details are discussed in separate sections below.

Exhibit 13 was derived by mapping Moody's ratings to a linear scale, then taking the median values of the numerically mapped ratings.

Exhibit 22 shows average senior unsecured recovery rates by letter rating and year prior to default. Each cell in the table indicates the average recovery rate on senior unsecured bonds with a specific rating within  $T$  years of default. For example, the 36.06% two-year B recovery rate reported in Exhibit 22 indicates the average recovery rate on B rated issues that default at some time within a two-year period, not recovery rate for issuers rated B *exactly* two years before default.<sup>13</sup> Together with issuer-weighted average cumulative default rates, these multi-period recovery estimates are used to calculate cumulative expected credit loss rates, as presented in Exhibit 23.

Exhibits 33 through 37 show issuer-weighted historical average default rates by rating category over various investment horizons. These data were generated by averaging the multi-year default rates of cohorts formed at monthly intervals. In addition to their being statements of historical fact, these data are also useful proxies for *expected* default rates. For example, over a five-year period a portfolio of B-rated issuers defaulted at a 26.5% average rate between 1983 and 2010 (see Exhibit 35). For an investor with a five-year exposure to a B-rated debt obligation or counterparty, this estimate also happens to be the best estimate of the expected risk of default for a B-rated exposure based on the available historical data, particularly over long investment horizons.

Exhibit 41 shows average cumulative volume-weighted default rates by rating category. Whereas issuer-based default rates weight each issuer equally, these data weight each issuer by the total volume of defaulted debt; larger defaults receive relatively more weight. Average default rates based on debt volume affected are less suitable estimates of expected default risk. One reason is that issuer default volumes vary considerably over time. On average, a leveraged corporate issuer defaults on approximately \$300 million of bonds. However, that total has been as high as \$30 billion (WorldCom). Issuer-based default rates receive particular emphasis in the rating process because the expected likelihood of default of a debt issuer holding a given rating is expected to be the same regardless of differences in the nominal sizes of the exposures.

Exhibit 42 shows the cumulative issuer-weighted historical default rates of cohorts formed at annual intervals between the years 1970 and 2010 (January 1 of each year). These data are a subset of the data used to calculate the issuer-weighted averages shown in Exhibits 34 (which, again, are based on cohorts formed at monthly time intervals). The default rates in Exhibit 42 may be useful for scenario analysis. For example, if one believed that future default rates for a given pool of issuers will behave as they did in, say, 1997, then one can use the January 1, 1997 cohort cumulative default rates as proxies for expected default rates.

<sup>13</sup> The details of the calculation may be found in Moody's Special Comment, "[Recovery Rates on Defaulted Bonds and Preferred Stocks](#)", December 2003.



## Methodology and Data Sources

### Moody's Definition of Default

Moody's definition of default is applicable only to debt or debt-like obligations (e.g., swap agreements). Four events constitute a debt default under Moody's definition:

- a) a missed or delayed disbursement of a contractually-obligated interest or principal payment (excluding missed payments cured within a contractually allowed grace period), as defined in credit agreements and indentures;
- b) a bankruptcy filing or legal receivership by the debt issuer or obligor that will likely cause a miss or delay in future contractually-obligated debt service payments;
- c) a distressed exchange whereby 1) an obligor offers creditors a new or restructured debt, or a new package of securities, cash or assets that amount to a diminished financial obligation relative to the original obligation and 2) the exchange has the effect of allowing the obligor to avoid a bankruptcy or payment default in the future; or
- d) a change in the payment terms of a credit agreement or indenture imposed by the sovereign that results in a diminished financial obligation, such as a forced currency re-denomination (imposed by the debtor himself, or his sovereign) or a forced change in some other aspect of the original promise, such as indexation or maturity.<sup>14</sup>

Moody's definition of default does not include so-called "technical defaults," such as maximum leverage or minimum debt coverage violations, unless the obligor fails to cure the violation and fails to honor the resulting debt acceleration which may be required. Also excluded are payments owed on long-term debt obligations which are missed due to purely technical or administrative errors which are 1) not related to the ability or willingness to make the payments and 2) are cured in very short order (typically, 1-2 business days).

### Rating Migration Calculations

A rating migration matrix completely summarizes changes in credit ratings over a given time horizon. The cells of the matrix are discrete-time estimates of rating migration probabilities. They show rate of rating change measured at two points in time; e.g. the start and end of one year. When calculating credit rating migration rates, Moody's treats rating changes, rating withdrawals, and defaults as mutually exclusive states. For example, an issuer that is downgraded on the day of default is counted only as a default, not a downgrade or a downgrade and default. Similarly, an issuer whose rating is withdrawn on the day of default is counted as a default, not a withdrawal.

