

## SPECIAL COMMENT

# Corporate Default and Recovery Rates, 1920-2009

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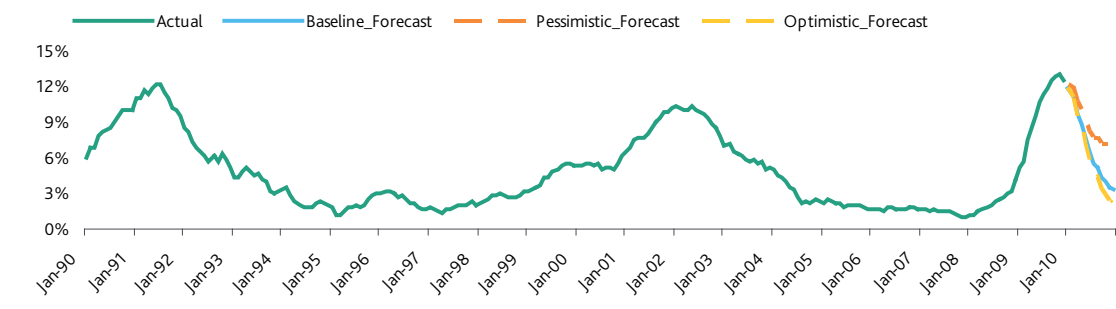
**Summary**

This report comprises Moody's twenty-third annual default study in which we update statistics on the default, loss, and rating transition experience of corporate bond and loan issuers for 2009, as well as for the historical period since 1920. Briefly, we find that:

- » 261 Moody's-rated corporate issuers defaulted on a total of \$183.3 billion of bonds and \$145.5 billion of loans in 2009. Including issuers whose ratings were withdrawn prior to January 1, 2009, 265 corporate issuers defaulted on \$183.3 billion of bonds and \$146.5 billion of loans.
- » In contrast to 2008, when default volume was boosted by several large bank failures, non-financial corporate issuers drove default volumes in 2009, accounting for 74.8% of total volume versus only 20.6% of volume in 2008.
- » Across regions, 200 of 2009's defaulters were North American issuers (191 in the U.S and 9 in Canada) with defaulted debt volumes totaling \$291.0 billion. In Europe, 30 Moody's-rated corporate issuers defaulted on \$15.5 billion of debt. The remaining defaulters were Latin-American and Asian issuers.
- » Moody's global speculative-grade default rate ended 2009 at 13.0%, almost tripling 2008's year-end level of 4.4%. This compares favorably with our one-year ago forecast of 15.1%. The default rate for all Moody's-rated corporate issuers rose to 5.4% at the end of 2009 from 2.0% at year-end 2008.
- » Measured on a dollar volume basis, Moody's global speculative-grade bond default rate ended 2009 at 15.6%, up from 5.9% at the end of 2008. Among all Moody's-rated issuers, the volume-weighted default rate increased to 2.6% in 2009 from 2.2% in 2008.
- » Moody's global speculative-grade default rate forecasting model now predicts that the speculative-grade default rate will fall sharply to 3.3% by the fourth quarter of 2010. This baseline scenario assumes an ongoing economic recovery and stable credit spreads through 2010. Under a more pessimistic scenario, in which the economic recovery falters and spreads move higher, the default rate is forecast to decline to 7.0% by the end of 2010.

- » The quarterly downgrade-to-upgrade ratio climbed to 18.3 in the first quarter of 2009, the highest quarterly level in over 27 years. The ratio then fell sharply over the remainder of the year and reached 1.8 in the fourth quarter.
- » Measured by post-default trading prices, the average recovery rate for senior unsecured bonds rose to 37.7% in 2009 from 33.8% in 2008. The increase was triggered by higher recovery rates for distressed exchanges. Excluding distressed exchanges, the average senior unsecured bond recovery rate in 2009 was 25.4%.

#### Global Speculative-Grade Default Rate Forecast



## 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 2009 and then discuss Moody's forecast for speculative-grade corporate default rates in 2010. This is followed by a review of 2009 rating accuracy metrics and the historical statistics on corporate defaults, ratings transitions, ratings performance metrics, and recovery rates. This year's default study includes several revisions to the historical data relative to previous years' reports, which are described in detail in a separate section at the end of the study. 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.

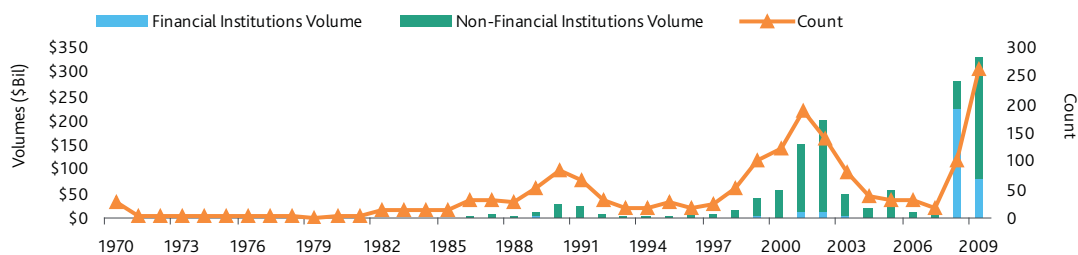
## 2009 – A Record Year for Defaults

Both default counts and defaulted debt volumes reached record highs in 2009. In contrast to 2008, when the global financial crisis resulted in defaults by a number of large banks and financial institutions, non-financial corporate issuers were the main driver of default volumes in 2009. In fact, non-financial companies accounted for 74.8% of volume in 2009, compared to 20.6% in 2008. Measured by default counts, however, non-financial companies accounted for 87.4% of defaults in 2009, up modestly from 81.4% in 2008.

World-wide, 261 Moody's-rated corporate issuers defaulted on a total of \$328.9 billion of debt in 2009. Default counts and volumes both surged from their 2008 levels when only 102 companies defaulted on \$280.6 billion of debt. From a geographic standpoint, 200 of the 261 defaulters were based in North America, while 30 were based in Europe. On a volume basis, defaulted debt totaled \$291.0 billion in North America and \$15.5 billion in Europe. Exhibit 1 presents annual default counts and defaulted debt volumes for the period 1970 to 2009, showing the unprecedented impact that the global economic recession has had on the default environment during the past two years.

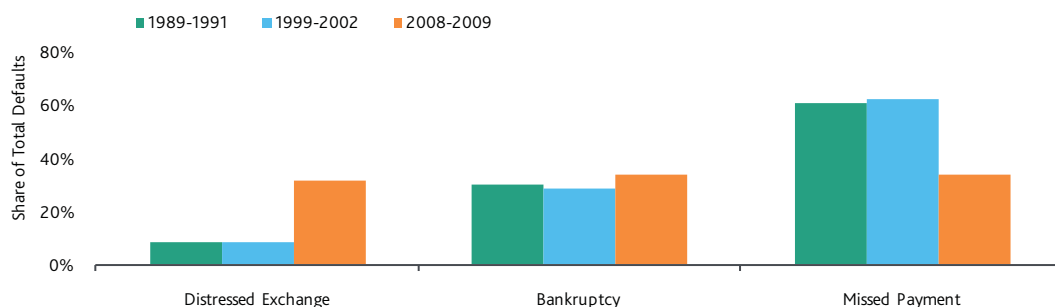
EXHIBIT 1

### Default Counts and Volumes Soar in 2008-2009



Distressed exchanges have played a prominent role in driving default counts higher during the past two years, accounting for 34.9% of total initial defaults in 2009 and 23.5% in 2008 (see Exhibit 2). To put this in context, distressed exchanges accounted for only approximately 11.0% of initial defaults during the period 1983 through 2007. In the fourth quarter of 2008 and the first half of 2009, several factors especially accelerated the pace of distressed exchanges, including the inability of many speculative-grade issuers to access the debt markets and the unattractiveness of bankruptcy given the lack of DIP and exit financing.

EXHIBIT 2

**Distressed Exchanges Spike in 2008-2009 Relative to Previous Cycles**

Among the 261 defaulters in 2009, more than a third of them were by issuers in the Capital Industries sectors.<sup>1</sup> Within this sector, defaults were highest in the automotive industry. Issuers in the Capital Industries sector also accounted for a 40.8% share of total default volume in 2009. Issuers in the FIRE sector<sup>2</sup> accounted for the next highest share of 2009 default volume with a 20.2% share of total volume. By broad industries, Exhibit 3 shows 2009 total default counts and debt volume shares.

EXHIBIT 3

**2009 Defaults by Broad Industry**

BROAD INDUSTRY	PERCENT OF ISSUER COUNTS	PERCENT OF DOLLAR VOLUME
Banking	5.7%	5.0%
Capital Industries	36.4%	40.8%
Consumer Industries	18.0%	8.0%
Energy & Environment	2.7%	0.8%
FIRE	6.9%	20.2%
Media & Publishing	16.5%	17.5%
Retail & Distribution	2.3%	0.5%
Technology	8.4%	6.6%
Transportation	2.7%	0.5%
Utilities	0.4%	0.0%
Total	261	\$328.9 billion

<sup>1</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 and non-durable consumer goods, healthcare & pharmaceuticals, hotel, gaming, & leisure, and consumer service industries.

<sup>2</sup> FIRE sector includes Finance, Insurance, and Real Estate industries.

Exhibit 4 lists the largest 2009 defaults measured by default volume. Not surprisingly, four of the defaults were by companies in the Capital Industries, with three of those in the automobile industry, including General Motors, Ford, and Chrysler. While General Motors was the largest default at \$47.8 billion in debt, CIT Group was a close second at \$42.3 billion.

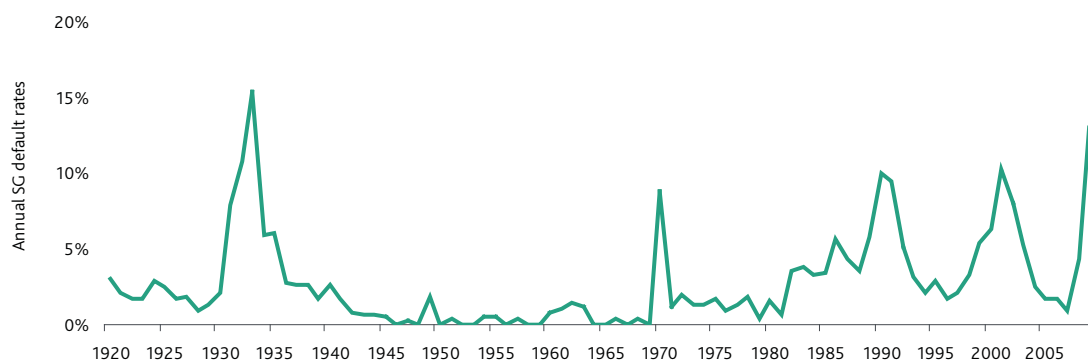
EXHIBIT 4

**Largest 2009 Defaults**

COMPANY	BROAD INDUSTRY	SPECIFIC INDUSTRY	VOLUME (BIL)
General Motors Corporation	Capital Industries	Automotive	\$47.8
CIT Group Inc.	FIRE	FIRE: Finance	\$42.3
Lyondell Chemical Company	Capital Industries	Chemicals, Plastics, & Rubber	\$19.2
Charter Communications Operating LLC	Media & Publishing	Media: Broadcasting & Subscription	\$10.8
Ford Motor Company	Capital Industries	Automotive	\$9.8
Idearc, Inc.	Media & Publishing	Media: Advertising/Printing/Publishing	\$9.4
Chrysler LLC	Capital Industries	Automotive	\$9.0
Capmark Financial Group Inc.	FIRE	FIRE: Real Estate	\$8.7
BTA Bank	Banking	Banking	\$4.8
Harrah's Operating Company, Inc.	Consumer Industries	Hotel, Gaming, & Leisure	\$4.6

As a result of rapidly increasing defaults in 2009, the trailing twelve-month issuer-weighted default rate for all Moody's-rated issuers jumped to 5.4% in 2009 from 2.0% in 2008. Among speculative-grade issuers, the default rate rose to 13.0% in 2009, almost triple its closing level of 4.4% at the end of 2008 and in close agreement with Moody's forecast of 15.1%. The 2009 year-end speculative-grade default rate exceeded the annual peaks of 10.3% and 10.0% set in 2001 and 1990, respectively, but failed to surpass the peak of 15.4% set during the Great Depression (see Exhibit 5). Measured on a dollar volume basis, Moody's speculative-grade corporate bond default rate jumped to 15.6% in 2009 from 5.9% in 2008. The volume-weighted default rate for all Moody's-rated issuers increased to 2.6% in 2009 from 2.2% in 2008.

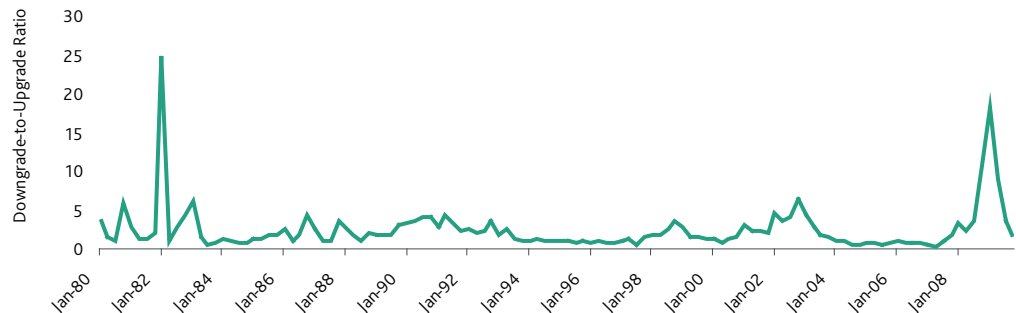
EXHIBIT 5

**Global Speculative-Grade Default Rate Reaches Post-War High**

Consistent with rapidly weakening credit quality and increasing numbers of defaults, the quarterly downgrade-to-upgrade ratio for corporate issuers began rising sharply in late 2008,<sup>3</sup> reaching a peak of 18.3x in the first quarter of 2009. During the remainder of 2009, however, the downgrade-to-upgrade ratio declined steeply and reached 1.8x in the fourth quarter, approximately the same level as just prior to the start of the recession in the fourth quarter of 2007. For historical perspective, Exhibit 6 shows the quarterly downgrade-to-upgrade ratio for Moody's-rated corporate issuers since 1980.

EXHIBIT 6

#### Quarterly Downgrade-to-Upgrade Ratio Declined Sharply in Second Half of 2009



Historically, as shown by Moody's research<sup>4</sup>, default rates and recovery rates are negatively correlated. In 2009, with default rates increasing sharply, this relationship manifested itself again as loan recovery rates were significantly below their long-run historical averages as shown in Exhibit 7. However, on the bond side, this relationship was not as readily apparent as holders of senior unsecured and subordinated bonds enjoyed above-average recovery rates in 2009. The explanation for this anomaly is the large share of defaults accounted for by distressed exchanges—which have significantly higher average recovery rates than those associated with bankruptcies and missed payments.

EXHIBIT 7

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

LIEN POSITION	ISSUER-WEIGHTED			VALUE-WEIGHTED		
	2009	2008	1982-2009	2009	2008	1982-2009
1st Lien Bank Loan	54.0%	61.7%	65.6%	56.6%	46.9%	59.1%
2nd Lien Bank Loan	16.0%	40.4%	32.8%	20.5%	36.6%	1.9%
Sr. Unsecured Bank Loan	34.5%	31.6%	48.7%	38.1%	22.8%	40.0%
Sr. Secured Bond	37.5%	54.9%	49.8%	29.5%	40.3%	48.5%
Sr. Unsecured Bond	37.7%	33.8%	36.6%	35.5%	26.2%	32.6%
Sr. Subordinated Bond	22.4%	23.7%	30.7%	17.9%	10.4%	25.0%
Subordinated Bond	46.8%	23.6%	31.3%	24.7%	7.3%	23.5%
Jr. Subordinated Bond	n.a.	n.a.	24.7%	n.a.	n.a.	17.1%

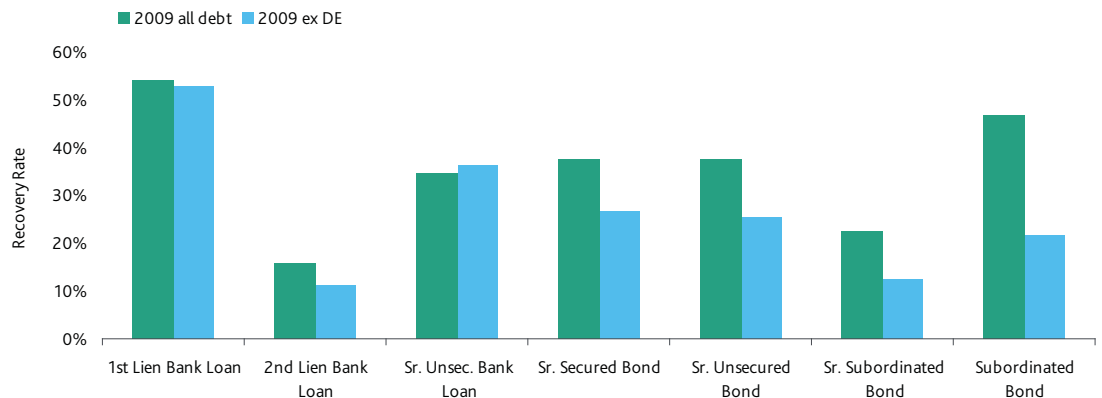
<sup>3</sup> These data are not adjusted for the impact of methodology changes (e.g. JDA, LGD). As a result, the data are not comparable to the downgrade/upgrade ratios shown in Moody's Quarterly Rating Action reports.

<sup>4</sup> See Moody's Special Comment "[Corporate Default and Recovery Rates, 1920-2006](#)", Feb 2007

Exhibit 8 shows the impact that distressed exchanges had on boosting 2009 recovery rates across debt types. Since a large majority of distressed exchanges involve only junior debt, first lien loan recovery rates were barely affected by distressed exchanges, while the impact was more substantial for unsecured and subordinated bonds. For example, excluding distressed exchange defaults, the 2009 average subordinated bond recovery rate would have been 21.8%, which is 50% lower than the 46.8% recovery that includes distressed exchanges.

EXHIBIT 8

### Distressed Exchanges Boosted 2009 Bond Recovery Rates



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.<sup>6</sup> In 2009, Moody's added 11 firms that either emerged from bankruptcy or resolved their default events. The average "firm-wide" recovery rate<sup>7</sup> for these 11 firms was 45.4%, below 2008's 57.3% level, and the long-term average of 53.3% since 1987. As shown in Exhibit 9, the individual debts at these 11 firms experienced lower average recoveries in 2009 compared to average recoveries in 2008. For example, senior unsecured bonds recovered an average 9.6% in 2009, only 15% of the comparable figure for 2008.

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

<sup>6</sup> The data is from Moody's Ultimate Recovery Database which includes robust detailed recovery information for over 3500 loans and bonds from more than 700 U.S. 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 relative to total debt. 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

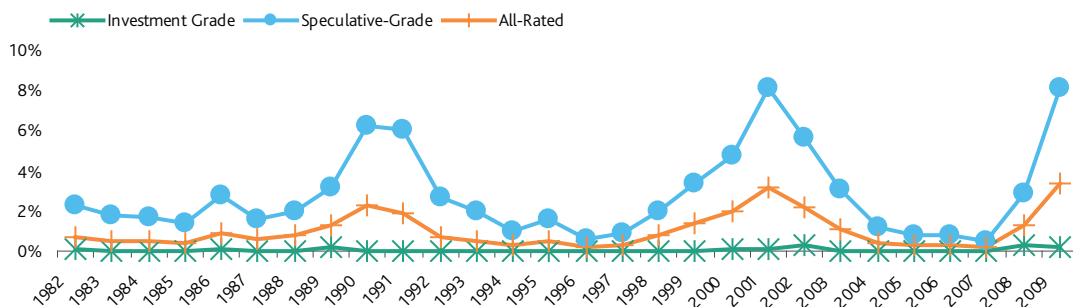
## Average Corporate Debt Recovery Rates Measured by Ultimate Recoveries, 1987-2009

LIEN POSITION	EMERGENCE YEAR			DEFAULT YEAR		
	2009	2008	1987-2009	2009	2008	1987-2009
Loans	74.4%	79.5%	81.1%	88.2%	65.9%	81.1%
<b>Bonds</b>						
Sr. Secured	--	70.0%	66.9%	--	51.1%	66.9%
Sr. Unsecured	9.6%	64.2%	44.6%	11.0%	57.6%	44.6%
Sr. Subordinated	33.2%	39.1%	30.7%	41.5%	34.1%	30.7%
Subordinated	--	--	31.0%	--	--	31.0%
Jr. Subordinated	--	0.0%	21.3%	--	--	21.3%

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 2009 for Moody's-rated corporate issuers. In 2009, although bond recovery rates were boosted by a large number of distressed exchanges, the large increase in default rates led to an increase in the average credit loss rate among Moody's-rated issuers to 3.3%, up from 1.3% in 2008. To put this in perspective, the average annual credit loss rate for Moody's-rated issuers since 1982 is 1.0%.

EXHIBIT 10

## Average Annual Credit Loss Rates, 1982-2009



## Default Rate Outlook for 2010

A year ago, reflecting in large part high yield bonds spreads that were at a level of 2000 basis points, Moody's default rate forecasting model (CTM) predicted that the global speculative-grade default rate would see a three fold increase to 15.1% in 2009, peaking at 15.4% in November. While the realized default rate peaked at a modestly lower level of 13.4%, the model provided advance warning of a rapid climb in the global default rate, correctly predicting in January that the default rate would peak in November, and that the rate would peak at a post-War record high.



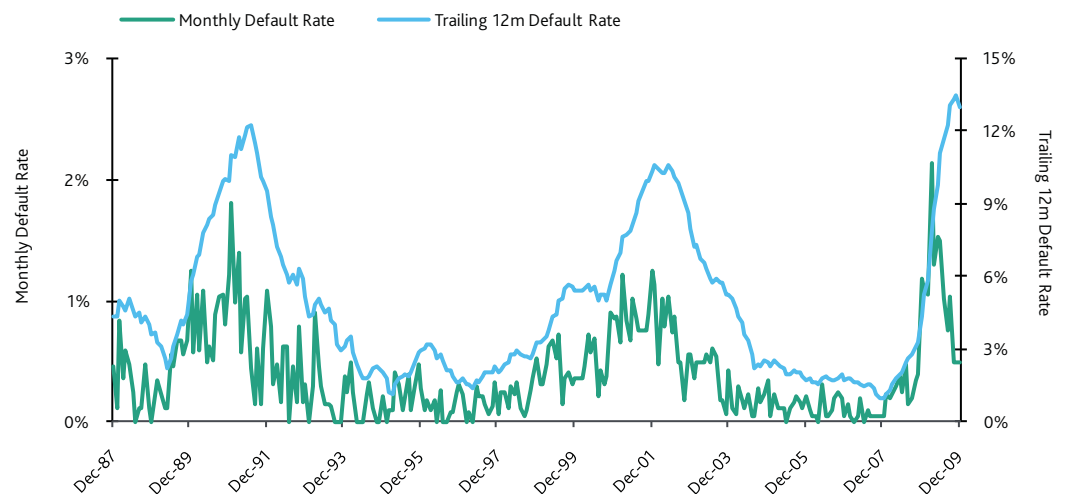
The CTM is now forecasting that the global speculative-grade default rate will fall sharply in 2010, reaching 3.3% by December under the baseline economic scenario. This forecast implies approximately 60 total defaults globally in 2010. The decline in the default rate is expected to be more rapid in the first half of the year with the rate expected to drop to 6.4% by the end of June.

