

## SPECIAL COMMENT

# U.S. Municipal Bond Defaults and Recoveries, 1970-2009

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This Special Comment presents historical default, transition, recovery and ratings performance statistics for Moody's-rated issuers in the United States municipal bond market.

The main findings of the study include:

- » Moody's-rated municipal issuers have a very limited default experience with only 54 defaults over the period 1970-2009. The majority of these defaults (78%) occurred in the healthcare and housing project finance sectors.
- » The meaning of the municipal and corporate rating scales are different, with municipal debts known to carry much lower default rates than corporates sharing the same rating symbols. For example, the average 5-year historical cumulative default rate for investment-grade municipal debt is 0.03%, compared to 0.97% for corporate issuers, while for speculative-grade debt the rates are 3.4% and 21.4% for municipals and corporate issuers respectively.
- » Historical recovery rates for defaulted US municipal bonds are higher, on average, than those for corporate bonds. The average historical 30-day post-default trading price for municipal bonds is \$59.91 relative to a par of \$100 for the period 1970-2009, much higher than the \$37.50 average recovery for corporate senior unsecured bonds over the same period.
- » Moody's municipal ratings have been as powerful historically as corporate ratings in differentiating defaulters from non-defaulters. The average 5-year accuracy ratio is 0.75 for municipals versus 0.71 for corporates.

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This Special Comment provides an in-depth discussion of credit rating(s) for U.S. Municipal Bond Defaults and Recoveries, 1970-2009 and should be read in conjunction with Moody's most recent Credit Opinion and rating information available on [Moody's website](#).

## Introduction

This default study presents historical default, loss and transition statistics for Moody's-rated issuers in the United States municipal bond market. As way of background, there is limited default experience in this market. Many municipal governments have the ability to often secure the debt they issue with a "general obligation" (GO) pledge, which provides that all of the revenue-producing power of a municipality can be brought to bear to service the debt, including the municipality's ability to levy taxes. This is a very strong pledge and drives the low default history of state and local government bonds. However, much of the debt issued in the municipal market is either sold by governments and not backed by a GO pledge or sold for obligors such as hospitals, universities and housing projects and these debts, on average, have a modestly weaker credit profile than debts backed by a GO pledge. Of the 54 Moody's rated municipal defaults since 1970, 51 of them have been defaults on non-GO debt. Examples of non-GO debt issues include bonds issued for the purposes of financing private universities, hospitals and housing projects.

It is also important to note that Moody's municipal credit opinions are unique in that they are expressed through Moody's municipal bond rating scale, which while sharing the familiar symbology is nevertheless conceptually distinct from Moody's global rating scale that is used for debt issued by corporations, non-US governmental issuers and structured finance securities.

## Methodology

The ratings examined in this study are those assigned to public long-term un-refunded debt issued by US state and local governments and for not for profit health care, higher education, housing, infrastructure or other not for profit institutions in the municipal bond market.<sup>1</sup>

For GO debt, the rating examined is the actual rating assigned to the GO debt of any given municipality.<sup>2</sup> There is only one rating history for the GO debt of any given municipality because each debt is backed by the full revenue-producing power of that municipality, implying no differences in default probabilities across debts.

However, for non-GO debt, we examine the ratings assigned to each distinct security class of debt issued across all distinct financing purposes. Multiple rating histories exist because municipalities and other obligors often issue multiple security classes of non-GO debt for multiple financing purposes, and each security class can have a distinct default probability and, therefore, a distinct rating. For example, the Dormitory Authority of New York sells bonds for both hospitals and universities, purposes that have different default probabilities.

Appendix B provides a detailed discussion of how default and transition rates are calculated from these rating histories.

## Moody's Definition of Default

Moody's definition of default includes the following three events:

- » A missed or delayed disbursement of interest and/or principal;

<sup>1</sup> We exclude debt that is insured or enhanced by letters of credit if there is no underlying rating.

<sup>2</sup> If a debt has some form of credit enhancement, the rating incorporating that enhancement is the rating examined.

- » Filing for bankruptcy, administration, legal receivership, or other legal blocks (perhaps by regulators) to the timely payment of interest and/or principal; or
- » A distressed exchange whereby: (i) the issuer offers creditors a new or restructured debt, or a new package of securities, cash or assets, that amount to a diminished financial obligation relative to the original obligation; and (ii) the exchange has the effect of allowing the issuer to avoid a bankruptcy or payment default.

This definition of default is intended to capture events that change the relationship between the debt-holder and debt issuer from the relationship which was originally contracted, and which subjects the debt-holder to an economic loss. We seek to identify only those economic losses that are the result of a credit event. Technical defaults (covenant violations etc.) and missed payments that are cured during any applicable grace period defined by the original legal documents are not included in Moody's definition of default.

Appendix A provides detailed summaries of the 54 default events experienced by Moody's-rated municipal issuers since 1970.

### Characteristics of Municipal Issuers

Broken out by GO and non-GO ratings, Exhibit 1 shows the annual sample rating counts since 1970. From just over 1100 ratings beginning in 1970, the total number of ratings in the sample grew to approximately 18,400 by the end of 2009. Approximately 9800 of the current 18,400 municipal ratings (or 53%) are on non-GO bonds.

EXHIBIT 1

#### Growth in US Municipal Ratings

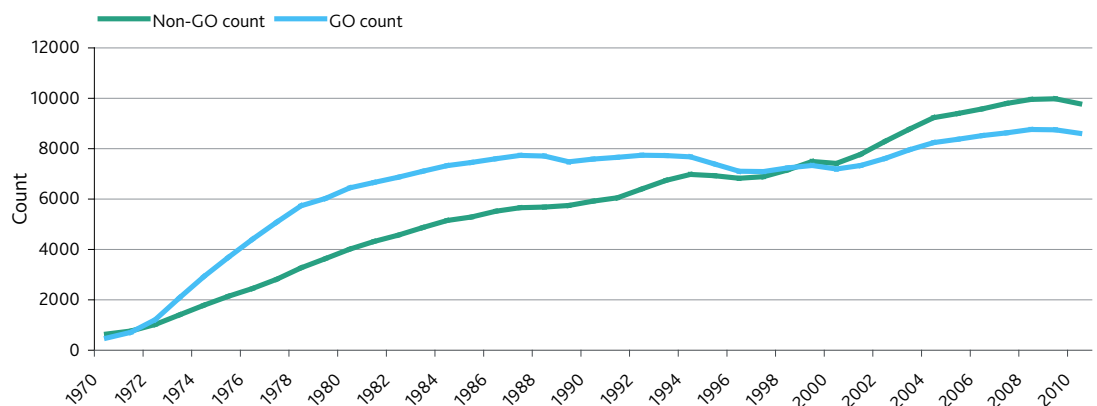


Exhibit 2 compares the current ratings distribution of US municipal issuers with the current distribution for global corporate issuers.<sup>3</sup> Virtually all municipal issuers have investment grade ratings, with more than 85% of issuers rated single A or higher. By comparison, approximately 37% of global corporate issuers are currently rated single A or higher.