The probability that an issuer's rating *i* held on cohort date *y* will transition to rating *j* (which includes default and withdrawal) over a time horizon *T* is calculated as:

<sup>14</sup> Moreover, unlike a general tax on financial wealth, the imposition of a tax by a sovereign on the coupon or principal payment on a specific class of government debt instruments (even if retroactive) would represent a default. Targeted taxation on government securities would represent a default even if the government's action were motivated by fairness or other considerations, rather than inability or unwillingness to pay.

$$p_{ij}^y(T) = \frac{n_{ij}^y(T)}{n_i^y(0)}$$

The weighted average rating migration rate for all cohorts  $y$  in the historical data set  $Y$  is calculated as:

$$\bar{p}_{ij}^y(T) = \frac{\sum_{y \in Y} n_{ij}^y(T)}{\sum_{y \in Y} n_i^y(0)}$$

### Default Rate Calculation

Moody's method for calculating cumulative default rates is a discrete-time approximation of the nonparametric continuous-time hazard rate approach.<sup>15</sup> Cumulative default rates are calculated from marginal default rates, which represent the probability that an issuer that has survived in the sample through a particular date will default over the next time interval (typically, one year) following that date.

The marginal default rate for issuers holding rating  $i$  on cohort date  $y$  is the ratio of the number of defaulting issuers in period  $t$  divided by the number of issuers exposed to the risk of default in period  $t$ :

$$d_i^y(t) = \frac{x_i^y(t)}{n_i^y(t) - x_i^y(t-1) - \frac{1}{2}[w_i^y(t) + w_i^y(t-1)]}$$

The denominator of the marginal default rate adjusts for defaults that occur prior to time interval  $t$ , as well as rating withdrawals,  $w(t)$ , that occur in periods prior to interval  $t$  and a small adjustment for withdrawals that occur in time interval  $t$ . Cumulative default rates for investment horizons of length  $T$ ,  $D(T)$ , are built up from the marginal default rates:

$$D_i^y(T) = 1 - \prod_{t=1}^T [1 - d_i^y(t)]$$

Or, expanding the above equation (and dropping indices for brevity):

$$D(T) = d(1) + d(2)[1 - d(1)] + d(3)[(1 - d(1))(1 - d(2))] + \dots + d(T)\left(\prod_{t=1}^{T-1} [1 - d(t)]\right)$$

In the first time period, a fraction of the credit exposures in the cohort either defaults or survives. The credit exposures that survive period one may then go on to default or survive in period two; those that survive period two may go on to default or survive in period three, etc. Because the time periods are non-overlapping and the probability of default in each period is assumed to be independent, the  $T$ -period cumulative default rate is defined as one minus the product of the  $T$  marginal survival rates.

<sup>15</sup> See Moody's Global Credit Research "[Measuring Corporate Default Rates](#)", November 2006

The calculation of the average cumulative default rate for rating class  $i$ ,  $\bar{D}_i(T)$ , is derived from the weighted average marginal default rates,  $\bar{d}_i(t)$ , calculated from all the available cohort marginal default rates in the historical data set  $Y$ :

$$\bar{D}_i(T) = 1 - \prod_{t=1}^T [1 - \bar{d}_i(t)]$$

where

$$\bar{d}_i(t) = \frac{\sum_{y \in Y} x_i^y(t)}{\sum_{y \in Y} n_i^y(t)}$$

The default rates calculated in multi-year rating migration matrices are not comparable to those calculated using Moody's discrete-time hazard rate method described above. Rating migration matrices account for rating withdrawals separately (in the column labeled WR) while the hazard rate method incrementally adjusts the denominator of the marginal default rate to remove rating withdrawals. Occasionally, withdrawal-adjusted rating migration matrices are calculated as follows:

$$p_{ij}^y(T)^* = \frac{p_{ij}^y(T)}{(1 - p_{iw}^y(T))}$$

Using this method, all issuers whose ratings are withdrawn are removed. In effect, data for issuers whose ratings are withdrawn is completely discarded. This method generally yields higher default rate estimates than the hazard rate method. Hence, Moody's hazard rate-derived default rate estimates lay between unadjusted migration matrix-derived default rates and withdrawal-adjusted migration matrix-derived default rates.

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## Recovery Rate Calculations

Moody's estimates defaulted debt recovery rates using market bid prices observed roughly 30 days after the date of default. Recovery rates are measured as the ratio of price to par value. Using post-default prices to measure recovery (or its complement, loss severity) parallels common practice in the credit default swaps market. Moreover, recovery rates measured in this way are most relevant for cash bond investors who liquidate their holdings shortly after default as often required by their portfolio governance rules or their own investment objectives. For investors holding defaulted securities until ultimate resolution, prices observed shortly after default are generally accepted as the market's estimate of discounted expected ultimate recovery rates.