This baseline forecast assumes that the unemployment rate will reach a peak of approximately 10.5% in 2010 and that the high yield spread will decline from its current level of 648 bps to 474 bps by the end of 2010. If the high yield bond spread and unemployment rate, the two macroeconomic factors included in the model, turn out to be higher than these baseline estimates, the global speculative-grade default rate would likely end 2010 above 3.3%. Under a more pessimistic macroeconomic scenario, where the unemployment rate climbs to 14.1% in 2010 and the high yield bond spread increases to 661 basis points, the global speculative-grade default rate is forecasted to decline to 7.2% by the end of 2010.

As shown in Exhibit 11, the forecasted sharp decline in the default rate is consistent with previous credit cycles when the default rate fell sharply shortly after the monthly default rate began to ease. In other words, the trailing twelve-month default rate typically declines once the monthly default count drops off. In 2009, the monthly default count fell off substantially in the second half of the year with the average monthly default count declining to 15.0 from 28.5 in the first half of the year.

EXHIBIT 11

#### Trailing 12-Month Default Rate Typically Peaks Near Peak in Monthly Default Rate



For U.S. and European speculative-grade issuers, Moody's forecasting model foresees default rates dropping to 3.6% and 2.7%, respectively, by the end of 2010 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 Business Service sector in Europe. Exhibit 12 shows the baseline one-year default rate forecasts across industries in both the U.S. and Europe.

EXHIBIT 12

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

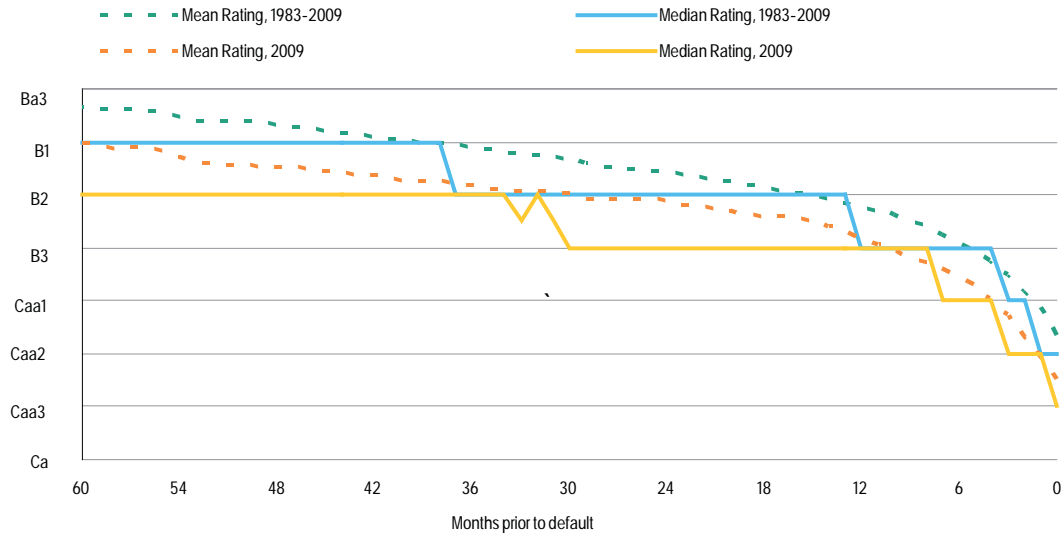
INDUSTRY	US	EUROPE	INDUSTRY	US	EUROPE
Transportation: Consumer	6.9%	2.6%	Telecommunications	1.9%	1.7%
Media: Advertising, Printing & Publishing	5.0%	3.5%	Forest Products & Paper	1.8%	2.2%
Services: Business	4.7%	4.5%	Metals & Mining	1.8%	0.9%
Hotel, Gaming, & Leisure	4.6%	2.6%	Energy: Oil & Gas	1.8%	0.4%
Automotive	4.2%	0.4%	Aerospace & Defense	1.6%	0.1%
Media: Broadcasting & Subscription	3.8%	2.4%	FIRE: Finance	1.6%	0.1%
Consumer goods: non-durable	3.6%	0.3%	FIRE: Real Estate	1.6%	0.3%
Retail	3.3%	1.1%	Construction & Building	1.5%	0.4%
Containers, Packaging, & Glass	2.8%	2.8%	Chemicals, Plastics, & Rubber	1.4%	1.2%
Transportation: Cargo	2.8%	1.5%	Beverage, Food, & Tobacco	1.1%	0.7%
Capital Equipment	2.7%	0.3%	Media: Diversified & Production	1.0%	0.5%
Services: Consumer	2.6%	0.0%	FIRE: Insurance	0.7%	0.1%
Wholesale	2.4%	0.2%	Utilities: Electric	0.4%	0.1%
Consumer goods: durable	2.3%	3.5%	Banking	0.2%	0.3%
High Tech Industries	2.2%	0.1%	Utilities: Oil & Gas	0.1%	0.0%
Environmental Industries	2.2%	0.1%	Utilities: Water	0.1%	0.1%
Energy: Electricity	2.0%	0.1%	Sovereign & Public Finance	0.0%	0.0%
Healthcare & Pharmaceuticals	1.9%	0.7%			

**Rating Accuracy Metrics**

Moody's ratings have historically proven to be effective predictors of default. This can be illustrated in Exhibit 13, which plots the average and median ratings of roughly 1,600 corporate issuers that defaulted from 1983 to 2009. The chart shows that Moody's-rated issuers have, on average, been downgraded to the Ba3 level as early as five years prior to default. Among issuers that defaulted in 2009, the average rating was B1 five years prior to default, which is slightly lower than its comparable historical average. In the year prior to default, 2009 defaulters' ratings were downgraded to B3 on average, which is also lower than the long-term average of B2.

EXHIBIT 13

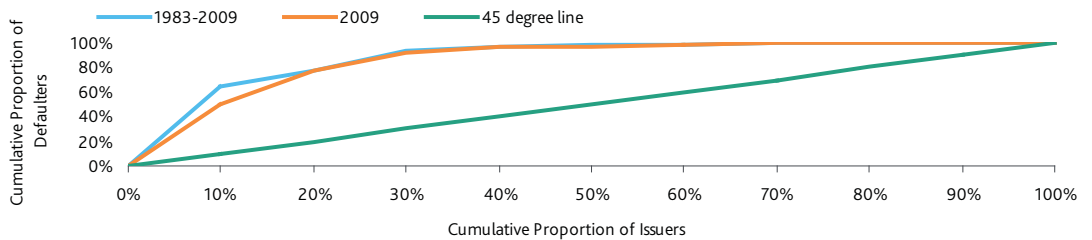
Average and Median Ratings Prior to Default, 1983-2009



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 to 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 greater number of defaults reside in the riskiest rating categories. Exhibit 14 shows that the CAP curve for 2009 lies slightly below the one for the 1983-2009 period, which indicates that the rating performance in 2009 was similar to the historical average.

EXHIBIT 14

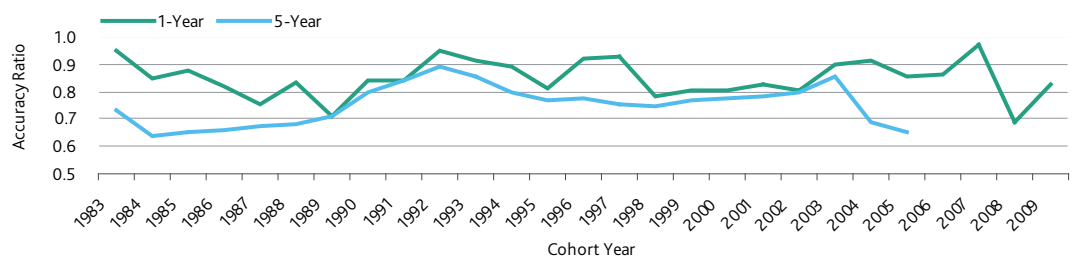
One Year Cumulative Accuracy Plots, 2009 vs. Historical Average



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>8</sup> AR values range from minus one to positive one and a higher AR indicates better rating accuracy. Exhibit 15 shows both one- and five-year horizon accuracy ratios for the period of 1983-2009. The graph 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. In the short run, the stability objective of Moody's rating system dampens rating changes; at longer time horizons, the stability objective is less of a constraint, and accuracy increases. In 2009, the one-year accuracy ratio bounced back towards its long-run average following a large decline in 2008, which resulted from several investment-grade financial institution defaults including Lehman Brothers.

EXHIBIT 15

## 1- and 5-Year Accuracy Ratios by Cohort Year, 1983-2009



<sup>8</sup> In this report, we are calculating Accuracy Ratio as defined in "Benchmarking Quantitative Default Risk Models: A Validation Methodology" (2000). The Accuracy Ratios from prior year reports 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 purpose of allowing Accuracy Ratios to be 100% when defaulters are perfectly differentiated from non-defaulters.

## Data Tables and Charts

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
155 East Tropicana, LLC	United States	Missed interest payment	\$130		Yes
Abitibi-Consolidated Company of Canada	Canada	Missed principal and interest payments	\$1,506	\$347	No
Abitibi-Consolidated Inc.	Canada	Missed principal and interest payments	\$1,995	\$0	No
Accuride Corporation	United States	Missed interest payment	\$275	\$354	Yes
Advanstar Communications, Inc.	United States	Missed interest payment		\$385	Yes
Affinity Group Holding, Inc.	United States	Missed interest payment	\$88		Yes
AGS, LLC	United States	Distressed exchange		\$10	Yes
Aiful Corporation	Japan	Suspension of payments		\$3,062	Yes
Airborne Health, Inc.	United States	Missed principal and interest payments		\$155	Yes
Akerys Holdings S.A.	France	Missed interest payment	\$377		Yes
Aleris International Inc.	United States	Chapter 11	\$1,000	\$2,048	Yes
Alfa Bank Ukraine	Ukraine	Distressed exchange	\$795		Yes
Alion Science and Technology Corp	United States	Distressed exchange	\$245		Yes
Alliance Bank	Kazakhstan	Missed principal and interest payments	\$4,093	\$106	Yes
Allis-Chalmers Energy Inc.	United States	Distressed exchange	\$75		Yes
American Achievement Group Holding Corp.	United States	Distressed exchange	\$169		Yes
American Capital, Ltd.	United States	Missed principal payment	\$400		Yes
American Media Operations, Inc.	United States	Missed interest payment	\$155		No
Appleton Papers Inc.	United States	Distressed exchange	\$271		Yes
Arantes Alimentos Ltda.	Brazil	Bankruptcy	\$0		Yes
Arantes International Ltd.	Brazil	Bankruptcy	\$150		Yes
Arclin Canada Ltd.	Canada	Chapter 11		\$250	Yes
ASAT Holdings Limited	Hong Kong	Missed interest payment	\$150		Yes
Asia Aluminum Holdings Limited	China	Placed under administration	\$450		Yes
Astana Finance	Kazakhstan	Suspension of payments	\$2,209		Yes

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Atlantic Express Transportation Corp.	United States	Distressed exchange	\$185		Yes
Atrium Companies, Inc.	United States	Missed interest payment		\$336	Yes
Aventine Renewable Energy Holdings, Inc.	United States	Chapter 11	\$300		Yes
Bank Nadra	Ukraine	Placed under administration	\$363	\$85	Yes
Barrington Broadcasting Group LLC	United States	Distressed exchange	\$68		Yes
Barzel Finco Inc.	United States	Missed interest payment	\$315		Yes
Baseline Oil & Gas Corp	United States	Missed principal and interest payments	\$15		No
BCBG Max Azria Group, Inc.	United States	Distressed exchange		\$200	Yes
BearingPoint, Inc.	United States	Prepackaged Chapter 11	\$650	\$314	Yes
Beazer Homes USA, Inc.	United States	Distressed exchange	\$371		Yes
Berry Plastics Corporation	United States	Distressed exchange	\$24		Yes
Berry Plastics Group, Inc.	United States	Distressed exchange		\$106	Yes
Bite Finance International B.V.	Netherlands	Distressed exchange	\$136		Yes
Black Gaming, LLC	United States	Missed interest payment	\$191		Yes
Bonten Media Group, Inc.	United States	Distressed exchange	\$38		Yes
Bowater Incorporated	United States	Chapter 11	\$1,809		Yes
Bradford & Bingley plc	United Kingdom	Distressed exchange	\$1,218		Yes
Broder Bros., Co.	United States	Missed interest payment	\$225		Yes
BTA Bank	Kazakhstan	Payment moratorium	\$4,766		Yes
Buffalo Thunder Development Authority	United States	Missed interest payment	\$245		Yes
Building Materials Holding Corporation	United States	Prepackaged Chapter 11		\$425	Yes
Canwest Limited Partnership	Canada	Missed principal and interest payments	\$400	\$972	Yes
Canwest Media Inc.	Canada	Missed interest payment	\$761		Yes
Cap Cana, S.A.	Dominican Republic	Missed principal and interest payments	\$235		No
Capmark Financial Group Inc.	United States	Missed principal payment	\$2,338	\$6,334	Yes
Caraustar Industries, Inc.	United States	Prepackaged Chapter 11	\$219	\$70	Yes
Castle Holdco 4, Ltd.	United Kingdom	Missed interest payment	\$907	\$147	Yes

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
CCH I Holdings LLC	United States	Prepackaged Chapter 11	\$2,533		Yes
CCH I, LLC	United States	Prepackaged Chapter 11	\$3,987		Yes
CCH II, LLC	United States	Prepackaged Chapter 11	\$2,474		Yes
CCO Holdings, LLC	United States	Prepackaged Chapter 11	\$800	\$350	Yes
CCS Medical Inc	United States	Prepackaged Chapter 11		\$480	Yes
Centaur, LLC	United States	Missed interest payment		\$541	Yes
Centro NP LLC	United States	Distressed exchange	\$122		Yes
Century Aluminum Company	United States	Distressed exchange	\$15		Yes
CEVA Group plc	United Kingdom	Distressed exchange	\$287	\$205	Yes
Champion Enterprises, Inc.	United States	Missed principal and interest payments	\$180	\$0	Yes
Champion Home Builders, Co.	United States	Missed principal and interest payments		\$201	Yes
Charter Communications Holdings, LLC	United States	Prepackaged Chapter 11	\$443		Yes
Charter Communications Inc.	United States	Prepackaged Chapter 11	\$482		Yes
Charter Communications Operating, LLC	United States	Prepackaged Chapter 11	\$2,416	\$8,419	Yes
Chemtura Corporation	United States	Chapter 11	\$650	\$180	Yes
China Glass Holdings Limited	China	Distressed exchange	\$39		Yes
China Orientwise Limited	China	Distressed exchange	\$100		Yes
Chrysler LLC	United States	Chapter 11		\$9,000	Yes
Cinram International Inc.	Canada	Distressed exchange		\$97	Yes
CIT Group Inc.	United States	Distressed exchange	\$29,784	\$12,535	Yes
Citadel Broadcasting Corporation	United States	Chapter 11	\$48	\$2,011	Yes
Citizens Republic Bancorp, Inc.	United States	Distressed exchange	\$108		Yes
Clear Channel Communications, Inc.	United States	Distressed exchange	\$412		Yes
CMP Susquehanna Corp	United States	Distressed exchange	\$175		Yes
Coinmach Service Corp.	United States	Missed interest payment		\$400	Yes
Colgrade Limited	Russia	Distressed exchange	\$250		Yes
Colonial BancGroup, Inc. (The)	United States	Chapter 11	\$250		Yes

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Colonial Bank	United States	Receivership	\$337		Yes
Commercial Vehicle Group, Inc.	United States	Distressed exchange	\$52		Yes
Cooper Standard Automotive Canada Limited	Canada	Bankruptcy		\$202	Yes
Cooper Standard Automotive Inc.	United States	Missed interest payment	\$550	\$594	Yes
Corporacion Interamericana de Entreten SAB CV	Mexico	Distressed exchange	\$200		Yes
Crescent Resources, LLC	United States	Chapter 11		\$1,425	Yes
Cygnus Business Media, Inc.	United States	Missed principal and interest payments		\$217	Yes
Dana Holding Corporation	United States	Distressed exchange		\$110	Yes
Davomas Abadi Tbk (P.T.)	Indonesia	Missed interest payment	\$238		Yes
Dayco Products, LLC (Old)	United States	Chapter 11		\$1,047	Yes
Dayton Superior Corporation	United States	Missed principal and interest payments	\$155	\$249	Yes
Desarrolladora Metropolitana, S.A. de C.V.	Mexico	Missed interest payment	\$200		Yes
Dex Media East LLC	United States	Prepackaged Chapter 11		\$1,200	Yes
Dex Media West LLC	United States	Prepackaged Chapter 11	\$1,156	\$1,170	Yes
Dex Media, Inc.	United States	Prepackaged Chapter 11	\$1,119		Yes
Duane Reade, Inc.	United States	Distressed exchange	\$353		Yes
Dunfermline Building Society	United Kingdom	Placed under administration	\$71		Yes
E*TRADE Financial Corp.	United States	Distressed exchange	\$1,742		Yes
Eddie Bauer, Inc.	United States	Chapter 11		\$220	Yes
Ermmis Operating Company	United States	Distressed exchange		\$53	Yes
Energy Partners, Ltd.	United States	Prepackaged Chapter 11	\$455	\$83	Yes
Energy XXI Gulf Coast, Inc.	United States	Distressed exchange	\$348		Yes
Equistar Chemicals, LP	United States	Chapter 11	\$150		Yes
Escada AG	Germany	Bankruptcy	\$285	\$128	Yes
Euramax International, Inc.	United States	Missed interest payment		\$509	Yes
Eurofresh Inc.	United States	Missed interest payment	\$170		Yes
Express Energy Services Operating, LP	United States	Missed principal and interest payments		\$360	Yes



EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
FairPoint Communications, Inc.	United States	Distressed exchange	\$531	\$1,992	Yes
Finance Leasing Company	Russia	Missed interest payment	\$250		Yes
Finlay Fine Jewelry Corporation	United States	Missed interest payment	\$41		No
Fionia Bank Holding A/S	Denmark	Seized by regulators	\$88		Yes
Foamex L.P.	United States	Missed interest payment		\$486	Yes
Fontainebleau Las Vegas Holdings, LLC	United States	Chapter 11	\$675		Yes
Fontainebleau Las Vegas, LLC	United States	Chapter 11		\$1,850	Yes
Ford Motor Company	United States	Distressed exchange	\$7,596	\$2,200	Yes
Freedom Communications, Inc.	United States	Prepackaged Chapter 11		\$919	Yes
Freescale Semiconductor, Inc.	United States	Distressed exchange	\$2,829		Yes
French Lick Resorts & Casino, LLC	United States	Distressed exchange	\$32		No
G Steel Public Company Limited	Thailand	Missed principal and interest payments	\$170	\$75	Yes
Gajah Tunggal Tbk (P.T.)	Indonesia	Distressed exchange	\$420		Yes
Gallery Media Group Ltd.	Russia	Missed interest payment	\$175		Yes
General Growth Properties, Inc.	United States	Missed principal and interest payments		\$3,877	No
General Motors Corporation	United States	Prepackaged Chapter 11	\$28,061	\$19,700	Yes
Georgia Gulf Corporation	United States	Missed interest payment	\$800		Yes
Golden Nugget, Inc.	United States	Distressed exchange		\$33	Yes
Great Lakes Chemical Corporation	United States	Chapter 11	\$370		Yes
Greentown China Holdings Limited	China	Distressed exchange	\$361		Yes
Griffin Coal Mining Company Pty Ltd (The)	Australia	Missed interest payment	\$475		Yes
GSCP (NJ), L.P.	United States	Missed principal and interest payments		\$209	Yes
Haight's Cross Comm. Operating Company	United States	Missed interest payment	\$170		Yes
Haight's Cross Communications, Inc.	United States	Missed interest payment	\$99		Yes
Harrah's Operating Company, Inc.	United States	Distressed exchange	\$4,561		No
Hawker Beechcraft Acquisition Company LLC	United States	Distressed exchange	\$496		Yes
Hayes Lemmerz Finance-Luxembourg S.A. (OLD)	Luxembourg	Chapter 11	\$177	\$368	Yes

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Head N.V.	Netherlands	Distressed exchange	\$0		Yes
Headwaters Incorporated	United States	Distressed exchange	\$74		Yes
Hellas Telecommunications II S.a.r.l.	Luxembourg	Missed interest payment	\$1,235		Yes
Hexion Specialty Chemicals Inc.	United States	Distressed exchange	\$288		Yes
HLI Operating Company Inc. (OLD)	United States	Chapter 11		\$125	Yes
Hovnanian Enterprises, Inc.	United States	Distressed exchange	\$155		Yes
HTM Sport- und Freizeitgerate AG	Austria	Distressed exchange	\$119		Yes
Human Touch LLC	United States	Missed principal payment	\$77		Yes
Idearc, Inc.	United States	Chapter 11	\$2,850	\$6,515	Yes
Indalex Holding Corp.	United States	Missed interest payment	\$198	\$193	Yes
Independencia International Ltd.	Brazil	Bankruptcy	\$525		Yes
Independencia S/A	Brazil	Bankruptcy	\$0	\$100	Yes
Industrias Unidas, S.A. de C.V.	Mexico	Distressed exchange	\$235		Yes
Inn of the Mountain Gods Resort and Casino	United States	Missed interest payment	\$200		Yes
Integra Telecom Holdings, Inc.	United States	Missed interest payment		\$325	Yes
Integra Telecom, Inc.	United States	Distressed exchange		\$280	Yes
Intelsat, Ltd.	United States	Distressed exchange	\$461		Yes
ION Media Networks, Inc.	United States	Prepackaged Chapter 11	\$1,307	\$325	Yes
IT Holding S.p.A	Italy	Missed principal and interest payments	\$242		No
J.G. Wentworth, LLC	United States	Missed interest payment		\$325	Yes
Japan Airlines International Co., Ltd.	Japan	Suspension of payments		\$0	Yes
K. Hovnanian Enterprises, Inc.	United States	Distressed exchange	\$1,494		Yes
Kinetek Holdings Corp.	United States	Distressed exchange		\$28	Yes
Korreden S.A.	France	Missed interest payment	\$0		Yes
Latham Manufacturing Corp.	United States	Prepackaged Chapter 11		\$148	Yes
Lear Corporation (Old)	United States	Missed interest payment	\$1,289	\$2,700	Yes
Level 3 Communications, Inc.	United States	Distressed exchange	\$282		No