<sup>3</sup> For more information on default statistics for Moody's corporate issuers, see [Corporate Default and Recovery Rates, 1920-2008](#).

EXHIBIT 2

## Ratings Distributions: Municipals vs. Corporates, January 2010

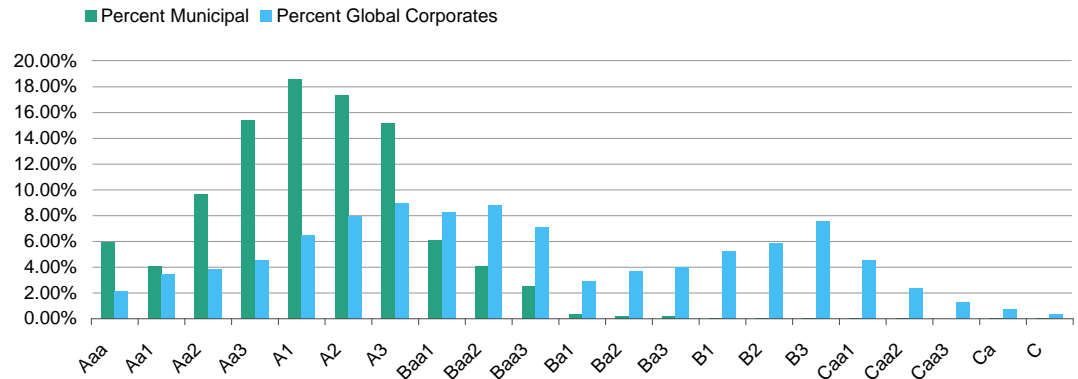


Exhibit 3 shows the distribution of non-GO municipal ratings across financing purposes. The data indicate that 15.5% of non-GO debt currently outstanding was issued by cities and towns for general financing purposes, followed by 12.7% that was issued by water and sewer enterprises and 11.4% by school districts.

EXHIBIT 3

## Distribution of Purpose for Non-GO debt, January 2010

PURPOSE	NUMBER OF OBSERVATIONS	PERCENTAGE
CITIES & TOWNS	1514	15.47%
WATER AND SEWER	1238	12.65%
SCHOOL DISTRICT	1110	11.35%
HOUSING FACILITIES	1041	10.64%
OTHER	847	8.66%
COUNTY	828	8.46%
HEALTH CARE	650	6.64%
HIGHER EDUCATION - PUBLIC	424	4.33%
HIGHER EDUCATION - PRIVATE	419	4.28%
SPECIAL DISTRICT	399	4.08%
STATE	349	3.57%
ELECTRIC ENTERPRISE	262	2.68%
COMBINED UTILITY ENTERPRISE	145	1.48%
AIRPORT ENTERPRISE	137	1.40%
TRANSIT ENTERPRISE	115	1.18%
NOT FOR PROFIT ORGANIZATION	110	1.12%
COMMUNITY COLLEGE DISTRICTS	103	1.05%
RECREATION	93	0.95%

Exhibit 4 shows the distribution of issuer-types for GO debt. Almost 50% of total GO bonds currently outstanding were issued by school districts and an additional 32% were issued by cities and towns.

EXHIBIT 4

**Distribution of Purposes for GO debt, January 2010**

PURPOSE	NUMBER OF OBSERVATIONS	PERCENTAGE
SCHOOL DISTRICT	4212	48.92%
CITIES AND TOWNS	2774	32.22%
COUNTY	740	8.59%
SPECIAL DISTRICT	405	4.70%
OTHER	253	2.94%
COMMUNITY COLLEGE DISTRICTS	144	1.67%
STATE	82	0.95%

### Rating Transitions

Rating migration matrices provide a complete picture of rating dynamics over time – upgrades, downgrades, withdrawal and default. In a rating transition matrix, each cell shows the fraction of debts that held a given row's rating at the beginning of the period and the column's rating at the end of the period. The matrices also include columns showing the fraction of debts that defaulted or had their ratings withdrawn (WR). The largest values in the average 1-year transition matrix are the diagonal elements, which show the fraction of debts that held the same rating at the end of the 12 month period as they did at the beginning.<sup>4</sup> The cells left of the diagonal show upgrades while those to the right show downgrades.

Exhibit 5 compares the municipal average one-year rating transition rates to those of corporate issuers for the period 1970-2009, while Exhibit 6 does the same for the recent recession period 2008-2009.<sup>5</sup> Exhibits 7 and 8 present the same results but separately breaking out transition rates for GO and non-GO ratings.

Exhibit 5 indicates that municipal ratings were more stable, and defaulted and withdrew less frequently, than did their corporate counterparts. For example, in the single-A rating category where approximately 50% of municipal ratings reside, the average one-year stability rate for municipal ratings was 94.7% versus 87.1% for corporates, while the average one-year default rate was zero percent versus .05%, respectively. In every rating category, the one-year average default rates for municipal debts are substantially below those for corporate issuers, as expected.

<sup>4</sup> The default column in Exhibit 5 does not precisely match the one-year cumulative default rate in Exhibit 10 because the cumulative default rates in Exhibit 10 are adjusted for rating withdrawals, while default and withdrawal are considered distinct end states in Exhibit 5.

<sup>5</sup> These comparisons are conducted by same rating symbol, even though, as discussed above, the same symbol does not imply identical credit risk for the municipal and corporate markets.