The alternative approach of directly measuring ultimate realized recoveries presents a number of estimation challenges, including the appropriate discount rate to apply to cash-flows and valuing the assets used to pay creditor claims, which may include illiquid new securities (e.g., equity and derivative instruments) as well as physical assets. The table below defines the various ways Moody's calculates

recovery rates.<sup>16</sup> For the purposes of measuring expected credit loss rates, we rely on issuer-weighted mean recovery rates.

Statistic	Definition
Issuer-Weighted Mean Recovery Rates	They are derived by estimating mean recovery rates for each issuer, then averaging them across issuers. They are useful for predicting recovery rates for portfolios that are well diversified across issuers.
Value-Weighted Mean Recovery Rates	They represent the average of recovery rates on all defaulted issuers, weighted by the face value of those issues. These estimates are useful for predicting recovery rates on the market portfolio.
Issuer-Weighted Median Recovery Rates	They are estimated as median of issuer-weighted recovery rates and are used for predicting the most likely recovery rate for a randomly selected issuer.
Issue-Weighted Mean Recovery Rates	They are estimated using recovery rates for each issue and taking the average of all issues. While this measure is widely reported, it is useful only for predicting the average recovery rate on a portfolio of default bonds diversified across issues but without reference to issuer or issue size.

### Credit Loss Rate Calculations

Moody's credit ratings are opinions of relative expected credit losses. Credit losses are therefore a function of both probability of default (PD) as well as the severity of default (LGD). The expected credit loss rate for rating category *i* is calculated as the product of the T-horizon average issuer-weighted default rate and the T-horizon average issuer-weighted senior unsecured loss severity rate (where  $\bar{r}(T)$  is the average senior unsecured recovery rate at horizon T):

$$l_i(T) = \bar{D}_i(T) \times (1 - \bar{r}_i(T))$$

### CAP Curve and Accuracy Ratio

In addition to assigning low ratings to issuers that ultimately default, the effectiveness of a rating system depends on its ability to assign high credit ratings to issuers that do not default. In other words, an efficient rating system is able to separate the low credit risks from the high credit risks. A metric designed to measure this aspect of ratings performance is the cumulative accuracy profile (CAP) plot.<sup>17</sup> The CAP plot graphs the cumulative proportion of defaults from a portfolio (the y-axis) against the proportion of issuers exposed to the risk of default (the x-axis), sorted by riskiness. A rating system that randomly identified defaults from non-defaults would plot a line directly on the 45-degree line. The more powerful the discriminatory power of the rating system, the further the CAP curve bows toward the top left corner.

- » CAP curves are powerful tools for visualizing rating performance, but can be unwieldy from making comparisons over many time periods. A summary measure of rating accuracy that can be derived from the CAP curve is the accuracy ratio (AR). The accuracy ratio is the ratio of the area between the CAP curve and the 45-degree line to the total area above the 45-degree line divided by survival rate (i.e. 1-default rate). A rating system that perfectly differentiates defaults from non-

<sup>16</sup> This table is derived from Moody's Special Comment "[Recovery Rates on Defaulted Bonds and Preferred Stocks](#)", December 2003

<sup>17</sup> For a more detailed discussion of rating accuracy metrics see Moody's Global Credit Research "[Measuring the Performance of Corporate Bond Ratings](#)", November 2006

defaults would score an AR of 100%, while a rating system that had zero predictive ability would score 50%.<sup>18</sup>

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### Data Sources

Moody's bases the results of this study on its proprietary database of ratings and defaults for both financial and non-financial corporate bond and/or loan issuers. Sovereign and sub-sovereign debt issuers, structured finance securities, private placements, and issuers with only short-term debt ratings are excluded unless otherwise noted. In total, Moody's data covers the credit experiences of approximately 20,000 corporate issuers that sold long-term public debt at some time between 1920 and 2010. As of January 1, 2010 roughly 5,000 corporate issuers held a Moody's long-term bond, loan, or corporate family rating.

Moody's database of corporate defaults covers approximately 5,000 long-term debt defaults by issuers both rated and non-rated by Moody's. Additional data sources, such as Barclay Fixed Income Index data, supplemented Moody's proprietary data in the construction of the aggregate dollar volume-weighted default rates. Defaulted debt pricing data was derived from Bloomberg, Reuters, IDC, Markit, and TRACE. The majority of these market quotes represent an actual bid on the debt instrument, although no trade may have occurred at that price. Over the 1982-2010 period, the dataset consists includes post-default prices for roughly 6,000 defaulted instruments issued by over 2,700 defaulting corporations. Moody's makes the 1970-2010 credit rating, default, and recovery rate data used in this study available through its Default and Recovery Database (DRD).

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<sup>18</sup> The accuracy ratio possesses the same information about discriminatory power as the area under the receiver-operator characteristics curve (AROC) and the Gini coefficient. Each measure quantifies rank rather than scale.

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