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Libbey Glass Inc.	United States	Distressed exchange	\$161		Yes
Little Traverse Bay Bands of Odawa Indians	United States	Missed interest payment	\$122		Yes
Lyondell Chemical Company	United States	Chapter 11	\$325	\$18,832	Yes
LyondellBasell Industries AF SCA	Netherlands	Missed interest payment	\$1,260	\$0	Yes
MagnaChip Semiconductor LLC	Korea	Missed interest payment	\$0	\$0	Yes
MagnaChip Semiconductor S.A.	Korea	Missed interest payment	\$750	\$100	Yes
Magyar Telecom B.V.	Hungary	Distressed exchange	\$358		Yes
Majestic HoldCo, LLC	United States	Missed interest payment	\$64		Yes
Majestic Star Casino, L.L.C. (The)	United States	Missed interest payment		\$80	No
Mandra Forestry Holdings Ltd.	China	Missed interest payment	\$195		Yes
Mark IV Industries, Inc. (Reorganized)	United States	Chapter 11		\$0	Yes
Mashantucket (Western) Pequot Tribe, CT	United States	Missed interest payment	\$500		Yes
Masonite Corporation	Canada	Missed interest payment		\$1,522	No
Mattress Holdings Corp.	United States	Distressed exchange		\$0	Yes
McClatchy Company (The)	United States	Distressed exchange	\$103		Yes
MediaNews Group, Inc.	United States	Missed principal payment	\$149	\$100	Yes
Mercer International Inc.	Canada	Distressed exchange	\$43		Yes
Merisant Co.	United States	Chapter 11	\$225	\$216	Yes
Merisant Worldwide, Inc.	United States	Chapter 11	\$136		Yes
Merrill Communications LLC	United States	Distressed exchange		\$10	Yes
Metaldyne Company LLC	United States	Chapter 11		\$643	Yes
Milacron Inc.	United States	Chapter 11	\$225		Yes
Millennium America Inc.	United States	Chapter 11	\$241		Yes
Momentive Performance Materials Inc.	United States	Distressed exchange	\$531		Yes
Morris Publishing Group, LLC	United States	Missed interest payment	\$278		Yes
Muzak Holdings, LLC	United States	Distressed exchange	\$25	\$105	Yes
Muzak LLC	United States	Chapter 11	\$335		Yes

EXHIBIT 16

**Moody's-Rated 2009 Corporate Bond and Loan Defaults**

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
MXenergy Holdings Inc.	United States	Distressed exchange	\$159		Yes
NCI Building Systems, Inc.	United States	Distressed exchange		\$150	Yes
Neenah Foundry Company	United States	Missed interest payment	\$75		Yes
Neo-China Land Group (Holdings) Limited	China	Distressed exchange	\$121		Yes
NES Rentals Holdings, Inc.	United States	Distressed exchange		\$14	Yes
Newark Group, Inc. (The)	United States	Missed interest payment	\$175		Yes
Newport Television, LLC	United States	Distressed exchange		\$51	Yes
Nexstar Broadcasting, Inc.	United States	Distressed exchange	\$142		Yes
NextMedia Operating, Inc.	United States	Missed interest payment		\$264	Yes
NJSC Naftogaz of Ukraine	Ukraine	Missed principal payment	\$500		Yes
Noranda Aluminum Acquisition Corporation	United States	Distressed exchange	\$49		Yes
Noranda Aluminum Holding Corporation	United States	Distressed exchange	\$142		Yes
Nortek, Inc.	United States	Missed interest payment	\$1,369		Yes
Nortel Networks Corporation	Canada	Chapter 11	\$1,150		Yes
Nortel Networks Limited	Canada	Chapter 11	\$3,025		Yes
November 2005 Land Investors, LLC	United States	Chapter 11		\$410	Yes
NTK Holdings, Inc.	United States	Distressed exchange	\$396		No
NV Broadcasting, LLC	United States	Prepackaged Chapter 11		\$315	Yes
NXP B.V.	Netherlands	Distressed exchange	\$1,097		Yes
OSI Restaurant Partners, Inc.	United States	Distressed exchange	\$240		Yes
Pakuwon Jati, Tbk (P.T.)	Indonesia	Distressed exchange	\$84		Yes
Panoram Industries International, Inc.	United States	Missed interest payment	\$151	\$198	Yes
Parkin Broadcasting, LLC	United States	Prepackaged Chapter 11		\$75	Yes
Peach Holdings, Inc.	United States	Distressed exchange		\$0	Yes
Pliant Corporation	United States	Prepackaged Chapter 11	\$617	\$173	Yes
Ply Gem Industries, Inc.	United States	Distressed exchange	\$360		Yes
Primus Telecommunications Group, Incorporated	United States	Distressed exchange	\$177	\$35	No

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Primus Telecommunications Holding, Inc.	United States	Distressed exchange	\$214	\$97	No
Quality Distribution, LLC	United States	Distressed exchange	\$84		Yes
Quality Home Brands Holdings LLC	United States	Prepackaged Chapter 11		\$351	Yes
Quantum Corporation	United States	Distressed exchange	\$87		Yes
Questex Media Group, Inc.	United States	Chapter 11		\$235	Yes
R.H. Donnelley Corporation	United States	Missed interest payment	\$3,672	\$0	Yes
R.H. Donnelley Inc.	United States	Prepackaged Chapter 11	\$413	\$1,937	Yes
RathGibson, Inc.	United States	Prepackaged Chapter 11	\$200	\$90	Yes
RBS Global, Inc.	United States	Distressed exchange	\$71		Yes
Reader's Digest Association, Inc. (The)	United States	Prepackaged Chapter 11	\$600	\$1,586	Yes
Real Mex Restaurants, Inc.	United States	Distressed exchange		\$15	Yes
Realogy Corporation	United States	Distressed exchange	\$220		Yes
Rede Energia S.A.	Brazil	Distressed exchange	\$78		Yes
Revere Industries, LLC	United States	Missed interest payment		\$165	Yes
Rhodes Companies, LLC (The)	United States	Chapter 11		\$414	Yes
Ritzio International Limited	Cyprus	Missed interest payment	\$280		Yes
Riviera Holdings Corporation	United States	Missed interest payment		\$228	Yes
Rodovid Bank	Ukraine	Payment moratorium	\$125		Yes
Rouse Company (The)	United States	Missed principal and interest payments	\$2,245		Yes
Safilo S.p.A.	Italy	Missed principal and interest payments	\$149	\$544	Yes
Sensata Technologies B.V.	United States	Distressed exchange	\$168		Yes
Simmons Company	United States	Missed interest payment	\$469	\$540	Yes
Simmons Super Holding Company	United States	Prepackaged Chapter 11		\$300	Yes
Sirius XM Radio Inc.	United States	Distressed exchange	\$6		No
Six Flags Inc. (Old)	United States	Distressed exchange	\$455		No
Six Flags Operations Inc. (OLD)	United States	Prepackaged Chapter 11	\$400		Yes
Six Flags Theme Parks Inc. (OLD)	United States	Prepackaged Chapter 11		\$1,125	Yes

EXHIBIT 16

## Moody's-Rated 2009 Corporate Bond and Loan Defaults

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
Smurfit-Stone Container Canada, Inc.	Canada	Chapter 11		\$336	Yes
Smurfit-Stone Container Enterprises, Inc.	United States	Chapter 11	\$2,275	\$770	Yes
Source Interlink Companies Inc.	United States	Prepackaged Chapter 11	\$465	\$1,169	Yes
Spansion, LLC	United States	Missed interest payment	\$1,332	\$93	Yes
Spectrum Brands, Inc.	United States	Prepackaged Chapter 11	\$1,050	\$1,600	Yes
Spirit Finance Corporation	United States	Missed principal and interest payments		\$146	Yes
Stallion Oilfield Services, Ltd.	United States	Missed interest payment	\$300	\$499	Yes
Standard Motor Products, Inc.	United States	Distressed exchange	\$12		Yes
Stanley-Martin Communities, LLC	United States	Missed interest payment	\$133		Yes
Station Casinos, Inc.	United States	Missed interest payment	\$2,122	\$900	Yes
Takefuji Corporation	Japan	Distressed exchange	\$282		Yes
Temirbank	Kazakhstan	Suspension of payments	\$1,316		Yes
Terphane Holding Corporation	Brazil	Missed principal and interest payments	\$83		Yes
Thomson S.A.	France	Missed principal and interest payments	\$93	\$2,533	Yes
Tishman Speyer Real Estate	United States	Missed interest payment		\$570	Yes
TLC Vision Corporation	United States	Missed principal and interest payments		\$106	Yes
TMST, Inc.	United States	Missed interest payment	\$437		Yes
Totes Isotoner Corporation	United States	Distressed exchange		\$0	Yes
TPG-Austin Portfolio Holdings LLC	United States	Missed interest payment		\$193	Yes
Treofan Germany GmbH & Co. KG	Germany	Missed interest payment	\$170		Yes
Tronox Worldwide LLC	United States	Missed interest payment		\$450	No
True Temper Sports, Inc.	United States	Missed interest payment	\$125	\$151	Yes
Trump Entertainment Resorts Holdings, L.P	United States	Missed interest payment		\$465	No
U.S. Shipping Partners LP	United States	Missed principal and interest payments	\$100	\$332	Yes
Unisys Corporation	United States	Distressed exchange	\$760		Yes
United Site Services, Inc.	United States	Missed interest payment		\$144	Yes
United Subcontractors Inc.	United States	Chapter 11		\$400	Yes

EXHIBIT 16

**Moody's-Rated 2009 Corporate Bond and Loan Defaults**

COMPANY	COUNTRY	INITIAL DEFAULT TYPE	BONDS	LOANS	IN JAN 1 COHORT?
USF Corporation	United States	Distressed exchange	\$105		Yes
VAC Finanzierung GmbH	Germany	Distressed exchange	\$33		Yes
Visteon Corporation	United States	Chapter 11	\$862	\$1,850	Yes
Vitro, S.A.B. de C.V.	Mexico	Missed interest payment	\$1,000		Yes
Waterford Wedgwood plc	Ireland	Missed interest payment		\$250	No
West Bromwich Building Society	United Kingdom	Distressed exchange	\$165		Yes
White Birch Paper Company	United States	Missed interest payment		\$650	Yes
William Lyon Homes, Inc.	United States	Distressed exchange	\$53		Yes
Wolverine Tube, Inc.	United States	Distressed exchange	\$122		Yes
Workflow Management, Inc.	United States	Missed principal and interest payments		\$140	No
WP Evenflo Holdings, Inc.	United States	Distressed exchange		\$45	Yes
XM Satellite Radio Holdings Inc.	United States	Distressed exchange	\$173		Yes
Young Broadcasting Inc.	United States	Chapter 11	\$484	\$370	Yes
YRC Worldwide Inc.	United States	Distressed exchange	\$365		Yes
Zlomrex S.A.	Poland	Distressed exchange	\$60		Yes

## EXHIBIT 17

## Annual Moody's-Rated Global Corporate Issuer Default Counts, 1920-2009

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	1950	0	0	0	1980	0	4	4
1921	7	24	31	1951	0	1	1	1981	0	2	2
1922	10	23	33	1952	0	0	0	1982	2	11	13
1923	5	22	27	1953	0	0	0	1983	0	13	13
1924	3	37	40	1954	0	1	1	1984	1	12	13
1925	7	34	41	1955	0	1	1	1985	0	15	15
1926	4	18	22	1956	0	0	0	1986	3	30	33
1927	1	15	16	1957	0	1	1	1987	0	31	31
1928	0	8	8	1958	0	0	0	1988	0	29	29
1929	3	12	15	1959	0	0	0	1989	4	48	52
1930	2	21	23	1960	0	2	2	1990	0	82	82
1931	6	79	85	1961	0	3	3	1991	1	65	66
1932	10	108	118	1962	0	4	4	1992	0	31	31
1933	9	188	197	1963	0	3	3	1993	0	19	19
1934	5	60	65	1964	0	0	0	1994	0	16	16
1935	9	51	60	1965	0	0	0	1995	0	27	27
1936	3	19	22	1966	0	1	1	1996	0	17	17
1937	4	17	21	1967	0	0	0	1997	0	25	25
1938	9	17	26	1968	0	1	1	1998	1	50	51
1939	2	13	15	1969	0	0	0	1999	1	99	100
1940	2	22	24	1970	2	25	27	2000	4	118	122
1941	0	10	10	1971	0	3	3	2001	4	183	187
1942	0	4	4	1972	0	5	5	2002	14	126	140
1943	0	3	3	1973	2	3	5	2003	0	80	80
1944	0	3	3	1974	0	3	3	2004	0	38	38
1945	0	2	2	1975	0	4	4	2005	2	29	31
1946	0	0	0	1976	0	2	2	2006	0	31	31
1947	0	1	1	1977	1	3	4	2007	0	18	18
1948	0	0	0	1978	0	4	4	2008	13	89	102
1949	0	5	5	1979	0	1	1	2009	10	251	261



## EXHIBIT 18

## Annual Rated Global Corporate Bond and Loan Default Volumes, 1920-2009

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	\$1,161	\$0	\$1,161	\$1,110	\$0	\$1,161
1984	\$183	\$0	\$183	\$399	\$0	\$399	\$582	\$0	\$582
1985	\$0	\$0	\$0	\$1,368	\$0	\$1,368	\$1,368	\$0	\$1,368
1986	\$138	\$0	\$138	\$3,986	\$0	\$3,986	\$4,124	\$0	\$4,124
1987	\$0	\$0	\$0	\$9,172	\$242	\$9,413	\$9,172	\$242	\$9,413
1988	\$0	\$0	\$0	\$5,425	\$361	\$5,786	\$5,425	\$361	\$5,786
1989	\$1,506	\$0	\$1,506	\$10,196	0	\$10,196	\$11,702	\$0	\$11,702
1990	\$0	\$0	\$0	\$19,559	\$1,603	\$21,161	\$19,559	\$1,603	\$21,161
1991	\$1,348	\$0	\$1,348	\$15,478	\$570	\$16,048	\$16,826	\$570	\$17,396
1992	\$0	\$0	\$0	\$6,418	\$698	\$7,116	\$6,418	\$698	\$7,116
1993	\$0	\$0	\$0	\$1,827	\$424	\$2,251	\$1,827	\$424	\$2,251
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	\$25,906	\$13,094	\$39,000	\$26,367	\$14,319	\$40,686
2000	\$4,115	\$3,950	\$8,065	\$24,473	\$21,567	\$46,040	\$28,588	\$25,517	\$54,105
2001	\$22,351	\$5,363	\$27,714	\$77,848	\$33,850	\$111,697	\$100,199	\$39,213	\$139,411
2002	\$47,900	\$13,122	\$61,022	\$105,949	\$35,728	\$141,677	\$153,850	\$48,850	\$202,699
2003	\$0	\$870	\$870	\$35,352	\$9,872	\$45,224	\$35,352	\$10,742	\$46,093
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	\$182,845	\$10,335	\$193,180	\$55,060	\$32,322	\$87,382	\$237,905	\$42,656	\$280,561
2009	\$38,295	\$21,931	\$60,226	\$145,026	\$123,612	\$268,638	\$183,321	\$145,543	\$328,864

## EXHIBIT 19

## Annual Issuer Default Counts and Volume Totals by Geographical Region, 1986-2009

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	0	0	31	\$0	\$0	\$0	\$0	\$9,413
1988	0	0	0	0	29	\$0	\$0	\$0	\$0	\$5,786
1989	0	4	0	0	48	\$0	\$1,144	\$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	\$16,397
1992	0	0	0	0	31	\$0	\$0	\$0	\$0	\$7,116
1993	0	0	0	0	19	\$0	\$0	\$0	\$0	\$2,251
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	5	1	0	45	\$0	\$1,444	\$200	\$0	\$11,402
1999	2	7	7	6	78	\$275	\$3,326	\$3,737	\$1,608	\$31,740
2000	0	1	3	2	116	\$0	\$225	\$713	\$238	\$52,929
2001	4	15	16	6	146	\$2,758	\$7,832	\$10,635	\$1,909	\$116,277
2002	0	1	26	15	98	\$0	\$408	\$47,385	\$9,640	\$145,266
2003	0	1	7	11	61	\$0	\$300	\$3,210	\$4,398	\$38,186
2004	1	0	3	0	34	\$183	\$0	\$1,873	\$366	\$13,587
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	2	12	2	86	\$0	\$270	\$53,374	\$555	\$226,361
2009	0	21	30	10	200	\$0	\$19,562	\$15,522	\$2,807	\$290,973

## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
155 East Tropicana, LLC	Payment default				26.3%			
Abitibi-Consolidated Company of Canada	Payment default	78.2%			90.5%	10.3%		
Abitibi-Consolidated Inc.	Payment default					8.3%		
Accuride Corporation	Payment default	98.7%					50.0%	
Advanstar Communications, Inc.	Payment default		9.0%					
Affinity Group Holding, Inc.	Payment default					40.0%		
Airborne Health, Inc.	Payment default	13.7%						
Aleris International Inc.	Bankruptcy					0.3%	0.1%	
Alfa Bank Ukraine	Distressed exchange					70.8%		
Alion Science and Technology Corp	Distressed exchange					75.8%		
Allis-Chalmers Energy Inc.	Distressed exchange					62.5%		
American Achievement Group Holding Corp	Distressed exchange					35.0%		
American Media Operations, Inc.	Payment default						30.0%	
Appleton Papers Inc.	Distressed exchange					81.1%	45.1%	
ASAT Holdings Limited	Payment default					1.4%		
Asia Aluminum Holdings Limited	Bankruptcy					7.0%		
Astana Finance	Payment default					15.8%		
Atlantic Express Transportation Corp	Distressed exchange				40.9%			
Atrium Companies, Inc.	Payment default	27.3%						
Aventine Renewable Energy Holdings, Inc.	Bankruptcy					19.5%		
BankUnited Financial Corporation	Bankruptcy						6.1%	
Barrington Broadcasting Group LLC	Distressed exchange						17.0%	
Baseline Oil & Gas Corp	Payment default				70.0%			
BCBG Max Azria Group, Inc.	Distressed exchange	35.0%						
BearingPoint, Inc.	Bankruptcy	43.9%					3.0%	0.3%
Beazer Homes USA, Inc.	Distressed exchange					63.4%		
Berry Plastics Corporation	Distressed exchange						29.2%	
Berry Plastics Group, Inc.	Distressed exchange			27.5%				
BI-LO LLC	Bankruptcy	41.9%		40.5%				
Bite Finance International B.V.	Distressed exchange						35.0%	

## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
Black Gaming, LLC	Payment default				10.0%		2.3%	
Bonten Media Group, Inc.	Distressed exchange						34.1%	
Bowater Incorporated	Bankruptcy					14.6%		
Bowater Pulp & Paper Canada	Bankruptcy					7.0%		
Bradford & Bingley plc	Distressed exchange							17.9%
Broder Bros., Co.	Payment default					31.5%		
BTA Bank	Payment default					21.1%		
Building Materials Holding Corporation	Bankruptcy	27.0%						
California Coastal Communities, Inc.	Payment default	62.5%						
Canwest Limited Partnership	Payment default	53.0%						11.3%
Canwest Media Inc.	Payment default							26.3%
Cap Cana, S.A.	Payment default				34.0%			
Capmark Financial Group Inc.	Payment default	71.0%		25.8%		21.8%		
Caraustar Industries, Inc.	Bankruptcy					57.5%		
Castle Holdco 4, Ltd.	Payment default	87.0%						
Cattles plc	Payment default					9.8%		
CCH I Holdings LLC	Bankruptcy					1.1%		
CCH I, LLC	Bankruptcy				9.0%			
CCH II, LLC	Bankruptcy					89.5%		
CCO Holdings, LLC	Bankruptcy					86.0%		
CCS Medical Inc	Bankruptcy	46.6%	6.0%					
Cell Genesys, Inc.	Distressed exchange					56.4%		
Cell Therapeutics, Inc.	Distressed exchange					63.0%		
Centaur, LLC	Payment default	86.2%	27.4%					
Centro NP LLC	Distressed exchange					93.0%		
Century Aluminum Company	Distressed exchange					90.5%		
CEVA Group plc	Distressed exchange			62.0%		60.5%	48.5%	
Champion Enterprises, Inc.	Payment default					2.3%		
Champion Home Builders, Co.	Payment default	49.8%						
Charter Communications Holdings, LLC	Bankruptcy					0.5%		
Charter Communications Inc.	Bankruptcy					10.4%		
Charter Communications Operating, LLC	Bankruptcy	80.8%						
Chemtura Corporation	Bankruptcy	60.0%				37.5%		
China Glass Holdings Limited	Distressed exchange					50.4%		

## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN			BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC. SR. SEC.	SR. UNSEC. SR. SUB.	SUB.	
Chrysler LLC	Bankruptcy	28.0%					
Cinram International Inc.	Distressed exchange	70.9%					
CIT Group Inc.	Distressed exchange	101.9%		68.3%	71.3%		27.5%
Citizens Republic Bancorp, Inc.	Distressed exchange						92.1%
Clear Channel Communications, Inc.	Distressed exchange				41.8%		
CMP Susquehanna Corp	Distressed exchange						3.6%
Colgrade Ltd.	Distressed exchange				81.0%		
Colonial BancGroup, Inc. (The)	Bankruptcy						5.0%
Colonial Bank	Bankruptcy						2.0%
Commercial Vehicle Group, Inc.	Distressed exchange				57.0%		
Cooper Standard Automotive Canada Ltd	Bankruptcy	79.5%					
Cooper Standard Automotive Inc.	Payment default	81.2%			22.5%	6.0%	
Crescent Resources, LLC	Bankruptcy			17.8%			
Cygnus Business Media, Inc.	Payment default	42.5%					
Dana Holding Corporation	Distressed exchange	55.1%					
Davomas Abadi Tbk (P.T.)	Payment default				17.0%		
Dayco Products, LLC	Bankruptcy	23.3%	2.2%				
Dayton Superior Corporation	Payment default	67.1%					53.0%
Decode Genetics, Inc.	Bankruptcy				6.3%		
Dex Media West LLC	Bankruptcy				68.0%	14.0%	
Dex Media, Inc.	Bankruptcy				12.0%		
Duane Reade, Inc.	Distressed exchange			99.5%		95.0%	
Dunfermline Building Society	Bankruptcy						93.7%
E*TRADE Financial Corp.	Distressed exchange				106.6%		
Eddie Bauer Holdings Incorporated	Bankruptcy				9.6%		
Eddie Bauer, Inc.	Bankruptcy	70.6%					
Edge Petroleum Corporation	Bankruptcy	62.5%					
Education Media & Publishing Group Ltd.	Distressed exchange	77.4%	24.0%				
Emmis Operating Company	Distressed exchange	54.9%					
Energy Partners, Ltd.	Bankruptcy				48.8%		
Energy XXI Gulf Coast, Inc.	Distressed exchange				82.5%		
Equistar Chemicals, LP	Bankruptcy				31.0%		
Euramax International, Inc.	Payment default	36.3%	15.5%				

## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
Eurofresh Inc.	Payment default					15.0%		
Express Energy Services Operating, LP	Payment default	27.2%						
FairPoint Communications, Inc.	Distressed exchange	81.4%				21.0%		
Finlay Fine Jewelry Corporation	Payment default					0.9%		
Foamex L.P.	Payment default	28.7%	8.0%					
Fontainebleau Las Vegas Holdings, LLC	Bankruptcy				3.5%			
Fontainebleau Las Vegas, LLC	Bankruptcy	31.9%						
Ford Motor Company	Distressed exchange	47.0%				35.4%		
Freedom Communications, Inc.	Bankruptcy	47.8%						
Freescale Semiconductor, Inc.	Distressed exchange					15.8%	14.0%	
French Lick Resorts & Casino, LLC	Distressed exchange				40.0%			
G Steel Public Company Limited	Payment default					23.0%		
Gajah Tunggal Tbk (P.T.)	Distressed exchange					47.8%		
Gallery Media Group Ltd.	Payment default				18.0%			
General Growth Properties	Payment default	40.4%						
General Motors Corporation	Bankruptcy	99.1%				11.0%		
Georgia Gulf Corporation	Payment default					36.1%	9.8%	
Golden Nugget, Inc.	Distressed exchange		41.0%					
GPX International Tire Corporation	Bankruptcy	36.9%						
Grant Forest Products Inc.	Bankruptcy	54.3%	4.0%					
Great Lakes Chemical Corporation	Bankruptcy					26.5%		
Greentown China Holdings Limited	Distressed exchange					85.0%		
GSCP (NJ), L.P.	Payment default	23.9%						
Haight's Cross Communications, Inc.	Payment default					6.8%		
Harrah's Entertainment, Inc.	Distressed exchange					23.2%	49.5%	
Harrah's Operating Company, Inc.	Distressed exchange					17.5%		
Hawker Beechcraft Acquisition Co LLC	Distressed exchange					27.0%	24.0%	
Hayes Lemmerz Finance-Luxembourg SA	Bankruptcy					73.4%		
Headwaters Incorporated	Distressed exchange						46.2%	

## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
Hellas Telecommunications II S.a.r.l.	Payment default							2.3%
Hexion Specialty Chemicals Inc.	Distressed exchange				44.6%	27.5%		
Hovnanian Enterprises, Inc.	Distressed exchange							36.2%
Human Touch LLC	Payment default					25.0%		
Idearc, Inc.	Bankruptcy	39.2%				2.0%		
Indalex Holding Corp.	Payment default				8.0%			
Inn of the Mountain Gods Resort and Casino	Payment default					38.0%		
Integra Telecom Holdings, Inc.	Payment default		44.0%					
Integra Telecom, Inc.	Distressed exchange			9.2%				
Intelsat, Ltd.	Distressed exchange					79.0%		
ION Media Networks, Inc.	Bankruptcy							0.0%
J.L. French Automotive Castings	Bankruptcy	21.9%						
JSC Alliance Bank	Payment default					18.8%		
K. Hovnanian Enterprises, Inc.	Distressed exchange				105.0%	50.7%	55.1%	
Kazanorgsintez OAO	Payment default					30.3%		
Kellwood Company	Payment default					20.0%		
Kinetek, Inc.	Distressed exchange	55.0%	2.2%					
Lear Corporation	Payment default	76.1%				44.3%		
Level 3 Communications, Inc.	Distressed exchange					94.1%		100.0%
Little Traverse Bay Bands of Odawa Indians	Payment default					46.1%		
Lyondell Chemical Company	Bankruptcy	32.7%				25.0%		
LyondellBasell Industries AF SCa	Payment default				4.5%			
MagnaChip Semiconductor S.A.	Payment default				2.9%		0.0%	
Majestic HoldCo, LLC	Payment default				0.8%			
Mandra Forestry Holdings Ltd.	Payment default					72.0%		
Masonite Corporation	Payment default	39.9%						
McClatchy Company (The)	Distressed exchange					27.9%		
Mercer International Inc.	Distressed exchange					85.5%		
Merisant Co.	Bankruptcy	73.3%						10.0%
Merisant Worldwide, Inc.	Bankruptcy							0.1%
Merrill Communications LLC	Distressed exchange	80.9%						

EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN			BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC. SR. SEC.	SR. UNSEC. SR. SUB.	SUB.	
Metaldyne Company LLC	Bankruptcy	12.2%					
Metro-Goldwyn-Mayer Studios Inc.	Payment default	63.0%					
Milacron Inc.	Bankruptcy			21.0%			
Millennium America Inc.	Bankruptcy				7.0%		
Momentive Performance Materials Inc.	Distressed exchange				34.8%	25.5%	
Morris Publishing Group, LLC	Payment default						4.5%
Muzak Holdings, LLC	Distressed exchange	70.0%					
Muzak LLC	Bankruptcy				50.0%		
MXenergy Holdings Inc.	Distressed exchange				38.5%		
Nakheel PJSC	Payment default				57.9%		
NCI Building Systems, Inc.	Distressed exchange	94.5%					
Neo-China Land Group (Holdings) Limited	Distressed exchange				63.0%		
NES Rentals Holdings, Inc.	Distressed exchange		49.5%				
Newark Group, Inc. (The)	Payment default						1.0%
Newport Television, LLC	Distressed exchange	53.6%					
Nexstar Broadcasting, Inc.	Distressed exchange						38.3%
NextMedia Operating, Inc.	Payment default		18.0%				
Noranda Aluminum Acquisition Corporation	Distressed exchange				25.3%		
Noranda Aluminum Holding Corporation	Distressed exchange				15.3%		
Nortek, Inc.	Payment default			101.0%		67.0%	
Nortel Networks Corporation	Bankruptcy				16.5%		
Nortel Networks Limited	Bankruptcy				13.8%		
Northeast Biofuels, LLC	Bankruptcy	34.9%					
NV Broadcasting, LLC	Bankruptcy	27.4%					
NXP B.V.	Distressed exchange				31.2%	23.0%	
Oscient Pharmaceuticals Corp.	Bankruptcy					5.0%	
OSI Restaurant Partners, Inc.	Distressed exchange				30.0%		
Pakuwon Jati Tbk (P.T.)	Distressed exchange			76.2%			
Panolam Industries International, Inc.	Payment default	75.0%					5.0%
Parkin Broadcasting, LLC	Bankruptcy	27.4%					
Pliant Corporation	Bankruptcy			21.4%			
Ply-Gem Industries, Inc.	Distressed exchange						24.5%
Primus Telecommunications	Distressed exchange				5.2%		



## EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
Group, Inc								
Primus Telecommunications Holding, Inc.	Distressed exchange	62.7%				6.0%		
Quality Distribution, LLC	Distressed exchange						66.0%	
Quantum Corporation	Distressed exchange							84.5%
Questex Media Group, Inc.	Bankruptcy	31.9%	2.0%					
R.H. Donnelley Corporation	Payment default					4.9%		
RathGibson, Inc.	Bankruptcy					35.5%		
RBS Global, Inc.	Distressed exchange					70.5%		
Reader's Digest Association, Inc. (The)	Bankruptcy							2.4%
Real Mex Restaurants, Inc.	Distressed exchange			30.6%				
Realogy Corporation	Distressed exchange					67.0%		
Rede Energia S.A.	Distressed exchange					53.0%		
Revere Industries, LLC	Payment default	30.0%						
Rexnord Holdings, Inc.	Distressed exchange			30.0%				
Rhodes Companies, LLC (The)	Bankruptcy	25.0%	7.5%					
Ritzio International Limited	Payment default					95.0%		
Riviera Holdings Corporation	Payment default	41.9%						
Rouse Company (The)	Payment default					51.3%		
Saad Group Limited	Payment default					15.5%		
Sensata Technologies B.V.	Distressed exchange					37.3%	15.5%	
Simmons Company	Payment default	99.8%				8.0%	15.0%	
Simmons Super Holding Company	Bankruptcy			3.0%				
Sirius Satellite Radio, Inc.	Distressed exchange					80.0%		
Six Flags Theme Parks Inc.	Bankruptcy	93.5%						
Six Flags, Inc	Distressed exchange					14.0%		
Smurfit-Stone Container Canada, Inc.	Bankruptcy	68.4%						
Smurfit-Stone Container Enterprises, Inc.	Bankruptcy	68.4%				8.8%		
Source Interlink Companies Inc.	Bankruptcy	48.8%						
Spanson, LLC	Payment default				23.5%		0.3%	
Spectrum Brands, Inc.	Bankruptcy	66.4%					22.4%	
Stallion Oilfield Services, Ltd.	Payment default	88.1%		47.0%		38.0%		

EXHIBIT 20

## 2009 Defaulted Corporate Bond and Loan Recoveries

COMPANY	INITIAL DEFAULT TYPE	BANK LOAN				BOND		
		1ST LIEN	2ND LIEN	SR. UNSEC.	SR. SEC.	SR. UNSEC.	SR. SUB.	SUB.
Standard Motor Products, Inc.	Distressed exchange							90.0%
Stanley-Martin Communities, LLC	Payment default						30.0%	
Station Casinos, Inc.	Payment default	80.0%				33.4%	2.8%	
TCM Media, Inc.	Payment default	40.0%	10.0%					
Temirbank	Payment default					25.1%		
Thornburg Mortgage, Inc.	Payment default					1.9%	0.8%	
Tishman Speyer Real Estate	Payment default	46.8%						
TLC Vision Corporation	Payment default	45.0%						
Triple Crown Media, Inc.	Bankruptcy	40.0%						
True Temper Sports, Inc.	Payment default	86.8%	16.3%					0.0%
U.S. Shipping Partners LP	Payment default	39.3%						
Unisys Corporation	Distressed exchange					78.6%		
United Site Services, Inc.	Payment default			15.0%				
United Subcontractors Inc.	Bankruptcy	9.1%	1.6%					
USF Corporation	Distressed exchange					59.8%		
VAC Finanzierung GmbH	Distressed exchange				40.0%			
Visteon Corporation	Bankruptcy	39.7%				6.8%		
Vitro, S.A.B. de C.V.	Payment default					22.5%		
Waterford Wedgwood plc	Payment default			72.5%				
White Birch Paper Company	Payment default	33.1%	8.0%					
William Lyon Homes, Inc.	Distressed exchange					31.5%		
Wolverine Tube, Inc.	Distressed exchange					80.3%		
Workflow Management, Inc.	Payment default		30.0%					
WP Evenflo Holdings, Inc.	Distressed exchange		10.0%					
XM Satellite Radio Holdings Inc.	Distressed exchange					43.4%		
Young Broadcasting Inc.	Bankruptcy	35.8%						0.0%
YRC Worldwide Inc.	Distressed exchange					47.3%		

## EXHIBIT 21

## 2009 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%	44.1%	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	73.5%	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%	21.5%	19.8%	15.9%	47.0%	21.8%
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%	53.2%	54.5%	n.a.	n.a.	54.7%
2008	61.7%	54.9%	33.8%	23.7%	23.6%	n.a.	34.0%
2009	54.0%	37.5%	37.7%	22.4%	46.8%	n.a.	34.3%

## EXHIBIT 22

## Average Sr. Unsecured Bond Recovery Rates by Year Prior to Default, 1982-2009

	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%	43.45%	57.61%	43.40%
A	31.77%	47.56%	46.15%	39.90%	41.82%
Baa	42.36%	44.42%	43.64%	45.21%	43.34%
Ba	46.19%	44.06%	42.00%	40.14%	39.39%
B	37.21%	35.76%	36.30%	37.45%	40.92%
Caa-C	34.55%	34.65%	33.64%	35.86%	35.57%
Investment Grade	39.50%	44.83%	44.63%	44.85%	43.89%
Speculative Grade	36.49%	36.52%	36.68%	37.80%	39.82%
All Rated	36.65%	37.32%	37.75%	39.04%	40.73%

## EXHIBIT 23

## Average Cumulative Credit Loss Rates by Letter Rating, 1982-2009

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Aaa	0.00%	0.01%	n.a.	0.00%	0.02%
Aa	0.02%	0.04%	0.06%	0.07%	0.14%
A	0.04%	0.10%	0.21%	0.35%	0.47%
Baa	0.11%	0.30%	0.55%	0.82%	1.16%
Ba	0.66%	1.93%	3.58%	5.45%	7.02%
B	2.86%	6.76%	10.43%	13.46%	15.51%
Caa-C	11.53%	19.12%	25.61%	29.58%	33.77%
Investment Grade	0.06%	0.14%	0.27%	0.41%	0.57%
Speculative Grade	3.04%	6.30%	9.40%	11.95%	13.84%
All Rated	1.11%	2.25%	3.30%	4.13%	4.75%

## EXHIBIT 24

## Annual Credit Loss Rates by Letter Rating, 1982-2009

YEAR	Aaa	Aa	A	Baa	Ba	B	Caa-C	INV-GRADE	SPEC-GRADE	ALL RATED
1982	0.000	0.000	0.164	0.204	1.787	1.476	16.052	0.135	2.301	0.666
1983	0.000	0.000	0.000	0.000	0.431	2.982	19.909	0.000	1.808	0.457
1984	0.000	0.000	0.000	0.183	0.421	3.430	50.594	0.049	1.686	0.469
1985	0.000	0.000	0.000	0.000	0.563	2.982	0.000	0.000	1.374	0.379
1986	0.000	0.000	0.000	0.492	1.001	5.673	11.506	0.118	2.760	0.907
1987	0.000	0.000	0.000	0.000	0.990	2.352	7.250	0.000	1.579	0.565
1988	0.000	0.000	0.000	0.000	0.691	3.396	15.646	0.000	1.963	0.748
1989	0.000	0.339	0.000	0.327	1.670	4.791	13.734	0.160	3.185	1.298
1990	0.000	0.000	0.000	0.000	2.142	9.863	37.052	0.000	6.284	2.261
1991	0.000	0.000	0.000	0.174	3.089	8.004	28.149	0.042	6.028	1.907
1992	0.000	0.000	0.000	0.000	0.157	4.684	15.136	0.000	2.636	0.728
1993	0.000	0.000	0.000	0.000	0.359	2.864	18.400	0.000	1.950	0.526
1994	0.000	0.000	0.000	0.000	0.113	1.880	2.435	0.000	0.967	0.284
1995	0.000	0.000	0.000	0.000	0.379	2.232	4.763	0.000	1.545	0.489
1996	0.000	0.000	0.000	0.000	0.000	0.509	5.210	0.000	0.614	0.198
1997	0.000	0.000	0.000	0.000	0.084	0.852	6.504	0.000	0.899	0.306
1998	0.000	0.000	0.000	0.073	0.605	2.300	6.895	0.024	1.978	0.758
1999	0.000	0.000	0.000	0.065	0.816	3.094	11.245	0.023	3.371	1.370
2000	0.000	0.000	0.000	0.296	0.547	4.430	14.770	0.106	4.751	1.954
2001	0.000	0.000	0.135	0.155	1.092	7.510	24.956	0.107	8.103	3.120
2002	0.000	0.000	0.121	0.770	0.968	3.193	20.067	0.325	5.631	2.139
2003	0.000	0.000	0.000	0.000	0.582	1.229	12.562	0.000	3.040	1.045
2004	0.000	0.000	0.000	0.000	0.196	0.404	5.850	0.000	1.169	0.410
2005	0.000	0.000	0.000	0.082	0.000	0.463	3.008	0.031	0.787	0.305
2006	0.000	0.000	0.000	0.000	0.089	0.529	2.722	0.000	0.793	0.295
2007	0.000	0.000	0.000	0.000	0.000	0.000	2.805	0.000	0.448	0.173
2008	0.000	0.369	0.245	0.314	0.767	1.360	9.955	0.285	2.894	1.334
2009	0.000	0.000	0.114	0.480	1.495	4.534	21.289	0.212	8.083	3.337
Average	0.000	0.025	0.028	0.129	0.751	3.108	13.874	0.058	2.808	1.015
Max	0.000	0.369	0.245	0.770	3.089	9.863	50.594	0.325	8.103	3.337
Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.448	0.173

## EXHIBIT 25

## 2009 One-Year Letter Migration Rates

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	DEFAULT	WR
Aaa	62.42%	33.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.82%
Aa	0.00%	70.98%	22.62%	1.04%	0.15%	0.00%	0.00%	0.00%	0.00%	5.21%
A	0.00%	0.18%	80.20%	12.61%	0.44%	0.53%	0.00%	0.00%	0.18%	5.86%
Baa	0.00%	0.09%	0.93%	85.38%	5.12%	0.84%	0.09%	0.00%	0.74%	6.80%
Ba	0.00%	0.00%	0.00%	3.85%	71.54%	13.27%	0.77%	0.58%	2.31%	7.69%
B	0.00%	0.00%	0.00%	0.00%	2.88%	68.35%	13.46%	0.41%	6.99%	7.91%
Caa	0.00%	0.00%	0.00%	0.00%	0.00%	7.59%	48.81%	6.51%	28.20%	8.89%
Ca-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	20.63%	65.08%	9.52%

## EXHIBIT 26

## Average One-Year Letter Rating Migration Rates, 1920-2009

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	DEFAULT	WR
Aaa	86.82%	8.06%	0.81%	0.16%	0.03%	0.00%	0.00%	0.00%	0.00%	4.11%
Aa	1.22%	84.63%	7.09%	0.73%	0.17%	0.04%	0.01%	0.00%	0.07%	6.06%
A	0.08%	2.96%	84.84%	5.47%	0.67%	0.11%	0.03%	0.01%	0.09%	5.74%
Baa	0.04%	0.29%	4.50%	81.30%	5.01%	0.79%	0.13%	0.02%	0.29%	7.63%
Ba	0.01%	0.08%	0.48%	5.89%	73.65%	6.77%	0.56%	0.07%	1.34%	11.16%
B	0.01%	0.05%	0.16%	0.60%	5.79%	71.60%	5.45%	0.55%	3.91%	11.90%
Caa	0.00%	0.02%	0.03%	0.19%	0.74%	7.73%	63.37%	3.94%	12.48%	11.49%
Ca-C	0.00%	0.00%	0.11%	0.00%	0.44%	2.97%	7.48%	54.35%	22.15%	12.51%

## EXHIBIT 27

## Average One-Year Transition Rates, 1970-2009

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	DEFAULT	WR
Aaa	87.65%	8.48%	0.61%	0.01%	0.03%	0.00%	0.00%	0.00%	0.00%	3.22%
Aa	1.01%	86.26%	7.82%	0.34%	0.05%	0.02%	0.01%	0.00%	0.02%	4.47%
A	0.06%	2.78%	87.05%	5.21%	0.48%	0.09%	0.03%	0.00%	0.05%	4.24%
Baa	0.04%	0.19%	4.65%	84.40%	4.20%	0.79%	0.18%	0.02%	0.17%	5.35%
Ba	0.01%	0.06%	0.38%	5.66%	75.74%	7.25%	0.53%	0.08%	1.13%	9.16%
B	0.01%	0.04%	0.13%	0.35%	4.81%	73.50%	5.66%	0.70%	4.37%	10.43%
Caa	0.00%	0.02%	0.02%	0.16%	0.44%	8.17%	59.90%	4.25%	14.72%	12.32%
Ca-C	0.00%	0.00%	0.00%	0.00%	0.32%	2.24%	8.65%	38.48%	33.28%	17.03%

## EXHIBIT 28

## Average Five-Year Letter Rating Migration Rates, 1970-2005

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca_C	DEFAULT	WR
Aaa	54.11%	23.93%	5.20%	0.34%	0.26%	0.04%	0.04%	0.00%	0.08%	16.01%
Aa	3.29%	50.85%	21.09%	3.20%	0.54%	0.16%	0.03%	0.01%	0.18%	20.66%
A	0.21%	8.59%	52.88%	14.29%	2.72%	0.84%	0.15%	0.02%	0.51%	19.79%
Baa	0.24%	1.17%	13.76%	46.51%	8.92%	2.88%	0.51%	0.08%	1.63%	24.29%
Ba	0.05%	0.19%	2.37%	12.09%	26.81%	10.78%	1.30%	0.14%	7.91%	38.37%
B	0.04%	0.06%	0.31%	1.81%	6.87%	22.10%	4.57%	0.68%	20.17%	43.38%
Caa	0.00%	0.00%	0.03%	0.92%	2.06%	6.59%	7.49%	1.06%	37.84%	44.02%
Ca-C	0.00%	0.00%	0.00%	0.00%	0.22%	1.87%	2.05%	2.39%	49.41%	44.06%

EXHIBIT 29

## 2009 One-Year Alphanumeric Rating Migration Rates

	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	CaC	Default	WR			
<b>Aaa</b>	62.42%	14.65%	16.56%	2.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.82%		
<b>Aa1</b>	0.00%	57.99%	15.07%	12.79%	5.02%	0.46%	0.00%	0.46%	0.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.76%	
<b>Aa2</b>	0.00%	0.00%	48.90%	31.28%	9.69%	5.73%	0.88%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.08%	
<b>Aa3</b>	0.00%	0.44%	0.88%	46.02%	30.09%	9.73%	5.75%	1.33%	0.00%	0.44%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.87%	
<b>A1</b>	0.00%	0.00%	0.00%	0.00%	59.38%	20.31%	5.94%	5.00%	1.25%	0.31%	0.31%	0.00%	0.00%	1.25%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.94%
<b>A2</b>	0.00%	0.00%	0.00%	0.00%	0.24%	63.77%	22.95%	5.31%	0.48%	1.21%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.80%
<b>A3</b>	0.00%	0.00%	0.51%	0.00%	0.26%	0.51%	67.86%	13.01%	8.42%	2.04%	0.51%	0.00%	0.26%	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.87%
<b>Baa1</b>	0.00%	0.00%	0.00%	0.28%	0.00%	0.00%	2.23%	69.83%	12.29%	5.31%	0.56%	0.56%	0.00%	0.28%	0.28%	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.98%
<b>Baa2</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	0.00%	4.98%	70.38%	13.74%	3.08%	0.24%	0.47%	0.00%	0.00%	0.00%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.69%
<b>Baa3</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.02%	6.80%	69.73%	6.12%	4.76%	1.02%	1.36%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.16%
<b>Ba1</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	9.02%	57.14%	12.03%	4.51%	3.01%	0.75%	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.27%
<b>Ba2</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	6.11%	61.67%	12.78%	3.89%	2.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.78%
<b>Ba3</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.48%	4.83%	57.00%	15.94%	7.25%	1.45%	0.97%	0.48%	0.00%	0.48%	0.00%	0.00%	0.00%	0.00%	7.25%
<b>B1</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.18%	8.27%	56.30%	10.63%	7.87%	3.54%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.27%
<b>B2</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	0.93%	6.52%	52.48%	10.56%	9.63%	1.55%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	9.63%
<b>B3</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.25%	4.79%	58.19%	13.85%	6.55%	1.01%	0.76%	0.00%	0.00%	0.00%	0.00%	6.30%
<b>Caa1</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.80%	10.40%	37.60%	13.60%	8.00%	2.80%	0.00%	0.00%	0.00%	0.00%	8.40%
<b>Caa2</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.67%	0.67%	4.70%	22.15%	16.11%	8.72%	0.00%	0.00%	0.00%	0.00%	10.07%
<b>Caa3</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	17.74%	16.13%	0.00%	0.00%	0.00%	0.00%	8.06%
<b>Ca-C</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.17%	1.59%	0.00%	20.63%	0.00%	0.00%	0.00%	0.00%	9.52%