## EXHIBIT 5

## Average One-year Rating Transition Rates, 1970-2009, Municipals vs. Corporates

## ALL MUNICIPALS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	95.34%	1.03%	0.51%	0.68%	0.02%	0.00%	0.00%	0.00%	2.42%
Aa	0.59%	95.28%	1.85%	0.15%	0.02%	0.00%	0.00%	0.00%	2.12%
A	0.05%	1.34%	94.67%	0.78%	0.03%	0.01%	0.00%	0.00%	3.12%
Baa	0.14%	0.10%	2.27%	92.65%	0.34%	0.04%	0.01%	0.01%	4.46%
Ba	0.04%	0.34%	0.31%	5.94%	83.64%	2.72%	0.48%	0.22%	6.30%
B	0.00%	0.22%	0.30%	1.82%	6.88%	75.31%	4.50%	3.51%	7.44%
Caa-C	0.00%	0.00%	0.09%	0.65%	2.60%	3.64%	76.30%	6.72%	10.01%

## GLOBAL CORPORATES

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa	DEFAULT	WR
Aaa	87.65%	8.48%	0.61%	0.01%	0.03%	0.00%	0.00%	0.00%	3.22%
Aa	1.01%	86.26%	7.82%	0.34%	0.05%	0.02%	0.01%	0.02%	4.47%
A	0.06%	2.78%	87.05%	5.21%	0.48%	0.09%	0.03%	0.05%	4.24%
Baa	0.04%	0.19%	4.65%	84.40%	4.20%	0.79%	0.20%	0.17%	5.35%
Ba	0.01%	0.06%	0.38%	5.66%	75.74%	7.25%	0.61%	1.13%	9.16%
B	0.01%	0.04%	0.13%	0.35%	4.81%	73.50%	6.35%	4.37%	10.43%
Caa-C	0.00%	0.02%	0.02%	0.14%	0.42%	7.53%	62.32%	16.71%	12.83%

\* Last cohort used, January 2009

Exhibit 6, which isolates the recent period 2008-2009, shows higher default rates than the 1970-2009 average for municipals, and much more volatility for corporates.

EXHIBIT 6

**Average One-Year Rating Transition Rates, 2008-2009, Municipals vs. Corporates****ALL MUNICIPALS**

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	89.83%	1.31%	1.00%	0.45%	0.00%	0.00%	0.00%	0.00%	7.41%
Aa	0.16%	95.50%	1.21%	0.16%	0.02%	0.01%	0.01%	0.00%	2.93%
A	0.02%	1.19%	93.52%	0.90%	0.03%	0.02%	0.01%	0.00%	4.32%
Baa	0.06%	0.16%	3.04%	86.92%	0.76%	0.09%	0.07%	0.02%	8.89%
Ba	0.00%	0.25%	0.62%	6.03%	75.34%	6.15%	0.92%	0.12%	10.58%
B	0.00%	2.26%	0.00%	0.00%	5.78%	60.30%	17.09%	4.77%	9.80%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.85%	13.33%	14.81%

**GLOBAL CORPORATES**

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	67.02%	28.09%	0.00%	0.24%	0.00%	0.00%	0.00%	0.00%	4.66%
Aa	0.00%	72.93%	21.00%	1.27%	0.16%	0.04%	0.05%	0.14%	4.40%
A	0.00%	0.77%	82.22%	10.02%	0.36%	0.20%	0.10%	0.61%	5.72%
Baa	0.00%	0.13%	1.29%	84.63%	5.54%	1.04%	0.26%	0.52%	6.60%
Ba	0.00%	0.00%	0.04%	3.47%	70.64%	12.07%	2.76%	1.86%	9.15%
B	0.00%	0.00%	0.10%	0.18%	2.48%	66.45%	16.90%	6.53%	7.37%
Caa-C	0.00%	0.00%	0.00%	0.28%	0.00%	4.00%	61.04%	26.47%	8.22%

\* Last cohort used, January 2009

Exhibits 7 and 8 compare transition rates for GO ratings with those for non-GO ratings for the periods 1970-2009 and 2008-2009, respectively. For both periods, while GO and non-GO ratings exhibit similar stability rates, GO debts default at a lower frequency than non-GO debts. As discussed above, of the 54 total municipal defaults since 1970 only 3 were on GO debt.

## EXHIBIT 7

## Average One-Year Rating Transition Rates, 1970-2009, GO vs. Non-GO

## NON-GENERAL OBLIGATIONS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	96.42%	0.60%	0.27%	0.04%	0.00%	0.00%	0.00%	0.00%	2.67%
Aa	0.67%	94.90%	1.43%	0.09%	0.02%	0.01%	0.00%	0.00%	2.87%
A	0.05%	1.46%	94.09%	0.82%	0.05%	0.02%	0.01%	0.00%	3.50%
Baa	0.02%	0.03%	2.20%	92.25%	0.58%	0.07%	0.02%	0.01%	4.83%
Ba	0.00%	0.16%	0.25%	4.76%	82.53%	4.11%	0.77%	0.34%	7.08%
B	0.00%	0.24%	0.33%	1.56%	5.39%	75.72%	4.88%	3.81%	8.07%
Caa-C	0.00%	0.00%	0.10%	0.67%	3.08%	3.69%	73.18%	7.95%	11.33%

## GENERAL OBLIGATIONS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	91.58%	2.52%	1.34%	2.91%	0.10%	0.00%	0.00%	0.00%	1.56%
Aa	0.52%	95.59%	2.19%	0.19%	0.01%	0.00%	0.00%	0.00%	1.50%
A	0.04%	1.25%	95.12%	0.74%	0.01%	0.00%	0.00%	0.00%	2.83%
Baa	0.22%	0.15%	2.33%	92.95%	0.16%	0.01%	0.00%	0.00%	4.18%
Ba	0.12%	0.62%	0.42%	7.89%	85.48%	0.44%	0.00%	0.01%	5.03%
B	0.00%	0.00%	0.00%	4.93%	24.64%	70.43%	0.00%	0.00%	0.00%
Caa-C	0.00%	0.00%	0.00%	0.56%	0.00%	3.35%	93.30%	0.00%	2.79%

\* Last cohort used, January 2009

## EXHIBIT 8

## Average One-Year Transition Rates, 2008-2009, GO vs. Non-GO

## NON-GENERAL OBLIGATIONS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	88.83%	1.41%	0.90%	0.10%	0.00%	0.00%	0.00%	0.00%	8.75%
Aa	0.23%	94.44%	0.94%	0.06%	0.04%	0.03%	0.01%	0.00%	4.25%
A	0.01%	1.22%	92.42%	1.07%	0.03%	0.02%	0.01%	0.00%	5.21%
Baa	0.01%	0.03%	2.96%	86.27%	1.26%	0.15%	0.13%	0.01%	9.18%
Ba	0.00%	0.27%	0.67%	4.18%	76.45%	6.21%	1.01%	0.00%	11.20%
B	0.00%	2.26%	0.00%	0.00%	5.78%	60.30%	17.09%	4.77%	9.80%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.85%	13.33%	14.81%

## GENERAL OBLIGATIONS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	Caa_C	DEFAULT	WR
Aaa	92.34%	1.04%	1.24%	1.30%	0.00%	0.00%	0.00%	0.00%	4.08%
Aa	0.08%	96.63%	1.49%	0.26%	0.00%	0.00%	0.00%	0.01%	1.53%
A	0.03%	1.15%	94.67%	0.73%	0.02%	0.01%	0.00%	0.00%	3.39%
Baa	0.11%	0.31%	3.12%	87.64%	0.20%	0.01%	0.00%	0.05%	8.56%
Ba	0.00%	0.00%	0.00%	25.00%	63.89%	5.56%	0.00%	1.39%	4.17%

\* Last cohort used, January 2009

## Cumulative Default Rates

Only 54 Moody's-rated municipal issuers defaulted on their debts during the period 1970-2009.<sup>6</sup> Exhibit 9 shows the default counts by purpose. The vast majority of defaults were in the healthcare and housing project finance sectors.<sup>7</sup>

## EXHIBIT 9

## Default Counts by Purpose

Housing	21
Health Care	21
Electric, Water or Sewer Enterprise	3
Higher Education	1
Recreation	1
City, Town, County -- non-General Obligation	4
General Obligation	3

As shown in Exhibit 10, municipals had lower average cumulative default rates than did global corporates overall and by like rating symbol. For example, the average one-year default rate for all municipals was just 0.01% versus 1.57% for corporates, and in the single-A rating category to which

<sup>6</sup> This study does not capture Moody's-rated note defaults.

<sup>7</sup> The complete list of the defaulters is in Exhibit 12.

the majority of municipal ratings are assigned, average cumulative default rates are much lower for municipals than for corporates with the same single-A symbol.

## EXHIBIT 10

## Average Cumulative Default Rates, 1970-2009, Municipals vs. Corporates

## ALL MUNICIPALS

RATING	1	2	3	4	5	6	7	8	9	10
Aaa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.02%	0.03%	0.03%
A	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.02%	0.02%	0.02%	0.03%
Baa	0.01%	0.02%	0.04%	0.06%	0.08%	0.10%	0.11%	0.13%	0.14%	0.16%
Ba	0.22%	0.71%	1.06%	1.33%	1.57%	1.91%	2.27%	2.52%	2.71%	2.80%
B	3.65%	6.00%	7.88%	9.91%	11.73%	12.40%	12.40%	12.40%	12.40%	12.40%
CaaC	7.07%	8.97%	11.03%	11.60%	11.60%	11.60%	11.60%	11.60%	11.60%	11.60%
Inv. Grade	0.00%	0.01%	0.01%	0.02%	0.03%	0.03%	0.04%	0.05%	0.05%	0.06%
Spec. Grade	1.05%	1.86%	2.49%	3.00%	3.43%	3.79%	4.10%	4.32%	4.47%	4.55%
Allrated	0.01%	0.02%	0.03%	0.04%	0.05%	0.06%	0.07%	0.07%	0.08%	0.09%

## GLOBAL CORPORATES

RATING	1	2	3	4	5	6	7	8	9	10
Aaa	0.00%	0.01%	0.01%	0.04%	0.11%	0.17%	0.25%	0.32%	0.41%	0.50%
Aa	0.02%	0.06%	0.09%	0.16%	0.23%	0.31%	0.38%	0.45%	0.49%	0.54%
A	0.05%	0.17%	0.34%	0.52%	0.72%	0.94%	1.18%	1.46%	1.76%	2.05%
Baa	0.18%	0.49%	0.91%	1.40%	1.93%	2.47%	3.00%	3.53%	4.15%	4.85%
Ba	1.17%	3.19%	5.58%	8.12%	10.40%	12.49%	14.32%	16.15%	18.03%	19.96%
B	4.55%	10.43%	16.19%	21.26%	25.90%	30.30%	34.47%	38.11%	41.42%	44.38%
CaaC	17.72%	29.38%	38.68%	46.09%	52.29%	56.62%	59.77%	63.56%	67.42%	71.38%
Inv. Grade	0.08%	0.24%	0.46%	0.71%	0.97%	1.26%	1.54%	1.84%	2.16%	2.50%
Spec. Grade	4.53%	9.33%	13.87%	17.87%	21.36%	24.43%	27.13%	29.56%	31.85%	34.01%
Allrated	1.57%	3.22%	4.73%	6.03%	7.14%	8.10%	8.92%	9.67%	10.38%	11.06%

\* Last cohort used, January 2009

Exhibit 11 shows cumulative default rates for GO and non-GO debts broken out separately, indicating that GO debts have defaulted at a much lower frequency than non-GO debts even after controlling for rating levels.

## EXHIBIT 11

## Average Cumulative Default Rates, 1970-2009, General Obligation vs Non-GO

## NON-GENERAL OBLIGATION

RATING	1	2	3	4	5	6	7	8	9	10
Aaa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%	0.03%	0.04%	0.05%
A	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%	0.04%	0.06%	0.07%
Baa	0.01%	0.04%	0.09%	0.14%	0.19%	0.23%	0.27%	0.31%	0.35%	0.39%
Ba	0.35%	1.14%	1.74%	2.20%	2.64%	3.29%	3.99%	4.52%	4.91%	5.10%
B	3.97%	6.55%	8.64%	10.92%	13.00%	13.78%	13.78%	13.78%	13.78%	13.78%
CaaC	8.43%	10.74%	13.33%	14.07%	14.07%	14.07%	14.07%	14.07%	14.07%	14.07%
Inv. Grade	0.00%	0.01%	0.03%	0.04%	0.05%	0.07%	0.08%	0.09%	0.11%	0.13%
Spec. Grade	1.55%	2.77%	3.75%	4.57%	5.29%	5.93%	6.48%	6.90%	7.20%	7.37%
Allrated	0.02%	0.04%	0.07%	0.09%	0.11%	0.12%	0.14%	0.16%	0.18%	0.19%

## GENERAL OBLIGATION

RATING	1	2	3	4	5	6	7	8	9	10
Aaa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.02%	0.02%	0.02%
A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ba	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CaaC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Inv. Grade	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.01%
Spec. Grade	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Allrated	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.01%

\* Last cohort used, January 2009

## Recovery Rates

To the extent data are available, Exhibit 12 presents two different recovery rate measures for each of the 54 Moody's-rated municipal defaults since 1970. One recovery measure is the 30-day post-default trading price and the other is the ultimate discounted recovery rate which is based on the value creditors actually receive at the resolution of the default event.<sup>8</sup>

Average recovery rates for Moody's-rated municipal bonds are high relative to average recovery rates on senior unsecured bonds of corporate issuers. The average 30-day post-default price for defaulted municipal bonds was \$59.9 relative to a par value of \$100. The corresponding recovery for the senior

<sup>8</sup> For further details on the ultimate recoveries, see the circumstances surrounding the various defaults in Appendix A.

unsecured bonds of corporate issuers is \$37.5. Ultimate recoveries on municipal bonds are higher than the 30-day trading prices, with an average of \$67 and a median of \$85. Ultimate recoveries were highly dispersed across individual bonds with many bonds recovering 100 cents on the dollar and others receiving less than 5 cents on the dollar.