## EXHIBIT 30

## Average One-Year Alphanumeric Rating Migration Rates, 1983-2009

	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	CaC	Default	WR
Aaa	86.56%	5.82%	2.71%	0.57%	0.31%	0.13%	0.01%	0.01%	0.00%	0.00%	0.02%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.84%
Aa1	2.34%	76.52%	7.85%	6.43%	1.60%	0.35%	0.12%	0.17%	0.03%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	4.56%
Aa2	1.12%	4.88%	74.93%	8.91%	3.40%	1.32%	0.41%	0.09%	0.12%	0.01%	0.03%	0.00%	0.00%	0.02%	0.01%	0.01%	0.00%	0.02%	0.00%	0.00%	0.00%	4.71%
Aa3	0.21%	1.56%	4.50%	75.44%	8.60%	2.88%	1.01%	0.24%	0.22%	0.08%	0.01%	0.04%	0.02%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	5.13%
A1	0.07%	0.11%	1.38%	5.59%	75.91%	7.79%	2.92%	0.65%	0.38%	0.16%	0.20%	0.13%	0.04%	0.05%	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%	0.06%	4.54%
A2	0.08%	0.03%	0.24%	1.16%	5.19%	76.19%	7.78%	2.82%	0.87%	0.40%	0.17%	0.10%	0.12%	0.04%	0.03%	0.01%	0.03%	0.03%	0.01%	0.00%	0.06%	4.64%
A3	0.05%	0.06%	0.14%	0.27%	1.98%	7.00%	73.34%	6.69%	3.23%	1.06%	0.44%	0.19%	0.19%	0.10%	0.04%	0.02%	0.01%	0.00%	0.01%	0.02%	0.05%	5.14%
Baa1	0.03%	0.05%	0.09%	0.14%	0.28%	1.94%	7.01%	72.35%	7.39%	3.00%	0.79%	0.41%	0.31%	0.39%	0.07%	0.04%	0.06%	0.03%	0.01%	0.02%	0.13%	5.45%
Baa2	0.04%	0.08%	0.04%	0.09%	0.17%	0.73%	2.74%	6.02%	73.32%	6.72%	1.69%	0.68%	0.61%	0.50%	0.25%	0.12%	0.12%	0.02%	0.03%	0.01%	0.17%	5.85%
Baa3	0.05%	0.02%	0.03%	0.05%	0.14%	0.26%	0.61%	2.87%	8.71%	69.73%	5.13%	2.63%	1.15%	0.84%	0.38%	0.28%	0.21%	0.10%	0.11%	0.05%	0.29%	6.36%
Ba1	0.03%	0.00%	0.02%	0.05%	0.18%	0.15%	0.37%	0.65%	3.10%	9.73%	62.68%	4.74%	3.95%	1.53%	1.12%	0.70%	0.11%	0.16%	0.05%	0.06%	0.71%	9.92%
Ba2	0.00%	0.00%	0.03%	0.00%	0.03%	0.09%	0.07%	0.31%	0.75%	3.16%	8.58%	62.56%	6.93%	2.94%	2.30%	1.05%	0.22%	0.20%	0.09%	0.11%	0.75%	9.83%
Ba3	0.00%	0.02%	0.01%	0.03%	0.02%	0.15%	0.14%	0.17%	0.30%	0.71%	2.62%	6.09%	63.88%	5.88%	4.45%	2.15%	0.50%	0.32%	0.08%	0.11%	1.79%	10.58%
B1	0.03%	0.01%	0.02%	0.01%	0.04%	0.08%	0.09%	0.07%	0.13%	0.27%	0.46%	2.49%	6.44%	63.85%	6.71%	4.02%	1.26%	0.56%	0.27%	0.37%	2.47%	10.33%
B2	0.00%	0.00%	0.01%	0.02%	0.02%	0.00%	0.04%	0.10%	0.10%	0.16%	0.29%	0.62%	1.84%	6.74%	61.84%	7.90%	3.29%	1.66%	0.54%	0.62%	3.81%	10.39%
B3	0.00%	0.01%	0.04%	0.00%	0.01%	0.02%	0.07%	0.04%	0.05%	0.10%	0.09%	0.23%	0.64%	2.45%	6.22%	58.75%	6.00%	3.91%	1.25%	1.25%	7.59%	11.26%
Caa1	0.00%	0.05%	0.00%	0.00%	0.00%	0.04%	0.00%	0.07%	0.00%	0.00%	0.08%	0.02%	0.14%	0.69%	2.34%	8.19%	50.72%	8.41%	4.39%	3.02%	9.67%	12.17%
Caa2	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.01%	0.07%	0.26%	0.12%	0.09%	0.49%	0.84%	1.29%	3.77%	7.06%	46.68%	4.73%	5.18%	17.53%	11.87%
Caa3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.16%	0.12%	0.00%	0.18%	0.39%	1.56%	2.03%	6.25%	39.27%	7.35%	27.00%	15.69%
Ca-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.00%	0.24%	0.20%	0.63%	1.46%	1.22%	3.52%	4.09%	37.95%	33.23%	17.38%

## EXHIBIT 31

## Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2009

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
1958	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

## EXHIBIT 31

## Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2009

YEAR	Aaa	Aa	A	Baa	Ba	B	Caa-C	INV GRADE	SPEC GRADE	ALL RATED
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	1.026	6.154	0.000	0.000	1.743	0.361
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	0.164
1982	0.000	0.000	0.255	0.317	2.783	2.299	25.000	0.211	3.583	1.037
1983	0.000	0.000	0.000	0.000	0.911	6.306	42.105	0.000	3.824	0.966
1984	0.000	0.000	0.000	0.362	0.833	6.780	100.000	0.096	3.333	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	1.007	2.047	11.602	23.529	0.241	5.644	1.855
1987	0.000	0.000	0.000	0.000	2.730	6.489	20.000	0.000	4.357	1.559
1988	0.000	0.000	0.000	0.000	1.261	6.202	28.571	0.000	3.585	1.366
1989	0.000	0.617	0.000	0.596	3.040	8.720	25.000	0.291	5.797	2.363
1990	0.000	0.000	0.000	0.000	3.401	15.659	58.824	0.000	9.976	3.590
1991	0.000	0.000	0.000	0.275	4.878	12.638	44.444	0.066	9.517	3.011
1992	0.000	0.000	0.000	0.000	0.308	9.218	29.787	0.000	5.188	1.433
1993	0.000	0.000	0.000	0.000	0.571	4.555	29.268	0.000	3.102	0.836
1994	0.000	0.000	0.000	0.000	0.245	4.062	5.263	0.000	2.089	0.613
1995	0.000	0.000	0.000	0.000	0.723	4.260	9.091	0.000	2.948	0.934
1996	0.000	0.000	0.000	0.000	0.000	1.366	13.986	0.000	1.647	0.532
1997	0.000	0.000	0.000	0.000	0.192	1.940	14.815	0.000	2.048	0.698

## EXHIBIT 31

## Annual Issuer-Weighted Corporate Default Rates by Letter Rating, 1920-2009

YEAR	Aaa	Aa	A	Baa	Ba	B	Caa-C	INV GRADE	SPEC GRADE	ALL RATED
1998	0.000	0.000	0.000	0.121	1.001	3.804	11.404	0.039	3.271	1.254
1999	0.000	0.000	0.000	0.105	1.317	4.992	18.143	0.037	5.438	2.211
2000	0.000	0.000	0.000	0.390	0.721	5.841	19.476	0.140	6.265	2.577
2001	0.000	0.000	0.172	0.197	1.390	9.561	31.772	0.136	10.316	3.972
2002	0.000	0.000	0.172	1.093	1.374	4.531	28.475	0.461	7.990	3.035
2003	0.000	0.000	0.000	0.000	1.001	2.114	21.612	0.000	5.230	1.797
2004	0.000	0.000	0.000	0.000	0.409	0.844	12.211	0.000	2.441	0.856
2005	0.000	0.000	0.000	0.182	0.000	1.026	6.667	0.068	1.744	0.675
2006	0.000	0.000	0.000	0.000	0.197	1.176	6.051	0.000	1.764	0.656
2007	0.000	0.000	0.000	0.000	0.000	0.000	6.000	0.000	0.959	0.369
2008	0.000	0.557	0.370	0.474	1.159	2.054	15.038	0.430	4.371	2.015
2009	0.000	0.000	0.183	0.771	2.400	7.277	34.166	0.340	12.972	5.355
Mean	0.000	0.063	0.094	0.272	1.081	3.442	13.838	0.150	2.774	1.142
Median	0.000	0.000	0.000	0.000	0.686	2.052	7.930	0.000	1.760	0.693
St Dev	0.000	0.186	0.264	0.463	1.617	4.065	17.102	0.277	3.104	1.422
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

EXHIBIT 32

## Annual Issuer-Weighted Corporate Default Rates by Alphanumeric Rating, 1983-2009

Year	Aaa	Aaa1	Aaa2	Aaa3	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca-C	InvGrade	SpecGrade	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	0.000	0.000	0.000	2.614	0.000	9.091	17.910	53.333	0	0	0	0	3.824	0.966	
1984	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.064	1.170	1.613	0.000	5.926	17.647	2.985			100	0.096	3.333	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	0.000	0.000	0.000	1.626	2.857	4.444	7.143	11.650	0	0	0	0	0	3.448	0.95	
1986	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.448	0.893	1.183	3.436	7.821	15.152	15.385	28.571	0	0	0.241	0	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	0.000	0.000	0.000	0.000	0.943	2.978	4.240	7.692	10.219	22.222	0	0	0	0	4.357	1.559	
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	0.000	0.000	0.000	2.575	4.178	6.897	10.959	23.529	0	0	0	0	3.585	1.366	
1989	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.826	1.000	0.806	1.852	4.814	5.621	9.150	18.321	27.273	0	0.291	0	0	5.797	2.363	
1990	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	2.844	7.843	21.687	29.870	58.333	0	75	0	0	9.976	3.59	
1991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.749	0.000	0.000	1.124	0.000	9.143	3.521	11.043	27.957	48	0	44.444	0.066	0	9.517	3.011	
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	0.000	0.000	0.000	0.735	0.976	1.471	26.582	31.579	0	28.571	0	0	5.188	1.433	
1993	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	0.000	0.791	2.479	3.279	10.084	25	0	57.143	0	0	3.102	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	0.000	0.000	0.000	0.619	1.905	3.614	8.805	7.018	0	0	0	0	2.089	0.613	
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	0.000	0.000	0.000	1.835	4.425	5.882	1.980	2.667	0	24.242	0	0	2.948	0.934	
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	0.000	0.000	0.000	1.158	0.000	3.279	0	14.953	0	12.5	0	1.647	0.532	
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	0.000	0.000	0.000	0.467	0.000	1.183	6.969	0	13.592	0	18.868	0	2.048	0.698	
1998	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.319	0.000	0.000	1.881	1.232	2.133	5.425	4.893	5.825	12.048	26.667	16.667	0.039	3.271	1.254	
1999	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.528	0.576	2.454	2.568	5.386	8.090	11.245	21.849	21.429	46.154	0.037	5.438	2.211	
2000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.295	0.000	0.990	0.510	0.629	1.000	3.081	4.911	11.306	11.228	29.487	20.69	40	0.14	6.265	2.577	
2001	0.000	0.000	0.000	0.000	0.451	0.000	0.289	0.000	0.000	0.000	0.289	0.277	0.000	0.000	1.351	2.841	3.150	10.406	18.000	25.758	33.333	47.619	42.105	0.136	10.316	3.972	
2002	0.000	0.000	0.000	0.000	0.000	0.452	0.793	0.734	1.929	2.388	0.627	0.627	0.000	0.643	0.707	1.096	2.206	4.747	7.588	15.966	25.758	33.766	48.951	0.461	7.99	3.035	
2003	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	1.481	0.357	2.389	4.360	8.612	21.898	31.818	37.5	0	5.23	1.797	
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	0.000	0.000	0.000	0.926	0.000	0.604	2.375	7.968	9.174	15.094	32.258	0	2.441	0.856	
2005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.249	0.328	0.000	0.000	0.000	0.000	0.590	2.465	3.077	6.283	21.053	21.739	0.068	1.744	0.675	
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	0.000	0.000	0.000	0.484	0.777	0.552	2.219	2.286	6.742	18.182	17.778	0	1.764	0.656	
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	0.000	0.000	0.000	2.21	8.434	14.815	33.333	0	0.959	0.369	
2008	0.000	0.000	1.732	1.220	0.000	0.000	0.271	0.791	0.326	0.000	0.000	0.000	0.000	0.000	0.000	2.721	1.783	0.811	3.198	7.787	19	32.877	54.054	0.43	4.371	2.015	
2009	0.000	0.000	0.000	0.000	0.000	0.526	0.868	0.732	0.709	2.353	0.578	0.000	0.000	0.000	0.000	4.010	3.696	8.483	8.583	17.119	38.869	57.143	68.333	0.34	12.972	5.355	
Mean	0.000	0.000	0.114	0.045	0.017	0.036	0.121	0.145	0.375	0.696	0.608	0.000	0.000	0.000	0.000	2.023	2.751	6.120	10.223	8.506	22.652	17.058	32.209	0.087	4.788	1.719	
Median	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	1.481	2.479	5.386	8.583	7.875	22.06	16.638	32.258	0	3.824	1.366	
StDev	0.000	0.000	0.415	0.235	0.087	0.131	0.263	0.281	0.778	1.110	0.794	0.281	0.778	1.110	0.794	1.967	2.297	5.550	8.278	7.353	15.183	17.421	25.859	0.140	3.039	1.222	
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	0	0	0	0	0	0.959	0.369
Max	0.000	0.000	1.732	1.220	0.451	0.526	0.868	0.826	3.448	3.788	2.844	0.000	0.000	0.000	0.000	9.143	7.843	21.687	29.870	25.758	58.333	57.143	100	0.461	12.972	5.355	

## EXHIBIT 33

## Average Cumulative Issuer-Weighted Global Default Rates, 1920-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Aaa</b>	0	0.008	0.026	0.081	0.162	0.248	0.354	0.507	0.666	0.85	1.014	1.143	1.282	1.326	1.364	1.438	1.515	1.575	1.653	1.703
<b>Aa</b>	0.068	0.202	0.309	0.468	0.721	1.015	1.321	1.618	1.901	2.222	2.592	2.996	3.402	3.814	4.131	4.367	4.564	4.799	5.11	5.383
<b>A</b>	0.092	0.281	0.574	0.909	1.257	1.627	2.026	2.425	2.858	3.303	3.779	4.245	4.661	5.056	5.509	5.925	6.282	6.64	6.973	7.297
<b>Baa</b>	0.285	0.843	1.549	2.317	3.136	3.953	4.735	5.53	6.37	7.213	8.004	8.801	9.585	10.301	10.933	11.591	12.177	12.683	13.159	13.684
<b>Ba</b>	1.356	3.287	5.466	7.741	9.901	11.939	13.815	15.668	17.416	19.223	20.846	22.426	23.987	25.373	26.645	27.817	29.008	30.131	31.127	32.095
<b>B</b>	4.029	9.046	14.049	18.502	22.42	25.918	29.143	31.87	34.273	36.372	38.317	40.169	41.828	43.356	44.745	46.09	47.291	48.284	48.992	49.451
<b>Caa-C</b>	14.276	24.028	31.365	36.888	41.183	44.346	46.672	48.804	50.863	52.795	54.736	56.666	58.494	60.413	62.361	64.214	65.844	67.305	68.674	70.022
<b>INV GRADE</b>	0.152	0.451	0.835	1.268	1.742	2.231	2.72	3.213	3.729	4.258	4.79	5.323	5.833	6.306	6.753	7.179	7.552	7.904	8.256	8.609
<b>SPEC GRADE</b>	3.801	7.804	11.626	15.049	18.049	20.692	23.05	25.186	27.135	29.003	30.711	32.36	33.932	35.37	36.703	37.958	39.168	40.269	41.213	42.077
<b>ALL RATED</b>	1.501	3.118	4.673	6.074	7.324	8.439	9.443	10.367	11.244	12.098	12.906	13.691	14.434	15.113	15.746	16.342	16.886	17.389	17.858	18.31

## EXHIBIT 34

## Average Cumulative Issuer-Weighted Global Default Rates, 1970-2009

Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Aaa</b>	0	0.012	0.012	0.037	0.105	0.172	0.245	0.323	0.407	0.497	0.593	0.696	0.802	0.862	0.927	0.998	1.074	1.102	1.102	1.102
<b>Aa</b>	0.022	0.059	0.091	0.159	0.234	0.309	0.384	0.447	0.489	0.542	0.619	0.734	0.887	1.034	1.15	1.277	1.442	1.668	2.052	2.465
<b>A</b>	0.051	0.165	0.341	0.52	0.717	0.935	1.179	1.463	1.76	2.046	2.34	2.626	2.921	3.213	3.572	3.978	4.463	4.987	5.46	5.934
<b>Baa</b>	0.176	0.494	0.912	1.404	1.926	2.473	2.996	3.534	4.148	4.851	5.558	6.317	7.119	7.951	8.751	9.594	10.372	11.067	11.687	12.327
<b>Ba</b>	1.166	3.186	5.583	8.123	10.397	12.485	14.318	16.15	18.026	19.964	21.892	23.878	25.819	27.757	29.703	31.519	33.148	34.519	35.938	37.173
<b>B</b>	4.546	10.426	16.188	21.256	25.895	30.295	34.473	38.105	41.424	44.377	46.997	49.591	51.958	54.224	56.098	57.7	59.079	60.479	61.462	62.478
<b>Caa-C</b>	17.723	29.384	38.682	46.094	52.286	56.622	59.771	63.564	67.423	71.376	73.812	73.932	75.053	76.406	77.545	79.666	80.211	80.211	80.211	80.211
<b>Inv Grade</b>	0.083	0.243	0.458	0.705	0.973	1.255	1.538	1.838	2.16	2.503	2.854	3.221	3.611	4	4.403	4.839	5.298	5.757	6.203	6.661
<b>Spec Grade</b>	4.533	9.331	13.87	17.874	21.359	24.427	27.126	29.562	31.85	34.005	35.99	37.943	39.799	41.612	43.33	44.91	46.286	47.475	48.623	49.649
<b>All rated</b>	1.573	3.216	4.733	6.034	7.139	8.095	8.921	9.668	10.378	11.059	11.699	12.331	12.95	13.554	14.147	14.741	15.318	15.867	16.399	16.922

EXHIBIT 35

## Average Cumulative Issuer-Weighted Global Default Rates, 1983-2009

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	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187
Aa	0.024	0.066	0.102	0.174	0.247	0.288	0.318	0.341	0.362	0.408	0.483	0.609	0.75	0.866	0.989	1.115	1.285	1.59	2.089	2.583
A	0.057	0.187	0.389	0.588	0.806	1.04	1.297	1.587	1.861	2.099	2.334	2.561	2.822	3.128	3.521	4.017	4.66	5.424	6.003	6.536
Baa	0.196	0.543	0.973	1.473	2.027	2.599	3.13	3.657	4.197	4.815	5.45	6.135	6.976	7.877	8.719	9.665	10.571	11.335	12.028	12.603
Ba	1.209	3.434	6.171	9.043	11.444	13.635	15.6	17.483	19.321	21.128	22.822	24.592	26.392	28.407	30.467	32.194	33.74	35.082	36.803	38.152
B	4.55	10.519	16.377	21.516	26.24	30.764	35.054	38.788	42.081	44.982	47.561	50.218	52.752	55.21	57.136	58.616	60.309	62.429	63.933	65.493
Caa	15.383	26.969	36.352	44.021	50.339	54.795	57.783	61.459	66.086	71.993	75.94	76.146	78.176	80.571	82.434	85.78	86.669	86.669	86.669	86.669
Ca-C	36.207	48.44	57.897	64.579	70.176	72.015	74.757	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014
IG	0.091	0.262	0.487	0.739	1.014	1.291	1.561	1.834	2.1	2.372	2.65	2.943	3.287	3.653	4.042	4.495	5.01	5.575	6.094	6.565
SG	4.804	9.954	14.891	19.249	23	26.323	29.286	31.921	34.3	36.474	38.391	40.296	42.174	44.14	45.957	47.469	48.865	50.218	51.656	52.892
All Rated	1.761	3.62	5.348	6.819	8.046	9.093	9.991	10.773	11.465	12.1	12.67	13.232	13.809	14.406	14.99	15.573	16.185	16.829	17.448	18.002