EXHIBIT 12

## Recovery Rates for Defaulted Municipal Issuers, 1970-2009

DEFAULTED CREDIT	DEFAULT DATE	PURPOSE	SECURITY CLASS	30-DAY POST DEFAULT PRICE	ULTIMATE RECOVERY
Midlands Community Hospital	1/1/1978	HEALTH CARE	Revenue		100
Hilton Head Hospital	1/1/1978	HEALTH CARE	Revenue		100
Washington Public Power Supply	8/1/1983	ELECTRIC ENTERPRISE	Revenue		40
Belfield	4/1/1987	CITY	General Oblig Lim Tax		55
Vanceburg	12/1/1987	ELECTRIC ENTERPRISE	Revenue		100
Baldwin County	10/1/1988	COUNTY	General Obligation		100
Metropolitan Hospital	12/1/1989	HEALTH CARE	Revenue		28
Choate Symmes Hospitals	1/1/1990	HEALTH CARE	Revenue		61
Downtown Hospital Association	1/1/1991	HEALTH CARE	Revenue		100
Northwest General	4/1/1991	HEALTH CARE	Revenue		24
Polk County	12/1/1991	COUNTY	Lease Rental		100
Connecticut Housing Authority	7/1/1994	HOUSING FACILITIES	FHA		
Orange County	12/1/1994	COUNTY	General Oblig Lim Tax		100
Michigan Health Care Corporation	6/1/1995	HEALTH CARE	Revenue		24
Allegheny Health -- Delaware Valley	7/21/1998	HEALTH CARE	Revenue		
Allegheny Health -- Graduate Health	7/21/1998	HEALTH CARE	Corporate Guaranty		
Allegheny Health -- Graduate Health	7/21/1998	HEALTH CARE	Revenue		
Boston Regional Medical Center	2/1/1999	HEALTH CARE	Revenue		20
Greater Southeast Healthcare System	5/1/1999	HEALTH CARE	Revenue		50
Tarrant County Housing Finance Corporation	11/15/1999	HOUSING FACILITIES	Mortgage		
Marine Military Academy	5/1/2000	HIGHER EDUCATION - PRIVATE	Revenue		100
Citizen's General Hospital	1/1/2001	HEALTH CARE	Revenue		100
Genesee Hospital	5/1/2001	HEALTH CARE	Revenue		
Metro Health Center	7/1/2002	HEALTH CARE	Revenue		21
Yorkshire Development Project	10/1/2002	HOUSING FACILITIES	Section 8		100
St Francis Medical Center	11/1/2002	HEALTH CARE	Revenue		
Meadows Phoenix	7/1/2003	HOUSING FACILITIES	Section 8		4
Lakeview Apartments	7/1/2003	HOUSING FACILITIES	Mortgage		8
Cicero Local Development	11/3/2003	TOWN	Lease Rental		10.3
Fair Oaks Apartments	1/1/2004	HOUSING FACILITIES	Mortgage		70.32

Mercy Hospital and Medical Center	1/2/2004	HEALTH CARE	Revenue		100
National Benevolent Association	2/1/2004	HEALTH CARE	Revenue		100
Magnolia Park Apartments	5/1/2004	HOUSING FACILITIES	Mortgage		67
Westridge Apartments	6/1/2004	HOUSING FACILITIES	Mortgage		
Fort Worth Osteopathic Hospital	8/1/2004	HEALTH CARE	Revenue	72.58	21
Bay Club at Mesa Cove	9/1/2004	HOUSING FACILITIES	Mortgage	19.93	35
River Bend Apartments	9/1/2004	HOUSING FACILITIES	Mortgage		99.7
Crossroads Apartments	12/31/2004	HOUSING FACILITIES	Mortgage		
Legacy at Anderson Project	2/1/2005	HOUSING FACILITIES	Mortgage	54.77	89
Park at Wells Branch Apartments	6/1/2005	HOUSING FACILITIES	Mortgage	98.84	
Ashton Place and Woodstock Apartments	8/1/2005	HOUSING FACILITIES	Mortgage	7.75	
River Falls Project	1/1/2006	HOUSING FACILITIES	Mortgage	55	100
Legacy at Lehigh Project	6/1/2006	HOUSING FACILITIES	Mortgage	64.82	100
Cameron Crossing I & II	6/1/2006	HOUSING FACILITIES	Mortgage		85
Canterbury 3 Fountains	9/1/2006	HOUSING FACILITIES	Mortgage	59.44	
Austin Student Housing Project	1/1/2007	STUDENT HOUSING	Mortgage	91.46	
Nob Hill Apartments	12/1/2007	HOUSING FACILITIES	Mortgage	79.38	
North Oakland Medical Center	2/1/2008	HEALTH CARE	Revenue		
Jefferson County Sewer	4/1/2008	SEWER ENTERPRISE	Revenue		
Jefferson County GO	9/15/2008	COUNTY	General Obligation		
Fullerton Village at DePaul University	12/1/2008	PRIVATIZED STUDENT HOUSING	Revenue	55	
St Louis Convention Center	12/15/2008	RECREATION	Revenue		
Forum Health	3/1/2009	HEALTH CARE	Revenue		
Sierra Kings Health Care	10/1/2009	SPECIAL DISTRICT	General Obligation		
			<b>Average recovery</b>	59.91	67.04
			<b>Median recovery</b>	59.44	85.00

## Accuracy Measures

The cumulative default rates presented in Exhibit 10 show that the likelihood of default for Moody's-rated municipal issuers increases monotonically as one moves down the rating scale for most horizons. To further investigate how well Moody's municipal ratings rank-order default risk, we construct a cumulative ratings accuracy profile, which measures a ratings system's ability to distinguish defaulters from non-defaulters. Issuers are sorted by risk decile (from riskiest to least risky) and plotted against the share of defaulters in that decile. An effective rating system would have most (if not all) defaulters in the lowest categories and the plotted accuracy profile would bow towards the upper-left origin.