EXHIBIT 36

## Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1983-2009

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	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187	0.187
Aa1	0	0	0	0.094	0.141	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.31	0.503	0.721	0.805	0.805	0.805	0.805	0.805
Aa2	0	0.009	0.04	0.101	0.195	0.239	0.287	0.34	0.399	0.466	0.543	0.63	0.671	0.671	0.671	0.77	0.943	1.143	1.49	1.783
Aa3	0.05	0.13	0.185	0.254	0.324	0.373	0.403	0.417	0.42	0.471	0.576	0.777	0.98	1.144	1.313	1.475	1.711	2.214	3.021	3.861
A1	0.062	0.216	0.458	0.669	0.854	0.991	1.089	1.181	1.293	1.465	1.66	1.857	2.09	2.385	2.67	3.074	3.498	3.982	4.176	4.353
A2	0.06	0.158	0.325	0.538	0.746	1.028	1.422	1.883	2.298	2.62	2.858	3.027	3.205	3.443	3.761	4.213	5.07	5.936	6.684	7.331
A3	0.048	0.191	0.396	0.567	0.83	1.104	1.367	1.666	1.945	2.153	2.433	2.774	3.183	3.595	4.233	4.904	5.517	6.471	7.268	8.053
Baa1	0.134	0.352	0.615	0.872	1.18	1.482	1.786	2.003	2.197	2.463	2.78	3.335	4.025	4.852	5.929	7.219	8.03	8.342	8.342	8.342
Baa2	0.174	0.481	0.877	1.485	2.024	2.609	3.147	3.652	4.274	5.046	5.959	6.857	7.648	8.473	9.324	10.085	10.944	11.821	12.658	13.076
Baa3	0.299	0.85	1.528	2.194	3.081	3.985	4.802	5.766	6.657	7.539	8.227	8.802	9.9	10.983	11.529	12.27	13.347	14.49	15.776	17.126
Ba1	0.738	2.026	3.767	5.605	7.289	9.083	10.524	11.584	12.626	13.785	14.879	16.319	17.32	18.152	19.578	20.665	21.894	23.438	25.906	27.749
Ba2	0.783	2.27	4.19	6.246	8.084	9.544	10.886	12.363	13.746	15.01	16.764	18.691	20.798	22.792	25.368	27.472	29.258	29.934	30.23	30.23
Ba3	1.844	5.264	9.314	13.56	16.948	20.015	22.934	25.941	28.951	31.871	34.185	36.244	38.795	42.46	45.068	47.512	49.478	51.212	52.999	54.66
B1	2.561	7.025	11.701	15.807	20.077	24.445	29.146	33.159	36.724	39.931	42.862	46.094	49.475	52.853	54.66	56.173	58.657	60.934	63.512	66.349
B2	3.965	9.697	15.355	20.623	25.211	29.371	33.184	36.523	39.861	42.715	45.032	47.006	49.308	51.826	55.582	58.346	59.706	62.686	63.124	63.124
B3	7.941	16.279	24.224	31.004	36.907	42.531	47.024	51.137	53.988	56.487	58.889	61.461	62.577	63.197	63.386	63.386	63.753	64.429	64.429	64.429
Caa1	10.179	21.587	31.6	39.852	47.262	52.735	55.474	59.015	64.912	70.426	75.287	76.276	76.276							
Caa2	18.497	29.471	37.978	45.038	49.868	53.829	57.069	60.593	63.772	68.712	72.641	72.641	75.02	77.761	79.894	83.724	84.741	84.741	84.741	84.741
Caa3	29.097	43.795	53.32	60.407	66.96	68.648	71.417	75.3	80.454	94.251										
Ca-C	36.207	48.44	57.897	64.579	70.176	72.015	74.757	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014	78.014
IG	0.091	0.262	0.487	0.739	1.014	1.291	1.561	1.834	2.1	2.372	2.65	2.943	3.287	3.653	4.042	4.495	5.01	5.575	6.094	6.565
SG	4.804	9.954	14.891	19.249	23	26.323	29.286	31.921	34.3	36.474	38.391	40.296	42.174	44.14	45.957	47.469	48.865	50.218	51.656	52.892
ALL RATED	1.761	3.62	5.348	6.819	8.046	9.093	9.991	10.773	11.465	12.1	12.67	13.232	13.809	14.406	14.99	15.573	16.185	16.829	17.448	18.002



## EXHIBIT 37

## Average Cumulative Issuer-Weighted Global Default Rates by Alphanumeric Rating, 1998-2009

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	0	0	0	0	0	0	0	0
Aa3	0.055	0.135	0.172	0.214	0.26	0.305	0.378	0.378	0.378	0.407
A1	0.122	0.302	0.514	0.758	1.025	1.189	1.333	1.496	1.697	2.144
A2	0.109	0.252	0.462	0.628	0.838	1.191	1.736	2.518	3.437	4.44
A3	0.069	0.238	0.461	0.678	1.011	1.262	1.559	1.965	2.504	3.127
Baa1	0.175	0.416	0.657	0.851	1.07	1.363	1.636	1.961	2.208	2.733
Baa2	0.228	0.544	0.932	1.469	1.893	2.41	2.871	3.269	3.881	4.588
Baa3	0.369	0.952	1.664	2.318	3.164	3.804	4.63	5.959	7.425	9.602
Ba1	0.477	1.693	3.302	4.609	6.054	7.455	8.841	10.113	11.982	14.437
Ba2	0.748	1.786	3.276	5.023	6.454	7.814	8.785	10.724	12.141	14.689
Ba3	1.198	3.596	6.4	9.571	11.674	13.619	15.586	18.681	23.276	27.744
B1	1.788	5.825	10.187	13.835	16.892	20.057	23.686	27.335	31.354	35.609
B2	3.557	9.005	14.609	20.04	24.094	27.833	31.447	34.769	38.212	41.426
B3	6.097	14.261	22.769	29.787	35.645	41.404	46.431	51.729	57.562	62.683
Caa1	10.234	21.641	31.63	39.736	47.145	52.799	55.632	59.262	64.131	70.155
Caa2	18.503	30.848	40.297	47.365	52.685	56.42	58.902	61.565	61.565	61.565
Caa3	29.646	44.35	54.069	61.116	67.612	67.917	69.027	70.953	70.953	70.953
Ca-C	41.176	54.847	65.3	70.932	74.504	74.733	74.733	74.733	74.733	
IG	0.134	0.338	0.579	0.823	1.099	1.37	1.681	2.074	2.534	3.143
SG	5.125	10.644	15.918	20.376	23.859	26.857	29.521	32.336	35.428	38.654
All rated	2.013	4.13	6.079	7.654	8.866	9.87	10.762	11.706	12.732	13.887

## EXHIBIT 38

## Average Cumulative Issuer-Weighted Global Default Rates by Broad Industry Group

YEAR	1	2	3	4	5	6	7	8	9	10
Banking	0.419	0.875	1.35	1.787	2.152	2.46	2.705	2.956	3.186	3.432
Capital Industries	2.132	4.507	6.783	8.839	10.641	12.246	13.722	15.128	16.471	17.728
Consumer Industries	2.542	5.229	7.703	9.826	11.595	13.126	14.441	15.572	16.657	17.639
Energy & Environment	1.541	3.041	4.329	5.404	6.352	7.231	7.933	8.479	9.015	9.539
FIRE	0.641	1.353	2.048	2.689	3.264	3.821	4.36	4.897	5.462	6.065
Media & Publishing	3.506	7.483	11.315	14.63	17.691	20.352	22.436	24.187	25.791	27.4
Retail & Distribution	2.801	5.697	8.432	10.718	12.657	14.337	15.741	17.093	18.485	19.797
Govt-Related Corp. Issuers	0.357	0.732	0.955	1.116	1.3	1.336	1.336	1.336	1.336	1.336
Technology	1.875	3.782	5.432	6.696	7.623	8.307	8.907	9.377	9.75	10.112
Transportation	2.289	4.256	5.956	7.412	8.672	9.778	10.722	11.654	12.543	13.491
Utilities	0.173	0.346	0.504	0.656	0.812	0.964	1.105	1.233	1.365	1.505

## EXHIBIT 39

## Annual Default Rates by Broad Industry Groups, 1970-2009

YEAR	BANKING	CAPITAL INDUSTRIES	CONSUMER INDUSTRIES	ENERGY AND ENVIRONMENT	FIRE	MEDIA & PUBLISHING	RETAIL & DISTRIBUTION	GOVT-RELATED CORP ISSUERS	TECHNOLOGY	TRANSPORTATION	UTILITIES
1970		0	0.948	0	16.667	0	0	0	0.833	15.686	0
1971		0	0	0	0	0	0	0	0	2.308	0
1972		0.362	0	0	0	0	0	0	0	3.113	0
1973		0.359	0	0	0	0	2.941	0	0	1.613	0
1974	0	0.362	0	0	0	0	3.03	0	0	0	0
1975	0	0.364	0.775	0	0	4.255	1.527	0	0	0	0
1976	0	0.359	0.735	0	0	0	0	0	0	0	0
1977	0	0	0.749	0	0	4	0	0	0	1.77	0
1978	0	0	0.749	1.212	0	0	1.563	0	0.725	0	0
1979	0	0	0	0	0	0	0	0	0.702	0	0
1980	0	0.38	0	1.124	0	0	0	0	0.694	0.93	0
1981	0	0.37	0	0	0	0	0	0	0	0.93	0
1982	0	1.107	0	0.926	0	3.774	4.839	0	1.846	1.98	0
1983	0	1.081	0.57	2.449	0	0	0	0	0.608	3.902	0.408
1984	0	0.707	1.078	3.953	0	0	0	0	1.77	1.026	0
1985	0	1.22	1.37	3.448	1.124	0	0	0	0.548	0.971	0
1986	0	3.361	1.578	7.299	0	3.478	1.02	0	0.503	2.691	0
1987	0.399	2.4	2.431	5.634	0	1.25	1.747	0	0.461	0.897	0.403
1988	2.034	0.788	2.585	1.455	0.604	3.297	1.639	0	1.186	0	0.408
1989	2.134	3.175	4.167	0	3.352	6.486	0.758	11.765	1.158	1.835	0
1990	2.685	4.897	8.293	0.664	0	5.882	5.536	0	2.339	5.505	0.399
1991	2.073	3.576	3.745	1.316	0.506	4	9.63	0	1.616	9.184	1.212
1992	0.506	2.006	2.817	0.664	0.481	7.042	2.429	0	1.176	0	0.803
1993	0.471	1.581	1.154	1.266	0	2.778	2.353	0	0.381	0	0
1994	0	0.418	0.927	0.601	0	1.198	2.597	0	1.079	1.778	0
1995	0	1.261	2.695	0.538	1.097	0	1.786	0	0.662	0.858	0
1996	0	0.5	1.25	0.966	0	2.372	0.573	0	0.611	0	0.349
1997	0	0.446	2.203	0	0.279	1.29	3.209	0	0.551	0.794	0
1998	0.13	1.153	2.381	1.434	0.917	2.674	6.091	0	0.707	0.727	0
1999	0.247	2.233	4.542	5.546	0.616	2.791	2.771	2.703	1.887	5.263	0.304
2000	0	3.947	6.26	1.342	0.802	1.739	5.869	0	2.6	4.013	0
2001	0.12	7.048	5.542	2.044	1.223	3.913	8.173	0	7.361	4.082	0.539
2002	0.604	2.712	2.085	4.91	0.198	9.821	3.217	0	8.571	5.882	0.506
2003	0.122	2.449	1.977	1.333	0.392	3.581	4.42	0	4.357	3.213	0.498
2004	0	1.479	2.115	0.331	0.198	1.587	1.227	0	0.736	1.619	0.243
2005	0.114	1.3	0.503	0.651	0.19	0.501	1.899	0	0.244	3.891	0.477
2006	0	1.285	0.967	0	0.372	1.415	1.183	0	0.743	2.353	0
2007	0	0.715	0.651	0	0	0.92	1.802	0	0.486	0	0
2008	0.954	3.071	3.783	1.835	1.525	4.147	2.247	0	1.164	2.963	0
2009	1.46	10.058	7.82	2.167	3.217	20.976	3.614	0	5.327	5.556	0.224

## EXHIBIT 40

## Annual Volume-Weighted Corporate Bond Default Rates by Letter Rating, 1994-2009

COHORT	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	4.637	6.876	0.000	3.081	0.714
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	5.767	20.723	0.137	5.681	1.313
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	79.453	1.931	22.448	5.067
2003	0.000	0.000	0.000	0.000	3.622	2.560	16.981	0.000	5.654	0.988
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	3.680	0.000	0.006	0.118
2008	0.000	0.816	2.370	1.108	8.097	1.287	11.248	1.466	5.853	2.229
2009	0.000	0.000	0.014	0.642	0.571	6.416	39.050	0.187	15.640	2.631
Mean	0.000	0.051	0.364	0.387	1.379	4.274	21.200	0.273	5.991	1.302
Median	0.000	0.000	0.000	0.000	0.569	2.791	14.781	0.000	3.421	0.806
StDev	NA	0.204	0.872	0.683	2.266	4.549	20.470	0.580	6.319	1.323
Min	0.000	0.000	0.000	0.000	0.000	0.000	3.680	0.000	0.606	0.118
Max	0.000	0.816	2.718	2.529	8.097	15.699	79.453	1.931	22.448	5.067

## EXHIBIT 41

## Average Volume-Weighted Corporate Bond Default Rates by Letter Rating, 1994-2009

RATING	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Aaa	0.000	0.065	0.065	0.065	0.065
Aa	0.042	0.112	0.112	0.112	0.112
A	0.560	1.091	1.500	1.800	2.254
Baa	0.420	0.873	1.234	1.884	2.617
Ba	1.327	3.462	5.800	8.019	9.336
B	4.827	10.875	15.843	19.946	22.826
Caa-C	21.418	34.074	43.502	47.162	48.990
IG	0.372	0.755	1.042	1.374	1.798
SG	6.135	11.698	16.317	19.627	21.748
All	1.445	2.82	3.943	4.847	5.592

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-70</b>																					
Aaa	39	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	78	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	2.921
A	253	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	1.793	2.878	2.878
Baa	372	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	9.981
Ba	239	4.264	5.143	5.6	6.077	7.058	8.079	8.618	9.195	10.43	10.43	11.99	14.51	15.4	15.4	17.45	20.78	23.29	23.29	24.78	24.78
B	36	19.72	19.72	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	30.96	30.96	30.96	30.96	36.27	36.27	36.27	36.27	36.27
Caa-C	15	53.33	60	88	88	88	88	88	100												
Inv.Grade	742	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	5.985
Spec.Grade	290	8.772	9.854	11.72	12.5	13.3	14.14	14.59	15.53	16.53	16.53	17.78	21.11	21.82	21.82	23.43	26.93	28.9	28.9	30.11	30.11
All rated	1032	2.641	2.938	3.445	3.964	4.281	4.606	4.829	5.287	5.76	6.016	6.281	7.374	7.798	7.943	8.391	9.789	10.61	11.32	11.69	11.69
<b>1-Jan-71</b>																					
Aaa	40	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	1.786
A	282	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	0.531	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	10.31	10.31
Ba	229	0.881	1.339	1.817	2.801	3.827	4.369	4.948	6.187	6.187	7.744	10.25	11.14	11.14	13.17	17.57	20.09	20.09	21.58	21.58	21.58
B	27	0	3.846	3.846	3.846	3.846	3.846	3.846	3.846	3.846	3.846	15.87	15.87	15.87	15.87	23.18	23.18	23.18	23.18	23.18	23.18
Caa-C	7	14.29	57.14	74.29	74.29	74.29	74.29	100													
Inv.Grade	795	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
Spec.Grade	263	1.152	3.141	3.97	4.829	5.727	6.201	7.21	8.282	8.282	9.621	13.19	13.96	13.96	15.68	20.34	22.45	22.45	23.74	23.74	23.74
All rated	1058	0.285	0.77	1.266	1.57	1.986	2.2	2.641	3.097	3.343	3.598	4.785	5.193	5.332	5.764	7.109	7.902	8.577	8.932	9.487	9.487

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-72</b>																						
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	2.632
Aa	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.667	1.667
A	303	0	0.337	0.337	0.337	0.337	0.337	0.337	0.337	0.337	0.337	0.718	1.102	1.102	1.102	1.503	1.503	2.373	2.373	2.373	2.85	3.344
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	11.16	13.98	13.98
Ba	225	0	0.471	1.439	2.45	2.983	3.549	4.751	4.751	6.233	6.233	9.412	10.26	10.26	13.11	17.2	19.51	19.51	20.87	22.29	29.76	29.76
B	29	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	7.018	17.96	17.96	17.96	17.96	25.09	25.09	25.09	25.09	25.09	25.09	25.09
Caa-C	7	42.86	59.18	59.18	59.18	59.18	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59	79.59
Inv.Grade	854	0	0.363	0.486	0.736	0.864	1.125	1.394	1.394	1.68	1.68	2.133	2.442	2.757	2.919	3.584	4.109	4.85	5.238	6.248	7.498	7.498
Spec.Grade	261	1.957	2.769	3.609	4.487	4.95	5.927	6.961	6.961	8.227	8.227	12.28	13	13	15.43	19.82	21.78	21.78	22.97	24.23	30.88	30.88
All rated	1115	0.455	0.921	1.206	1.595	1.795	2.208	2.634	2.634	3.103	3.103	4.212	4.592	4.853	5.389	6.641	7.379	8.007	8.504	9.539	11.5	11.5
<b>1-Jan-73</b>																						
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	2.632
Aa	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.587	1.587
A	309	0	0	0	0	0	0	0	0	0.368	0.739	0.739	0.739	1.13	1.13	1.977	1.977	1.977	2.438	2.918	3.433	3.433
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	11.77	13.93	13.93	13.93
Ba	206	0	1.008	2.061	2.617	3.206	4.447	4.447	4.447	5.936	5.936	10.78	10.78	12.65	16.69	20.13	20.13	21.45	22.84	31.5	33.05	33.05
B	27	3.774	3.774	3.774	3.774	3.774	3.774	3.774	3.774	3.774	15.09	15.09	15.09	15.09	22.48	22.48	22.48	22.48	22.48	22.48	22.48	22.48
Caa-C	5	44.44	44.44	44.44	44.44	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22	72.22
Inv.Grade	873	0.231	0.348	0.587	0.709	0.958	1.215	1.215	1.488	1.488	1.922	2.367	2.669	2.979	3.619	4.123	4.835	5.208	6.374	7.379	7.594	7.594
Spec.Grade	238	1.277	2.156	3.077	3.563	4.586	5.661	5.661	6.958	6.958	11.75	12.47	12.47	14.09	18.47	21.44	21.44	22.61	23.86	31.67	33.06	33.06
All rated	1111	0.454	0.732	1.111	1.306	1.707	2.121	2.121	2.344	2.575	3.768	4.259	4.511	5.03	6.244	7.101	7.709	8.189	9.358	11.26	11.63	11.63

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-74</b>																					
N(0)	44	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	2,439
Aaa	44	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	2,439
Aa	90	0	0	0	0	0	0	0	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242	1,242
A	307	0	0	0	0	0	0	0	0.366	0.737	0.737	0.737	1,124	1,124	1,956	1,956	2,407	2,875	3,382	3,382	3,382
Baa	431	0	0.48	0.728	1.245	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	11.99
Ba	198	0.514	1.593	2.165	2.771	4.05	4.05	4.821	8.871	9.726	9.726	11.6	17.63	21.03	21.03	22.38	25.21	33.92	35.49	37.29	37.29
B	29	7.143	7.143	7.143	7.143	7.143	7.143	11.91	21.97	21.97	21.97	21.97	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
Caa-C	2	0	0	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Inv.Grade	872	0	0.235	0.355	0.601	0.853	0.853	1.122	1.693	2.131	2.428	2.734	3.049	3.546	4.246	4.612	5.564	6.549	6.76	6.76	6.76
Spec.Grade	229	1.336	2.272	2.766	3.809	4.905	4.905	6.217	11.04	11.78	11.78	13.41	19.56	22.52	22.52	23.72	26.26	34.23	35.66	37.27	37.27
All rated	1101	0.275	0.651	0.844	1.242	1.652	1.652	1.872	2.101	3.401	3.887	4.137	4.65	5.849	6.696	7.296	7.769	8.92	10.79	11.16	11.36
<b>1-Jan-75</b>																					
Aaa	52	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2
Aa	104	0	0	0	0	0	0	1.036	1.036	1.036	1.036	1.036	1.036	2,229	2,229	3,466	3,466	3,466	3,466	3,466	3,466
A	321	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	3,899
Baa	412	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	11.43	11.43	11.43	11.43	11.43
Ba	200	1.026	2.107	3.249	3.85	3.85	4.573	8.405	9.212	9.212	10.99	16.74	19.98	21.17	22.46	23.79	30.66	32.13	33.77	33.77	33.77
B	33	6.154	6.154	9.566	9.566	13.59	13.59	22.02	22.02	22.02	22.02	28.26	28.26	28.26	28.26	37.22	47.69	47.69	47.69	47.69	47.69
Caa-C	2	0	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Inv.Grade	889	0	0	0.118	0.362	0.362	0.619	0.619	1.165	1.583	1.867	2.157	2.457	2.928	3.591	3.937	5.015	6.128	6.326	6.542	6.542
Spec.Grade	235	1.743	2.659	4.105	5.117	5.117	6.329	10.82	11.5	11.5	13.03	18.8	21.57	22.58	23.67	25.99	33.21	34.49	35.9	35.9	35.9
All rated	1124	0.361	0.546	0.926	1.318	1.318	1.528	1.745	2.981	3.443	3.68	4.167	5.304	6.105	6.813	7.258	8.493	10.41	10.75	11.12	11.12

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-76</b>																						
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	1.667
Aa	112	0	0	0	0	0	0	0.957	0.957	0.957	0.957	0.957	0.957	2.07	2.07	3.222	3.222	3.222	3.222	3.222	3.222	3.222
A	368	0	0	0	0	0	0	0	0.615	0.615	0.615	1.276	2.357	2.357	2.357	3.135	4.358	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	10.9	11.49	11.49	11.49	11.49	11.49
Ba	207	0.99	2.032	3.124	3.124	3.731	4.384	7.155	7.886	7.886	9.488	14.61	17.49	18.56	19.69	20.87	28.23	29.55	30.98	30.98	30.98	30.98
B	27	0	0	4.082	4.082	4.082	9.001	19.4	19.4	19.4	19.4	27.89	27.89	27.89	27.89	41	57.86	57.86	57.86	57.86	57.86	57.86
Caa-C	2	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Inv.Grade	917	0	0.112	0.227	0.227	0.349	0.349	0.991	1.516	1.784	2.059	2.487	2.936	3.567	3.896	5.089	6.144	6.333	6.538	6.538	6.538	6.765
Spec.Grade	236	0.868	2.235	3.666	3.666	4.199	5.34	8.969	9.612	9.612	11.05	16.44	19.03	19.98	21	23.15	31.06	32.28	33.61	33.61	33.61	33.61
All rated	1153	0.175	0.536	0.907	0.907	1.105	1.31	2.473	3.018	3.242	3.703	4.904	5.666	6.34	6.762	8.079	10.05	10.37	10.72	10.72	10.72	10.92
<b>1-Jan-77</b>																						
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	1.667
Aa	119	0	0	0	0	0	0.897	0.897	0.897	0.897	0.897	0.897	1.946	1.946	3.023	3.023	3.023	3.023	3.023	3.023	3.023	3.023
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	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	10.76	10.76	10.76	10.76	10.76	10.76
Ba	196	0.525	1.627	1.627	2.242	2.903	5.697	6.433	6.433	8.04	13.17	16.05	17.11	18.22	19.38	26.65	27.96	29.4	29.4	29.4	29.4	29.4
B	31	3.279	6.733	6.733	10.79	15.14	24.84	24.84	24.84	24.84	32.75	32.75	32.75	32.75	44.98	60.7	60.7	60.7	60.7	60.7	60.7	60.7
Caa-C	2	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Inv.Grade	930	0.109	0.221	0.221	0.221	0.221	0.843	1.352	1.612	1.879	2.295	2.731	3.649	3.968	5.124	6.147	6.329	6.53	6.53	6.53	6.751	6.751
Spec.Grade	229	1.345	2.758	2.758	3.815	4.95	8.571	9.212	9.212	10.64	15.99	18.55	19.48	20.48	22.57	30.31	31.52	32.83	32.83	32.83	32.83	32.83
All rated	1159	0.351	0.713	0.713	0.905	1.105	2.238	2.769	2.987	3.437	4.607	5.35	6.266	6.677	7.954	9.864	10.18	10.53	10.53	10.53	10.72	10.72