Exhibit 13 shows the cumulative accuracy profile for Moody's municipal ratings, indicating that municipal ratings have had approximately the same level of accuracy as corporate ratings in differentiating defaulters from non-defaulters. For example, over the entire period 1970-2009, the riskiest 20% of municipal issuers accounted for 86% of all defaulters, which is modestly better than the 77% of corporate defaulters that resided in the riskiest 20% of corporate issuers. Municipals are

more accurate on average when looking at a longer horizon – the average 5-year accuracy ratio is 0.75 for municipals and 0.71 for corporates.

EXHIBIT 13

**One-year Cumulative Accuracy Profile, Municipals vs. Corporates**

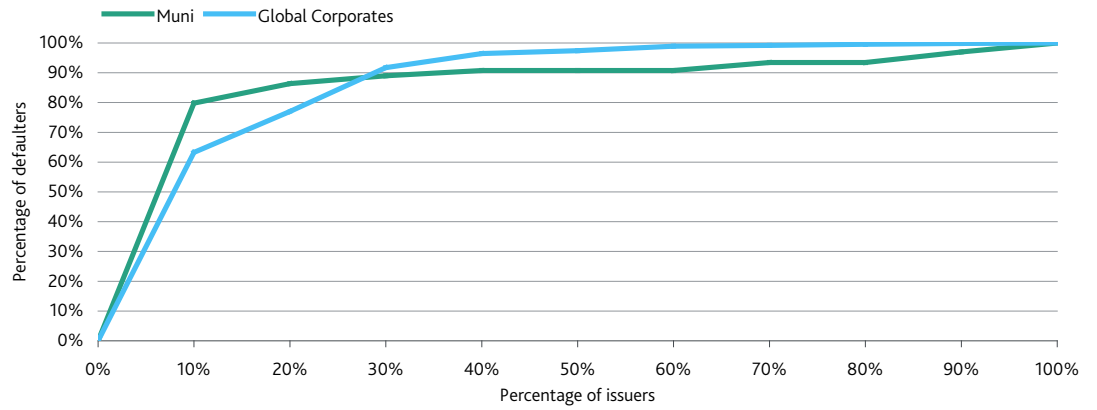
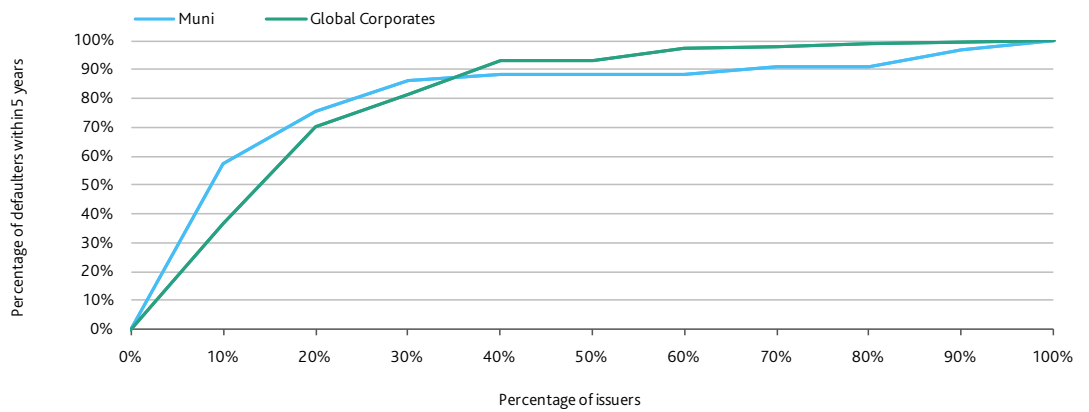


EXHIBIT 14

**5-Year Cumulative Accuracy Profile, Municipals versus Corporates**



## Related Research

- » [“Corporate Default and Recovery Rates, 1920-2008,”](#) February 2009 (114385)
- » [“The U.S. Municipal Bond Rating Scale: Mapping to the Global Rating Scale and Assigning Global Scale Ratings to Municipal Obligations,”](#) March 2007 (102249)
- » [“Moody’s US Municipal Bond Rating Scale,”](#) November 2002 (76553)

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

»

## Appendix A: Details on Individual Municipal Default Events, in Chronological Order

### 1) Midlands Community Hospital

- » CUSIP: 803728AP9
- » Default Date: January 1978
- » Obligor: Midlands Community Hospital
- » Issuer: Sarpy County Hospital Authority
- » Defaulted Bonds: Revenue Bonds dated 11/1/73 and 7/1/76; \$21.7 million of debt affected
- » Cause of Default: Inability to recruit physicians
- » Recovery: Principal payments due between January 1978 and January 1982 were paid between nine months and three years late. (Source: Moody's reports)

Midlands Community Hospital defaulted on Revenue Bonds dated 11/1/73 and 7/1/76 in January 1978. In the 1960's, Doctors Hospital in Omaha, Nebraska was an aging hospital with declining patient usage and outdated equipment. The Board of Directors of Doctors Hospital decided to build a new 208-bed hospital and close the aging facility. Sarpy County Hospital Authority issued bonds to finance the construction of Midlands Community Hospital in Papillion, Nebraska, 12 miles from Omaha. The ability to recruit physicians from Doctors Hospital in Omaha to practice at Midlands Community Hospital was a key factor in the future success of the new hospital. The recruitment did not go as planned and the hospital opened with only a few doctors. As a result, utilization fell far below the levels necessary to cover operations and maintenance expenses as well as debt service. In 1976 an event of default was declared under the legal documents, debt service reserves were used to make interest payments, and a receiver for the hospital was appointed and approved by the District Court. As a result, the principal payments due between January 1978 and January 1982 were paid between nine months and three years late.

### 2) Hilton Head Hospital, SC

- » CUSIP: 074347QW8 (Issuer CUSIP)
- » Default Date: January 1, 1978
- » Obligor: Hilton Head Hospital, SC
- » Issuer: Beaufort County, SC
- » Defaulted Bonds: Revenue Series 1974; approximately \$11 million of debt affected
- » Cause of Default: Low patient utilization levels led to a financial strain on the hospital.
- » Recovery: Bonds were redeemed at par plus call premium from the proceeds of the sale of the hospital

(Source: Moody's files)

Hilton Head Hospital defaulted on its debt service payment due January 1, 1978.

In 1974, Beaufort County, South Carolina issued \$11.2 million to finance the first health care facility on Hilton Head Island. The bonds were to be repaid from gross revenues of the hospital. Based on the

substantial growth of residential, retirement, and resort facilities on the Island in the years preceding the debt issuance, officials decided that it was necessary to develop health care facilities on the Island. The feasibility study for the new hospital projected high utilization of the 40 acute-care and 40 skilled nursing beds and revenues sufficient to cover debt service after use of the capitalized interest fund. In the mid 1970s, it became apparent that the population on the Island had been over-estimated and the national economic recession of 1974-1975 had further reduced population growth on the Island. Additionally, the hospital opened without being adequately staffed in certain areas that led to a loss of patients to hospitals in Savannah, GA. These factors resulted in patient utilization levels well below projected levels that led to financial strain on the hospital. In April 1976, the hospital missed payments on 1/6 of the upcoming interest due on the bonds. By January 1978, the capitalized interest and reserve funds had been depleted and the hospital failed to pay the interest payment due on January 1, 1978.

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### 3) Washington Public Power Supply System, WA (now Energy Northwest)

- » CUSIP: 939821LN2
- » Default Date: August 1983
- » Obligor: Washington Public Power Supply System (WPPSS)
- » Issuer: Washington Public Power Supply System (WPPSS)
- » Defaulted Bonds: Nuclear Projects 4 & 5; approximately \$2.25 billion of debt affected
- » Cause of Default: Declining demand for energy, rising construction costs
- » Recovery: Approximately 40% after the settlement of a class action suit in December, 1998

(Source: Moody's files)

In August 1983, Washington Public Power Supply System (WPPSS) defaulted on \$2.25 billion of revenue bonds for Nuclear Projects 4 & 5. Washington Public Power Supply System was organized in 1957 as a municipal corporation that allowed publicly-owned utilities in the Pacific Northwest to jointly build power generation facilities. As part of the Ten-Year Hydro Thermal Power Plan, WPPSS and other Northwest utilities assumed that demand for electricity in the northwest region would double every ten years beyond the capacity of current power sources. In the early 1970s WPPSS planned to construct five nuclear generation facilities to meet this forecasted demand. Bonds were sold to finance the cost of the power plants and were to be repaid through participation agreements with numerous municipal and cooperatively-owned electric utilities.

Construction delays and cost overruns on the sizable project and increased costs to meet newly required safety standards drove the cost of completion of the projects to three to four times the original estimates. At the same time demand for energy was declining due to rising energy costs, conservation, and an economic slowdown in the area. In January 1982, WPPSS abandoned construction on projects 4 and 5. In January 1983, the public utilities participating in WPPSS were obligated to begin repaying the debt incurred by the abandoned projects. In order to repay the debt, the utilities would have had to dramatically increase electricity rates on their customers to pay for the failed projects.

The uproar due to the increasing rates resulted in challenges to the enforceability of the contracts with participants for repayment of the construction and operation costs of Projects 4 and 5 (including repayment of debt service). In 1983, the Washington State Supreme Court ruled that the Washington State public agency participants in

Projects 4 and 5 did not have the authority to enter into the Project 4 and 5 participation agreements, rendering void the agreements and the source of revenues to pay debt service. WPPSS became unable to service the debt on the \$2.25 billion in bonds issued to finance construction of Projects 4 and 5, thereby precipitating the largest municipal bond payment default in history.

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#### 4) Belfield, ND

- » CUSIP: 077689AP2
- » Default Date: April 1987
- » Obligor: Belfield, ND
- » Issuer: Belfield, ND
- » Defaulted Bonds: Special assessment bonds; \$2.38 million of debt affected
- » Cause of Default: Insufficient property taxes to repay existing debt
- » Recovery: Approximately 55% of principal (Source: Moody's files)

In April 1987, the town of Belfield, North Dakota defaulted on debt service payments on \$2.38 million of special assessment bonds. The proceeds of the bonds were used to provide roads, water, and sewer services for a tract of land that was slated for residential development. The bonds were to be repaid with collected property taxes from the properties within the development. The oil boom of the early 1980's led to a severe housing shortage as workers relocated to the area to secure high paying jobs in the oil industry. The new residential development was to have provided housing for the influx of workers. A few years later the oil market declined and people began to seek housing and employment elsewhere. With only three homes built, the property taxes generated were insufficient to repay the existing debt. A deficiency levy was instituted on all properties in Belfield to make up the shortfall. The deficiency levy rose to levels that forced an increasing number of homeowners to abandon their properties or to fail to pay their property taxes. Ultimately, the town council refused to raise the levy any further and Belfield defaulted on its outstanding debt.

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#### 5) Vanceburg, KY

- » CUSIP: 921547AY1
- » Default Date: December 1, 1987
- » Obligor: Vanceburg, KY
- » Issuer: Vanceburg, KY
- » Defaulted Bonds: Greenup Hydro Project; \$124.5 million of debt affected
- » Cause of Default: Rising project costs, delays in completion
- » Recovery: Bondholders received par plus accrued interest up to May 1988 from the sale of the project

(Source: Moody's files)

Vanceburg, KY defaulted on its December 1, 1987 debt service payment for its Electric System Revenue Bonds – Greenup Hydro Project. The bonds were issued in 1979 to fund the construction and installation of a power plant structure containing hydroelectric generating units. The bulk of the power generating from this plant was to be sold to Hamilton Ohio Electric Utility. The bonds were

secured by a lien on revenues of the Vanceburg Electric System. A difficult start-up beginning in 1979 plagued the project. The problems included finding a location for the transmission lines to deliver power from Greenup to Hamilton, project cost overruns, and a six-month delay in project completion. In 1984, the City of Hamilton, Vanceburg Electric System's largest customer, filed a lawsuit seeking to have their power sales contract declared null and void alleging various contract breaches and fraudulent inducement to enter into a contract. The December 1, 1987 default was part of the legal settlement between the towns of Vanceburg and Hamilton in which Hamilton would pay off the Vanceburg bonds and assume the responsibility for the ongoing plant.