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-78</b>																					
N(0)	71	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	
Aaa	71	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	131	0	0	0	0.816	0.816	0.816	0.816	0.816	0.816	1,743	1,743	1,743	1,743	1,743	1,743	1,743	1,743	1,743	1,743	
A	381	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	1.406	1.77	2.522	2.913	3.324	4.639	5.113	6.131	7.736	9.946	10.53	10.53	10.53	10.53	10.53	10.53	
Ba	188	1.09	1.09	1.09	1.752	4.559	6.038	6.038	9.251	15.19	17.08	18.13	19.25	21.57	28.87	30.18	33.09	33.09	33.09	33.09	
B	37	5.556	5.556	11.85	15.18	22.4	22.4	26.71	26.71	32.35	38.5	38.5	47.28	60.46	60.46	60.46	60.46	60.46	60.46	60.46	
Caa-C	2	0	0	0	0	0	0	0	0	100											
Inv.Grade	924	0	0	0	0.606	0.978	1.232	1.362	1.768	2.334	3.227	3.538	4.824	5.82	5.998	6.193	6.193	6.407	6.407	6.407	
Spec.Grade	227	1.806	2.823	3.915	7.399	8.629	9.284	12.01	18.56	20.99	21.88	22.83	25.86	33.44	34.63	37.24	37.24	37.24	37.24	37.24	
All rated	1151	0.352	0.352	0.54	0.735	1.837	2.353	3.218	4.583	5.423	6.313	6.711	8.228	10.09	10.4	10.9	10.9	11.08	11.08	11.08	
<b>1-Jan-79</b>																					
Aaa	75	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	132	0	0	0	0.803	0.803	0.803	0.803	0.803	1,713	1,713	1,713	1,713	1,713	1,713	1,713	1,713	1,713	1,713	1,713	
A	377	0	0	0	0	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	1.69	2.046	2.413	2.794	2.794	4.076	4.54	5.545	8.205	10.4	10.98	10.98	10.98	10.98	10.98	10.98	10.98	
Ba	208	0.496	0.496	1.067	3.465	5.98	9.303	12.06	18.6	20.2	21.08	22.01	24.95	32.25	33.37	35.79	35.79	35.79	35.79	35.79	
B	34	0	6.452	9.853	17.21	17.21	21.57	26.47	38.24	45.1	45.1	56.08	56.08								
Caa-C	2	0	0	0	0	0	0	0	100												
Inv.Grade	920	0	0.113	0.707	1.071	1.195	1.323	1.587	2.141	3.016	3.321	4.743	5.722	5.896	6.087	6.087	6.298	6.298	6.298	6.298	
Spec.Grade	244	0.424	1.329	2.296	5.358	7.509	10.95	13.94	21.62	23.74	24.51	25.34	28.88	35.61	36.66	38.96	38.96	38.96	38.96	38.96	
All rated	1164	0.087	0.359	0.546	1.605	2.299	3.012	3.642	5.171	5.979	6.835	7.219	8.951	10.75	11.05	11.53	11.71	11.71	11.71	11.71	



EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-80</b>																					
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	129	0	0	0	0	0	0	0	0.901	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
A	382	0	0	0.274	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	5.817	5.817
Baa	336	0	0	1.002	1.349	1.706	2.448	2.448	3.278	4.169	5.593	8.103	10.69	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76
Ba	208	0	0.533	3.877	5.042	8.73	11.92	18	20.21	21.03	23.73	26.55	33.69	35.96	38.4	38.4	38.4	38.4	39.82	39.82	39.82
B	41	4.938	7.543	15.82	21.63	27.9	31.42	43.89	48.56	48.56	48.56	59.99	67.99	67.99	67.99	67.99	67.99	67.99	67.99	67.99	67.99
Caa-C	5	40	40	40	40	40	40	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Inv.Grade	935	0	0	0.458	0.81	0.93	1.176	1.558	2.225	3.066	3.504	4.867	5.959	6.293	6.476	6.476	6.679	6.679	6.679	6.679	6.679
Spec.Grade	254	1.626	2.493	6.574	8.476	12.51	15.68	23.04	25.52	26.21	28.44	32.4	39.42	41.41	43.56	43.56	43.56	43.56	44.8	44.8	44.8
All rated	1189	0.343	0.521	1.71	2.369	3.239	4.036	5.695	6.68	7.491	8.219	9.984	11.95	12.52	12.98	12.98	13.15	13.15	13.33	13.33	13.72
<b>1-Jan-81</b>																					
Aaa	92	0	0	0	0	0	0	1.242	1.242	1.242	2.525	2.525	2.525	2.525	2.525	2.525	2.525	2.525	2.525	2.525	2.525
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	2.504
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	4.931	6.587
Baa	338	0	0.632	1.961	2.65	3.365	3.365	3.763	4.617	5.98	8.378	10.34	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36	12.14
Ba	242	0	3.62	5.044	8.051	11.71	18.39	20.85	21.54	24.55	28.61	35.89	37.97	40.23	40.23	40.23	40.23	41.57	42.96	42.96	42.96
B	45	4.598	11.84	16.88	24.93	27.87	41.29	41.29	41.29	41.29	51.07	57.19	57.19	57.19	57.19	57.19	57.19	57.19	57.19	57.19	57.19
Caa-C	6	0	0	0	0	0	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Inv.Grade	951	0	0.329	0.78	1.011	1.249	1.62	2.139	2.959	3.385	4.711	5.622	5.947	6.124	6.124	6.321	6.321	6.321	6.321	6.321	7.459
Spec.Grade	293	0.708	4.806	6.761	10.48	13.95	21.86	24.41	24.98	27.46	32.18	39.08	40.84	42.77	42.77	42.77	42.77	43.9	45.07	45.07	45.07
All rated	1244	0.164	1.349	2.136	3.13	4.063	6.012	6.941	7.708	8.512	10.43	12.31	12.85	13.29	13.29	13.45	13.45	13.62	13.8	14.18	14.75

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-82</b>																					
Aaa	95	0	0	0	0	0	1.212	1.212	1.212	2.479	2.479	2.479	2.479	2.479	2.479	2.479	2.479	2.479	2.479	2.479	2.479
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	3.395	4.642
A	397	0.255	0.255	0.255	0.255	1.119	1.119	1.766	3.169	3.906	3.906	4.339	4.339	4.339	4.339	4.339	4.339	4.339	4.339	4.339	4.866
Baa	326	0.317	0.317	1.369	2.097	2.477	3.291	4.164	5.55	7.99	10.01	11.06	11.06	11.06	11.06	11.06	11.06	11.06	11.06	11.06	12.64
Ba	255	2.783	5.303	7.977	11.68	18.57	20.73	21.33	24	28.38	33.35	35.26	37.31	37.31	37.31	37.31	38.65	40.07	40.07	40.07	43.19
B	44	2.299	9.448	14.48	17.19	29.24	29.24	29.24	29.24	34.68	54.28	54.28	54.28	54.28	54.28	54.28	54.28	54.28	54.28	54.28	54.28
Caa-C	12	25	51.47	51.47	51.47	61.18	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88	70.88
Inv.Grade	964	0.211	0.211	0.547	0.778	1.259	1.765	2.566	2.984	4.429	5.327	5.646	5.821	5.821	6.015	6.015	6.015	6.015	6.015	6.015	8.529
Spec.Grade	311	3.583	7.701	10.61	14.03	21.73	23.96	24.46	26.68	30.97	37.28	38.9	40.66	40.66	40.66	41.78	42.96	42.96	42.96	42.96	45.59
All rated	1275	1.037	2.029	2.97	3.944	6.073	6.958	7.691	8.463	10.43	12.25	12.78	13.21	13.21	13.37	13.37	13.54	13.71	14.07	14.07	16.18
<b>1-Jan-83</b>																					
Aaa	97	0	0	0	0	2.439	2.439	2.439	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775	3.775
Aa	223	0	0	0	0	0.484	1.985	1.985	1.985	1.985	1.985	1.985	1.985	2.692	2.692	2.692	2.692	2.692	2.692	2.692	4.378
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	4.497	4.497	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	8.694	10.66	14.83
Ba	230	0.911	2.394	4.516	12.15	14.21	17.37	21	26.13	31.77	31.77	33.24	33.24	33.24	33.24	35.07	36.95	38.92	40.95	45.1	49.32
B	114	6.306	11.02	17.86	25.14	28.42	29.6	32.31	40.09	49.91	54.92	57.74	57.74	57.74	57.74	57.74	57.74	57.74	57.74	57.74	57.74
Caa-C	10	42.11	65.26	65.26	65.26	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84	76.84
Inv.Grade	1018	0	0.305	0.41	0.958	1.423	2.161	2.416	3.347	4.174	4.469	4.63	4.63	4.809	4.809	4.809	4.809	5.013	5.013	5.642	7.846
Spec.Grade	354	3.824	6.977	10.66	17.97	20.84	23.15	26.33	32.35	39.25	40.88	42.71	42.71	42.71	42.71	43.89	45.16	46.46	47.82	50.6	53.46
All rated	1372	0.966	1.967	2.925	5.029	6.022	7.084	7.9	9.728	11.54	12.02	12.43	12.43	12.58	12.58	12.74	12.9	13.24	13.95	15.4	16.54

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-84</b>																				
Aaa	79	0	0	1.481	1.481	1.481	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166	3.166
Aa	240	0	0	0.891	1.815	1.815	1.815	1.815	1.815	1.815	1.815	2.457	2.457	2.457	2.457	2.457	2.457	2.457	3.204	3.985
A	454	0	0.228	0.467	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	5.77	5.77	5.77	5.77	5.77	5.77	6.703	8.667	11.73	13.87	13.87
Ba	246	0.833	3.49	11.67	14.4	18.15	21.69	27.26	32.48	33.47	34.58	34.58	34.58	36.12	36.12	37.82	39.57	41.38	45.04	45.04
B	119	6.78	12.88	20.29	24.21	27.39	32.35	42.43	49.51	51.76	56.83	56.83	56.83	56.83	60.95	60.95	60.95	60.95	60.95	60.95
Caa-C	2	100																		
Inv.Grade	1054	0.096	0.195	0.402	0.951	1.649	2.013	2.898	3.688	3.969	4.124	4.295	4.295	4.295	4.295	4.492	5.097	6.553	7.427	7.661
Spec.Grade	367	3.333	7.13	15.01	18.16	21.69	25.74	32.88	38.67	40.02	42.3	42.3	42.3	43.35	44.5	45.69	46.93	48.21	50.83	50.83
All rated	1421	0.927	1.962	4.062	5.23	6.572	7.709	9.816	11.51	11.96	12.47	12.61	12.61	12.76	12.92	13.24	13.91	15.3	16.38	16.58
<b>1-Jan-85</b>																				
Aaa	80	0	0	0	0	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681	1.681
Aa	297	0	0	0	0.786	0.786	0.786	0.786	0.786	0.786	1.387	1.387	1.387	1.387	1.387	1.387	2.087	2.82	2.82	2.82
A	517	0	0.21	1.34	2.302	2.553	3.875	4.98	5.271	5.271	5.271	5.271	5.271	5.271	5.271	5.693	6.561	7.481	7.979	7.979
Baa	276	0	0.81	1.267	1.78	2.862	3.43	4.619	5.259	5.963	5.963	5.963	5.963	5.963	8.019	10.18	13.57	14.76	14.76	14.76
Ba	292	1.413	6.753	9.361	12.87	18.45	24.1	29.64	31.18	32.04	33.07	33.07	34.27	34.27	35.65	37.11	40.22	43.36	43.36	43.36
B	149	7.483	16.84	22.97	26.36	30.54	42.01	48.45	50.65	55.84	55.84	55.84	55.84	59.86	59.86	59.86	59.86	59.86	59.86	59.86
Caa-C	5	0	0	0	33.33	33.33	33.33	33.33	33.33	33.33	100									
Inv.Grade	1170	0	0.277	0.876	1.63	1.97	2.8	3.541	3.806	3.952	4.117	4.117	4.117	4.117	4.496	5.083	6.293	7.14	7.366	7.366
Spec.Grade	446	3.448	10.12	13.98	17.73	22.77	30.22	35.92	37.58	39.45	40.93	40.93	41.78	42.74	43.75	44.82	47.1	49.42	49.42	49.42
All rated	1616	0.95	2.966	4.431	5.95	7.407	9.691	11.43	11.96	12.42	12.82	12.82	12.96	13.11	13.57	14.21	15.53	16.57	16.76	16.76

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-86</b>																					
Aaa	107	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	1.828	1.828	1.828	1.828	1.828	1.828	2.548	3.286	3.286	3.286	3.286	3.286
A	575	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	3.252	3.98	4.764	5.187	5.187	5.187	5.635
Baa	309	1.007	1.382	3.065	3.946	5.789	7.238	8.28	8.864	8.864	8.864	8.864	8.864	10.56	11.45	13.29	15.17	15.17	15.17	15.17	15.17
Ba	357	2.047	5.965	8.572	13.64	20.32	26.8	28.67	30.79	32.33	33.16	35.17	35.17	35.17	37.76	43.29	44.73	44.73	44.73	44.73	46.36
B	187	11.6	17.5	21.44	25.39	34.77	41.58	47.28	50.68	50.68	50.68	50.68	53.76	60.88	60.88	60.88	60.88	60.88	60.88	60.88	60.88
Caa-C	10	23.53	23.53	40.52	40.52	40.52	40.52	40.52	40.52	100											
Inv.Grade	1283	0.241	0.413	1.24	1.626	2.434	3.065	3.291	3.415	3.415	3.556	3.556	3.556	3.884	4.391	5.26	6.171	6.365	6.365	6.365	6.574
Spec.Grade	554	5.644	10.21	13.49	18.1	25.56	32.02	34.99	37.42	38.5	39.7	41.12	41.93	43.7	45.56	49.52	50.55	50.55	50.55	50.55	51.7
All rated	1837	1.855	3.314	4.831	6.32	8.741	10.67	11.46	12.04	12.25	12.59	12.83	12.96	13.49	14.18	15.46	16.35	16.5	16.5	16.5	16.85
<b>1-Jan-87</b>																					
Aaa	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	310	0	0	0	0.394	0.394	0.394	0.394	0.394	0.945	0.945	0.945	0.945	0.945	1.61	2.29	2.29	2.29	2.29	2.29	2.29
A	543	0	0	0.409	1.262	1.925	1.925	1.925	1.925	1.925	1.925	1.925	1.925	2.27	2.986	3.751	4.572	4.572	4.572	5.005	5.005
Baa	339	0	1.045	1.415	3.359	4.987	6.285	7.239	7.239	7.239	7.897	7.897	9.314	10.05	11.57	12.35	12.35	12.35	12.35	12.35	12.35
Ba	462	2.73	4.252	9.068	15.82	22.85	25.45	28.5	30.22	31.48	32.19	33.81	34.76	36.99	40.56	44.31	44.31	44.31	44.31	45.8	45.8
B	270	6.489	14.02	20.73	31.93	40.74	46.58	48.59	48.59	48.59	48.59	50.53	54.84	59.24	61.57	66.87	66.87	66.87	66.87	66.87	66.87
Caa-C	10	20	30.67	30.67	30.67	30.67	30.67	30.67	30.67	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33	65.33
Inv.Grade	1323	0	0.25	0.511	1.424	2.089	2.393	2.614	2.614	2.74	2.879	2.879	3.176	3.483	4.274	4.935	5.282	5.282	5.282	5.47	5.47
Spec.Grade	742	4.357	8.248	13.69	21.94	29.47	33.11	35.76	36.89	38.15	38.62	39.68	40.92	42.3	45.18	48.25	52.36	52.36	52.36	53.37	53.37
All rated	2065	1.559	3.077	5.055	8.241	10.86	12.03	12.84	13.1	13.48	13.58	13.9	14.12	14.58	15.31	16.42	17.59	17.87	17.87	18.17	18.17

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-88</b>																						
Aaa	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aa	334	0	0.655	0.997	0.997	0.997	0.997	0.997	1.477	1.477	1.477	1.477	1.477	2.04	2.616	3.203	3.203	3.203	3.203	3.203	3.203	3.203
A	542	0	0.195	0.804	1.434	1.434	1.434	1.434	1.434	1.434	1.434	1.434	1.434	1.434	2.124	2.489	3.274	3.274	3.274	3.692	3.692	3.692
Baa	331	0	0.332	1.379	2.827	3.977	5.243	5.243	5.243	5.243	5.814	5.814	6.442	7.098	9.125	10.53	10.53	10.53	10.53	10.53	10.53	10.53
Ba	502	1.261	6.61	12.56	20.22	22.65	25.54	26.49	27.55	28.73	30.06	30.82	31.67	33.49	38.42	42.66	42.66	42.66	42.66	43.98	43.98	47.18
B	337	6.202	13.07	25.27	34.14	39.82	43.34	45.02	46.98	46.98	48.2	54.04	57.44	61.14	63.24	67.99	67.99	67.99	67.99	67.99	67.99	67.99
Caa-C	11	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29	64.29
Inv.Grade	1344	0	0.319	0.902	1.509	1.786	2.089	2.089	2.204	2.204	2.33	2.33	2.466	2.748	3.621	4.228	4.548	4.548	4.548	4.72	4.72	4.72
Spec.Grade	850	3.585	9.478	17.81	25.84	29.46	32.54	33.73	35.41	36.16	37.43	39.86	41.51	43.87	47.74	51.95	51.95	51.95	51.95	52.84	52.84	54.93
All rated	2194	1.366	3.735	7.029	10.04	11.32	12.38	12.69	13.19	13.37	13.74	14.24	14.65	15.3	16.64	17.82	18.07	18.07	18.07	18.34	18.34	18.63
<b>1-Jan-89</b>																						
Aaa	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	332	0.617	0.617	0.617	0.617	0.617	0.617	1.068	1.068	1.068	1.068	1.068	1.594	2.135	2.683	2.683	2.683	2.683	2.683	2.683	2.683	2.683
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	2.387	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	9.625	10.42
Ba	479	3.04	9.744	17.56	20.04	22.98	23.41	24.39	26.04	27.29	29.44	30.24	32.84	37.53	43.63	43.63	43.63	43.63	43.63	46.81	46.81	50.29
B	374	8.72	22.79	31.37	37.57	41.37	43.97	47.04	47.04	50.1	53.75	56.51	59.56	61.32	65.29	65.29	65.29	67.77	67.77	67.77	67.77	70.25
Caa-C	12	25	43.75	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81	57.81
Inv.Grade	1403	0.291	0.519	0.915	1.167	1.26	1.26	1.365	1.365	1.479	1.479	1.601	1.854	2.902	3.585	3.874	3.874	4.031	4.031	4.031	4.031	5.106
Spec.Grade	865	5.797	15.78	23.95	27.91	31.15	32.43	34.18	35.18	37.07	39.7	41.18	43.85	47.38	52.51	52.51	52.51	53.31	53.31	53.31	53.31	58.22
All rated	2268	2.363	6.102	9.12	10.54	11.56	11.91	12.44	12.68	13.18	13.71	14.09	14.76	16.18	17.55	17.77	17.77	18.02	18.02	18.02	18.29	19.56

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-90</b>																						
Aaa	173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aa	378	0	0	0	0	0.367	0.367	0.367	0.367	0.367	0.367	0.367	0.822	1.288	1.288	1.288	1.288	1.288	1.288	1.288	2.533	4.509
A	600	0	0	0	0	0	0	0	0	0	0.28	0.569	0.872	1.195	1.195	1.195	1.54	1.54	1.54	2.736	4.399	
Baa	339	0	0.631	0.631	0.631	0.631	0.631	0.631	0.631	1.165	1.165	1.727	4.617	7.04	7.69	7.69	7.69	7.69	7.69	8.536	11.15	
Ba	466	3.401	11.78	14.38	17.44	18.23	19.57	20.55	21.62	23.47	24.16	26.36	31.9	36.21	36.21	36.21	36.21	36.21	36.21	38.79	42.91	42.91
B	389	15.66	25.24	32.81	36.47	38.66	41.3	42.1	45.93	49.45	52.22	56.92	58.8	65.13	65.13	65.13	67.92	67.92	67.92	70.84	76.98	
Caa-C	18	58.82	67.06	67.06	67.06	67.06	67.06	67.06	67.06	67.06	100											
Inv.Grade	1490	0	0.143	0.143	0.143	0.143	0.237	0.237	0.237	0.237	0.348	0.578	1.413	2.157	2.419	2.419	2.562	2.562	2.562	3.548	5.257	
Spec.Grade	873	9.976	18.85	23.5	26.74	28.09	29.91	30.78	32.77	35.09	36.83	39.65	43.82	48.38	48.38	48.38	49.12	49.12	49.12	50.8	54.35	56.27
All rated	2363	3.59	6.69	8.174	9.145	9.523	10.07	10.28	10.74	11.22	11.65	12.35	13.74	15.09	15.3	15.3	15.52	15.52	15.52	17.07	18.69	
<b>1-Jan-91</b>																						
Aaa	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	423	0	0	0	0	0.315	0.315	0.315	0.315	0.315	0.315	0.722	1.146	1.146	1.146	1.146	1.146	1.146	1.146	2.292	4.69	
A	588	0	0	0	0	0	0	0	0	0.274	0.556	0.851	1.163	1.163	1.163	1.496	1.496	1.496	1.496	2.655	4.27	
Baa	369	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.715	1.171	3.519	5.493	6.022	6.022	6.022	6.645	6.645	6.645	7.311	8.014	9.462
Ba	368	4.878	6.181	8.065	8.502	9.491	10.58	11.18	13.25	14.03	16.58	22.11	26.13	26.13	27.35	27.35	27.35	27.35	27.35	31.98	33.66	
B	337	12.64	22.26	27.61	30.28	34.08	34.85	39.47	42.86	45.49	49.97	51.76	59.63	59.63	59.63	62.52	62.52	62.52	65.64	68.91	76.23	
Caa-C	19	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	72.22	72.22	100										
Inv.Grade	1540	0.066	0.066	0.066	0.066	0.154	0.154	0.154	0.154	0.256	0.467	1.234	1.92	2.161	2.161	2.293	2.433	2.433	2.579	3.497	5.087	
Spec.Grade	724	9.517	14.58	17.95	19.35	21.51	22.43	24.51	26.96	28.82	31.91	36.47	41.45	41.45	42.21	43.05	43.05	43.99	43.99	47.88	51.07	
All rated	2264	3.011	4.498	5.436	5.801	6.389	6.597	7.038	7.504	7.912	8.593	9.926	11.23	11.43	11.53	11.75	11.87	12.11	12.11	13.38	15.09	

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-92</b>																					
Aaa	147	0	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	0.556	0.656	0.656	0.656	0.656	0.656	0.656	0.656	0.556	1.754	
A	662	0	0	0	0	0	0	0	0.236	0.479	0.987	1.254	1.254	1.254	1.254	1.254	1.254	2.903	4.98		
Baa	382	0	0	0	0	0	0	0	0.402	0.82	2.99	4.379	4.881	4.881	5.433	6.017	6.633	7.268	8.569		
Ba	349	0.308	1.032	1.972	2.489	3.063	5.008	6.481	8.093	13.25	18.76	18.76	19.87	19.87	21.09	21.09	21.09	25.97	27.78		
B	266	9.218	16.15	20	24.66	27.06	30.92	34.49	37.22	43.5	45.38	51.57	51.57	51.57	51.57	51.57	51.57	54.91	66.18		
Caa-C	26	29.79	35.4	35.4	35.4	35.4	44.63	44.63	63.09	63.09	81.54	81.54	81.54	81.54	81.54	81.54	100				
Inv.Grade	1625	0	0	0	0.078	0.078	0.078	0.078	0.17	0.361	1.054	1.575	1.795	1.795	1.916	2.044	2.177	3.008	4.448		
Spec.Grade	641	5.188	8.711	10.32	12.71	13.91	15.96	18.33	20.6	23.62	28.01	33.33	33.33	34.05	34.84	34.84	35.78	39.85	44.39		
All rated	2266	1.433	2.354	2.747	3.349	3.605	4.013	4.445	4.898	5.528	6.767	7.98	8.169	8.267	8.472	8.58	8.808	9.993	11.73		
<b>1-Jan-93</b>																					
Aaa	126	0	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	0.49		
A	715	0	0	0	0	0	0	0	0.201	0.619	1.055	1.287	1.287	1.287	1.287	1.287	2.455	3.991			
Baa	448	0	0	0.263	0.263	0.548	0.846	1.476	2.126	3.811	4.884	5.266	5.266	5.687	6.132	6.602	8.537	10.56			
Ba	375	0.571	0.571	2.744	3.535	4.422	5.935	8.174	9.415	13.38	17.61	17.61	17.61	18.53	19.5	19.5	23.02	25.55			
B	255	4.555	9.292	14.21	16.12	19.21	22.03	26.24	33.27	37.31	41.74	43.38	45.2	45.2	47.54	50.16	53.18	63.98			
Caa-C	23	29.27	29.27	36.71	45.15	45.15	45.15	72.58	72.58	100											
Inv.Grade	1732	0	0	0.067	0.067	0.141	0.218	0.377	0.625	1.226	1.676	1.867	1.867	1.972	2.082	2.198	3.159	4.413			
Spec.Grade	653	3.102	4.971	8.35	9.765	11.4	13.3	16.5	19.65	23.93	28.07	28.58	29.15	29.76	31.06	31.78	34.99	39.38			
All rated	2385	0.836	1.315	2.183	2.508	2.913	3.343	4.054	4.796	5.999	7.043	7.281	7.365	7.541	7.82	8.016	9.244	10.85			

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-94</b>																					
Aaa	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	407	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	848	0	0	0	0	0	0.16	0.491	0.834	1.016	1.016	1.016	1.016	1.016	1.016	1.95	3.426				
Baa	513	0	0.209	0.209	0.437	0.675	1.915	2.431	3.78	4.637	4.944	4.944	5.289	5.655	6.044	8.118	9.902				
Ba	426	0.245	1.856	2.148	3.127	4.983	7.881	10.66	13.66	16.9	17.52	17.52	18.29	19.14	19.14	22.31	28.07				
B	342	4.062	8.272	11.42	13.27	16.67	21.43	26.79	31.84	37.3	41.34	44.79	44.79	47.62	49.23	52.86	56.79				
Caa-C	40	5.263	11.18	21.63	21.63	21.63	33.24	33.24	57.52	57.52	57.52	57.52	57.52	57.52	57.52	57.52	57.52				
Inv.Grade	1889	0	0.057	0.057	0.119	0.184	0.519	0.727	1.233	1.613	1.773	1.773	1.863	1.957	2.056	2.989	4.08				
Spec.Grade	808	2.089	4.981	6.898	8.173	10.52	14.44	18.02	22.25	26.19	28.05	29.33	29.8	31.35	31.94	35.16	40.1				
All rated	2697	0.613	1.468	1.986	2.356	2.95	4.049	4.929	6.145	7.181	7.638	7.847	7.995	8.308	8.474	9.694	11.26				
<b>1-Jan-95</b>																					
Aaa	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.432					
A	917	0	0	0	0	0	0.139	0.428	0.877	1.036	1.036	1.036	1.036	1.036	1.871	2.975					
Baa	531	0	0	0	0.441	1.586	2.065	3.567	4.096	4.096	4.096	4.417	4.764	5.137	7.134	8.854					
Ba	434	0.723	0.984	2.151	3.81	7.133	9.593	12.69	15.57	17.25	17.25	17.97	18.77	18.77	20.76	29.63					
B	462	4.26	6.734	9.547	12.81	16.64	22.28	31.34	38.54	43.11	45.7	46.42	48.03	48.96	52.09	54.34					
Caa-C	61	9.091	17.85	17.85	26.21	36.5	41.21	61.96	71.47	71.47	71.47	71.47	71.47	100							
Inv.Grade	2011	0	0	0	0.115	0.414	0.6	1.118	1.457	1.529	1.529	1.61	1.696	1.787	2.645	3.651					
Spec.Grade	957	2.948	4.749	6.642	9.436	13.34	17.36	23.73	28.75	31.76	33.02	33.72	34.88	35.76	38.22	43.64					
All rated	2968	0.934	1.485	2.035	2.875	4.077	5.159	6.995	8.356	9.031	9.273	9.466	9.742	9.962	11.05	12.69					



EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-96</b>																					
Aaa	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	477	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
A	992	0	0	0	0	0.122	0.377	0.641	0.782	0.782	0.782	0.782	0.782	1.709	2.689						
Baa	616	0	0	0.181	0.742	1.327	2.752	3.396	3.626	3.873	4.138	4.717	4.717	6.38	8.17						
Ba	462	0	0.738	2.406	6.13	8.193	12.28	14.72	16.61	16.61	17.85	18.54	19.32	21.06	28.76						
B	542	1.366	4.225	9.033	11.98	18.06	26.04	33.81	38.48	41.51	42.19	43.8	45.73	50.07	54.77						
Caa-C	75	13.99	20.13	27.15	42.37	48.44	61.33	66.49	66.49	66.49	66.49	66.49	66.49	66.49	66.49						
Inv.Grade	2212	0	0	0.05	0.207	0.425	0.934	1.231	1.357	1.424	1.495	1.647	1.647	2.487	3.462						
Spec.Grade	1079	1.647	3.807	7.378	11.47	15.63	21.86	26.81	29.86	31.24	32.17	33.23	34.45	37.19	43.2						
All rated	3291	0.532	1.201	2.273	3.491	4.703	6.58	7.939	8.674	8.991	9.218	9.522	9.717	10.82	12.49						
<b>1-Jan-97</b>																					
Aaa	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	520	0	0	0	0	0	0	0	0	0	0	0	0	0	0.344						
A	1056	0	0	0	0.109	0.336	0.574	0.954	0.954	0.954	0.954	0.954	1.965	2.859							
Baa	710	0	0.15	0.775	1.266	2.472	3.201	3.397	3.609	4.067	4.572	4.572	5.763	7.703							
Ba	556	0.192	1.719	5.891	9.145	12.08	14.98	16.84	16.84	17.81	18.36	18.97	20.35	26.42							
B	647	1.94	6.459	10.4	16.11	26.24	33.01	37.12	40.22	40.72	43.16	45.45	50.64	57.29							
Caa-C	85	14.82	25.1	38.37	48.64	65.21	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3							
Inv.Grade	2414	0	0.044	0.228	0.418	0.868	1.182	1.406	1.465	1.592	1.727	1.727	2.485	3.448							
Spec.Grade	1288	2.048	5.659	10.22	15.02	22.05	26.84	29.69	31.15	31.86	33.23	34.51	37.4	43.34							
All rated	3702	0.698	1.893	3.395	4.892	7.13	8.593	9.431	9.796	10.04	10.41	10.64	11.73	13.46							

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1-Jan-98</b>																						
Aaa	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aa	561	0	0	0	0	0	0	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.56	
A	1070	0	0	0.102	0.316	0.54	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	2.888
Baa	848	0.121	0.626	1.019	2.116	3.282	3.44	3.78	4.15	4.553	4.553	4.553	4.553	4.553	4.553	4.553	4.553	4.553	4.553	4.553	4.553	7.162
Ba	631	1.001	3.787	6.662	10.45	13.42	15.73	16.41	17.54	17.97	18.48	19.6	25.04									
B	855	3.804	10.05	17.46	28.32	34.8	40.2	44.1	44.72	46.97	49.74	53.48	58.11									
Caa-C	122	11.4	28.33	39.53	55.9	61.59	65.43	68.44	68.44	73.3	73.3	86.65	86.65									
Inv.Grade	2596	0.039	0.203	0.373	0.816	1.284	1.485	1.646	1.76	1.882	1.882	2.574	3.531									
Spec.Grade	1608	3.271	8.944	14.84	23.26	28.25	32.26	34.73	35.52	37.02	38.59	41.14	45.81									
All rated	4204	1.254	3.398	5.535	8.628	10.53	11.85	12.64	12.93	13.37	13.71	14.75	16.42									
<b>1-Jan-99</b>																						
Aaa	106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	597	0	0	0	0	0	0.223	0.223	0.223	0.223	0.223	0.223	0.5									
A	1080	0	0	0.203	0.309	0.646	0.646	0.646	0.646	0.646	1.554	2.51										
Baa	964	0.105	0.544	1.462	2.686	2.953	3.242	3.554	4.062	4.062	5.097	6.928										
Ba	642	1.317	3.32	5.69	8.551	10.85	11.44	12.44	13.18	13.6	15.48	21.05										
B	1022	4.992	13.47	23.96	32.36	37.16	40.67	41.82	43.81	46.68	50.12	54.85										
Caa-C	239	18.14	28.96	48.36	55.29	61.19	66.12	66.12	68.38	68.38	74.13	74.13										
Inv.Grade	2747	0.037	0.191	0.593	1.059	1.285	1.43	1.533	1.697	1.697	2.385	3.385										
Spec.Grade	1903	5.438	12.07	20.96	27.26	31.26	33.77	34.74	36.18	37.72	40.31	44.85										
All rated	4650	2.211	4.886	8.48	11.04	12.52	13.39	13.75	14.24	14.62	15.71	17.45										

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-00</b>																					
Aaa	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1144	0	0.186	0.38	0.69	0.8	0.8	0.8	0.8	0.8	1.917	3.247									
Baa	1048	0.39	0.901	1.991	2.465	2.721	3.134	3.58	3.58	4.108	6.237										
Ba	580	0.721	2.3	4.51	6.281	6.281	7.594	7.963	8.385	11.24	19.1										
B	1106	5.841	16.44	25.42	30.77	34.27	36.02	38.91	41.35	44.24	49.76										
Caa-C	277	19.48	42.01	52.23	59.05	65.72	67.12	69	69	73.42	79.33										
Inv.Grade	2910	0.14	0.397	0.86	1.15	1.282	1.423	1.573	1.573	2.197	3.407										
Spec.Grade	1963	6.265	15.87	22.96	27.33	29.96	31.47	33.27	34.66	37.37	43.33										
All rated	4873	2.577	6.44	9.35	11.05	11.99	12.53	13.13	13.47	14.54	16.76										
<b>1-Jan-01</b>																					
Aaa	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	659	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1186	0.172	0.442	0.728	0.728	0.728	0.728	0.728	2.137	3.222											
Baa	1037	0.197	1.562	1.905	2.152	2.551	2.982	2.982	3.323	5.541											
Ba	522	1.39	3.153	4.66	4.949	6.285	6.671	7.116	9.654	17.61											
B	1069	9.561	19.36	25.18	28.55	30.42	33.42	35.75	39.22	46.82											
Caa-C	261	31.77	43.68	55.01	62.44	64.82	66.46	66.46	69.65	73.7											
Inv.Grade	3000	0.136	0.712	0.943	1.025	1.156	1.296	1.296	1.984	3.11											
Spec.Grade	1852	10.32	18.04	23.2	26.01	27.71	29.63	31.02	33.94	41.02											
All rated	4852	3.972	7.134	9.044	9.986	10.56	11.16	11.49	12.64	14.96											

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-02</b>																					
Aaa	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	665	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1191	0.172	0.354	0.354	0.354	0.354	0.354	1.68	2.565												
Baa	1138	1.093	1.387	1.493	1.721	1.846	1.846	2.291	4.37												
Ba	542	1.374	3.141	4.14	5.279	6.262	6.647	8.43	14.5												
B	817	4.531	9.876	12.52	14.87	17.96	19.87	25.11	35.66												
Caa-C	316	28.48	42.14	51.4	53.79	58.14	61.07	63.02	69.74												
Inv.Grade	3127	0.461	0.637	0.674	0.754	0.797	0.797	1.475	2.503												
Spec.Grade	1675	7.99	13.55	16.58	18.44	20.78	22.13	25.46	33.46												
All rated	4802	3.035	4.954	5.89	6.461	7.087	7.397	8.624	11.05												
<b>1-Jan-03</b>																					
Aaa	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1169	0	0	0	0	0	1.286	2.025													
Baa	1111	0	0	0.212	0.327	0.327	0.463	1.781													
Ba	526	1.001	1.452	2.217	2.802	3.14	5.778	11.17													
B	806	2.114	3.805	6.008	8.634	10.23	14.66	26.01													
Caa-C	305	21.61	34.52	36.98	41.76	44.97	47.69	55.38													
Inv.Grade	3014	0	0	0.078	0.119	0.119	0.683	1.432													
Spec.Grade	1637	5.23	8.288	10	12.14	13.42	16.84	25.18													
All rated	4651	1.797	2.783	3.351	3.974	4.3	5.538	8.033													

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-04</b>																					
Aaa	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	567	0	0	0	0	0.231	0.231														
A	1138	0	0	0	0	1.361	1.721														
Baa	1130	0	0.194	0.194	0.194	0.316	1.891														
Ba	517	0.409	0.64	1.449	1.763	3.891	9.372														
B	889	0.844	2.103	4.249	5.263	8.642	20.14														
Caa-C	264	12.21	19.17	23.9	27.32	32.55	46.63														
Inv.Grade	2970	0	0.074	0.074	0.074	0.696	1.405														
Spec.Grade	1670	2.441	4.164	6.203	7.275	10.41	20.02														
All rated	4640	0.856	1.472	2.097	2.396	3.671	6.645														
<b>1-Jan-05</b>																					
Aaa	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aa	579	0	0	0	0	0.211	0.211														
A	1169	0	0	0	0	0.944	1.392														
Baa	1131	0.182	0.182	0.182	0.638	1.988															
Ba	517	0	0.719	1	3.495	9.191															
B	944	1.026	2.913	3.907	7.618	19.84															
Caa-C	322	6.667	11.03	14.47	22.33	40.89															
Inv.Grade	3014	0.068	0.068	0.068	0.646	1.307															
Spec.Grade	1783	1.744	3.729	4.931	8.93	19.99															
All rated	4797	0.675	1.348	1.722	3.295	6.931															

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-06</b>																					
Aaa	134	0	0	0	0	0															
Aa	608	0	0	0.191	0.191																
A	1190	0	0	0.866	1.278																
Baa	1133	0	0	0.32	1.237																
Ba	551	0.197	0.197	2.736	9.83																
B	1014	1.176	2.082	7.076	18.71																
Caa-C	341	6.051	10.33	20.16	40.06																
Inv.Grade	3065	0	0	0.496	0.984																
Spec.Grade	1906	1.764	2.992	8.033	19.57																
All rated	4971	0.656	1.079	3.055	7.085																
<b>1-Jan-07</b>																					
Aaa	146	0	0	0	0																
Aa	639	0	0.17	0.17																	
A	1190	0	0.72	1.104																	
Baa	1115	0	0.299	1.373																	
Ba	552	0	1.762	8.247																	
B	1162	0	4.654	16.81																	
Caa-C	327	6	18.48	41.46																	
Inv.Grade	3090	0	0.423	0.949																	
Spec.Grade	2041	0.959	6.037	18.28																	
All rated	5131	0.369	2.493	7.227																	

EXHIBIT 42

## Cumulative Issuer-Weighted Default Rates by Annual Cohort, 1970-2009

RATING	N(0)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>1-Jan-08</b>																					
Aaa	176	0	0																		
Aa	732	0.557	0.557																		
A	1111	0.37	0.961																		
Baa	1093	0.474	0.983																		
Ba	540	1.159	6.844																		
B	1168	2.054	13.62																		
Caa-C	415	15.04	39.39																		
Inv.Grade	3112	0.43	0.816																		
Spec.Grade	2123	4.371	16.92																		
All rated	5235	2.015	7.211																		
<b>1-Jan-09</b>																					
Aaa	157	0																			
Aa	672	0																			
A	1126	0.183																			
Baa	1074	0.771																			
Ba	520	2.4																			
B	973	7.277																			
Caa-C	524	34.17																			
Inv.Grade	3029	0.34																			
Spec.Grade	2017	12.97																			
All rated	5046	5.355																			

## 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.

The chart on the cover page presents Moody's speculative-grade default rate forecast for 2010. The model generated point forecasts for each month are shown, as well as forecasted lower and higher bounds. The pessimistic and optimistic bounds represent positive and negative economic scenarios for the U.S. unemployment rate and high yield spread.

Exhibit 13 was derived by mapping Moody's ratings to a linear scale, then taking the average and 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 35.8% two-year B recovery rate reported in Exhibit 22 indicates that the average recovery rate on B rated issues that default at some time within a two-year period, not mean recovery rate for issuers rated B exactly two years before default.<sup>9</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 26.2% average rate between 1983 and 2008 (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 2009 (January 1 of each year). These data are a subset of the data used to calculate the issuer-weighted averages shown in Exhibits 34 through 35 (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>9</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

### Methodology Changes in Recent Years Report

The historical data contained in Moody's 2010 global default study includes a number of revisions relative to previous years' publications. Moody's occasionally discovers historical defaults, leading to minor revisions of the historical data. As always, the data contained in the most recently published Moody's default study supersedes the data published in previous reports.

#### *Change in Senior Rating Algorithm*

In January 2009, we applied a smoothing procedure in the senior rating algorithm to estimate every issuer's senior unsecured ratings. This enhancement aims at ironing out artificial rating changes that are not resulting from a change in an issuer's credit quality, but due to the switch of reference debt based on which the estimated senior unsecured rating is estimated. The implementation of the smoothing procedure is particularly important to structural breaks when Moody's introduced new debt ratings, refined its rating scale and adjusted its notching practices. For example, the introduction of issuer ratings on October 25 1999 results in numerous artificial rating changes if the smoothing procedure is not in place. During other times, the impact of smoothing is modest. For instance, only 3% of Moody's-rated issuers observe adjustments in their estimated senior unsecured ratings (mostly by one notch) on January 1, 2009.

#### *Removal of Special Purpose Vehicles*

During 2009, we removed a substantial number of special purpose vehicles from our universe of study. These special purpose vehicles were serving purely as financial conduits used for the purposes of issuing debt for other rated operating companies.

#### *Removal of Project Finance Issuers*

In December 2009, we removed approximately 300 past and present project finance issuers from the universe of corporate issuers.

### Moody's Definition of Default

Moody's definition of default includes three types of credit events:

1. A missed or delayed disbursement of interest and/or principal at the end of contractual allowed grace period;
2. Bankruptcy, administration, legal receivership, or other legal blocks (perhaps by regulators) to the timely payment of interest and/or principal; or
3. A distressed exchange occurs where: (i) the issuer offers debt holders a new security or package of securities that amount to a diminished financial obligation (such as preferred or common stock, or debt with a lower coupon or par amount, lower seniority, or longer maturity); and (ii) the exchange has the apparent purpose of helping the borrower avoid default.

The definition of a default is intended to capture events that change the relationship between debt holders and the debt issuer from the relationship which was originally contracted, and which subjects the bondholder to an economic loss. Technical defaults (covenant violations, etc.) are not included in Moody's definition of default. Secondary and tertiary defaults are reported only after the initial default event is believed to have been cured. This is to ensure that multiple defaults related to a single episode of credit distress are not over-counted.

### 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:

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

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

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

### 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>10</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

<sup>10</sup> See Moody's Global Credit Research "[Measuring Corporate Default Rates](#)", November 2006

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.

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.

### 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>11</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  $r(T)$  is the average senior unsecured recovery rate at horizon  $T$ ):

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

<sup>11</sup> This table is derived from Moody's Special Comment "[Recovery Rates on Defaulted Bonds and Preferred Stocks](#)", December 2003

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### 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>12</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-defaults would score an AR of 100%, while a rating system that had zero predictive ability would score 50%.<sup>13</sup>

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### Data Sources

Moody's bases the results of this study on its proprietary database of ratings and defaults for corporate bond and loan issuers. Municipal 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 over 18,000 corporate issuers that sold long-term public debt at some time between 1920 and 2009. As of January 1, 2009 approximately 5,000 corporate issuers held a Moody's long-term bond, loan, or corporate family rating.

Moody's database of corporate defaults covers over 3,600 long-term bond defaults by issuers both rated and non-rated by Moody's. Additional data sources, such as Lehman Brothers index data, supplemented Moody's proprietary data in the construction of the aggregate dollar volume-weighted default rates. Defaulted bond pricing data was derived from Bloomberg, Reuters, 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 1982-2009 period, the dataset consists includes post-default prices for approximately 3,000 defaulted instruments issued by over 1,400 defaulting corporations. Moody's makes the 1970-2009 credit rating, default, and recovery rate data used in this study available through its Default Risk Service (DRS) database.

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<sup>12</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

<sup>13</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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