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## 6) Baldwin County, Alabama

- » CUSIP: 057845BB4
- » Default Date: October 1, 1988
- » Obligor: Baldwin County, AL
- » Issuer: Baldwin County, AL
- » Defaulted Bonds: GO Warrants; approximately \$6 to \$8 million of debt affected
- » Cause of Default: Lack of funds to meet debt obligations
- » Recovery: 100% of principal and interest (Source: Moody's reports)

On October 1, 1988, Baldwin County, AL, defaulted in its payments on two series of outstanding GO Warrants (the nomenclature for bonds in Alabama) with a total outstanding par of between \$6 million and \$8 million. AmSouth Bank served as Trustee and did not receive the payments as due from the county for the June 1 principal and interest payments. The county carried an "A" rating on the bonds at the time.

The county did not have sufficient funds on hand to meet its obligations at the time and officials decided to use available funds to make other payments (most probably payroll).

Moody's dropped the county's rating to "B" that month as a result of the default. With help from AmSouth, county management was able to come up with sufficient funds 15 days later, and bondholders received 100% of due principal and interest.

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## 7) Metropolitan Hospital, PA

- » CUSIP: 717826KW0
- » Default Date: December 1989
- » Obligor: Metropolitan Hospital, PA
- » Issuer: Philadelphia Hospitals Authority
- » Defaulted Bonds: Revenue bonds Series 1976 and 1981; \$63.2 million of debt affected
- » Cause of Default: Low occupancy rates led to financial distress
- » Recovery: 28 cents on dollar (Source: Moody's files)

Metropolitan Hospital defaulted on the debt service due on its revenue bonds in December 1989. The bonds were issued in 1976 and 1981 by Philadelphia Hospitals Authority to construct Metropolitan

Hospital, an osteopathic facility located in downtown Philadelphia. Primarily due to low occupancy rates, the hospital was experiencing severe cash flow problems. As a result of the financial stress, the hospital filed for bankruptcy protection on July 11, 1989. In December 1989, funds were not available to meet the debt service payment due.

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## 8) Choate-Symmes Hospitals, MA

- » CUSIP: 575850DM1
- » Default Date: January 1, 1990
- » Obligor: Choate-Symmes Hospitals, MA
- » Issuer: Massachusetts Health and Educational Facilities Authority
- » Defaulted Bonds: Revenue Bonds Series 1982; \$32 million of debt affected
- » Cause of Default: Lack of funds due to over collected revenues
- » Recovery: 61 cents on the dollar (Source: Moody's files)

Choate-Symmes failed to make its debt service payment due on its revenue bonds on January 1, 1990. In 1982, Massachusetts Health and Educational Facilities Authority issued bonds on behalf of Choate-Symmes to modernize an aged plant, remedy code deficiencies, ease capacity constraints and centralize certain services. The bonds were secured by a mortgage pledge as well as a first lien on gross receipts of the hospitals.

In early 1989, the Massachusetts Rate Setting Commission required that Choate-Symmes refund approximately \$5.5 million in overcollected revenue. This action led Choate-Symmes to file for bankruptcy protection in October 1989. In January 1990, funds were not available to pay the debt service due on the bonds.

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## 9) Downtown Hospital Association, TN (D/B/A Downtown General Hospital)

- » CUSIP: 162405AL8 (Issuer CUSIP)
- » Default Date: August 1, 1991
- » Obligor: Downtown Hospital Association, TN
- » Issuer: Chattanooga Health and Education Facilities Board
- » Defaulted Bonds: Revenue Series 1975; \$2.2 million of debt affected
- » Cause of Default: Unfavorable Medicare reimbursement process
- » Recovery: All principal and approximately 50% of interest owed (Source: Moody's files)

Downtown Hospital Association defaulted on its principal and interest payments due August 1, 1991. In 1975, Chattanooga Health and Education Facilities Board issued bonds to finance the construction of a new 54-bed hospital, Downtown General Hospital, in downtown Chattanooga as well as to capitalize interest through the construction period. The bonds were secured by a first lien on gross revenues of the hospital. The new hospital replaced the antiquated 54 bed Newell Clinic Hospital. In the 1980s there were several changes in the health care industry that adversely affected smaller hospitals like Downtown General Hospital. The most notable change was the introduction of the Medicare Prospective Payment System (PPS). The transition from a cost basis to a PPS for Medicare

reimbursement had a negative financial impact on the hospital. Additionally, Downtown General did not diversify into new service lines and therefore became particularly susceptible to the shift of hospital services out of the inpatient setting. As a result, the hospital's average daily population dropped from over 50 to 14. Beginning in November 1989, the hospital was unable to make its scheduled monthly payments for upcoming debt service payments. By August 1991, the reserve funds had been depleted and funds were not available to make the August 1 payment.

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### 10) Northwest General Hospital, MI

- » CUSIP: 594648PW1
- » Default Date: April 1991
- » Obligor: Northwest General Hospital, MI
- » Issuer: Michigan State Hospital Finance Authority
- » Defaulted Bonds: Revenue Bonds Series 1980; \$4.8 million of debt affected
- » Cause of Default: Inadequate federal reimbursements, decline in admissions
- » Recovery: Approximately 24% of par (Source: Moody's files)

Northwest General Hospital failed to make its interest payment due to bondholders in April 1991. The bonds were issued by Michigan State Hospital Finance Authority in 1980 to construct an addition to Northwest General Hospital, a 104-bed facility located in Detroit. Throughout the 1980s the hospital was plagued by continued financial deterioration despite financial and management support from an outside organization, Botsford General Hospital. Inadequate reimbursements from state and federal agencies, a decline in hospital admissions, an excess of available beds in the area, and the failure to recruit physicians to admit to the hospital were the reasons cited when Northwest General Hospital's management decided to close the hospital in September 1990. Although not legally obligated, the Michigan State Hospital Finance Authority provided funds to make the debt service payment due in October 1990. In April 1991, the bonds defaulted when funds were not available to make the interest payment.

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### 11) Polk County, IA

- » CUSIP: 731211AB4
- » Default Date: December 1991
- » Obligor: Polk County, IA
- » Issuer: Polk County, IA
- » Defaulted Bonds: Sports Facility Revenue Bonds, Series 1984; \$39 million of debt affected
- » Cause of Default: Operating losses associated with the racetrack
- » Recovery: Trustee called the defaulted issue at par with proceeds from the 1993 refunding issue

(Source: Moody's files)

Polk County defaulted on a \$2.3 million principal and interest payment due in December 1991 on its Sports Facility Revenue Bonds, Series 1984. The bonds were issued to finance the track construction at Prairie Meadows racetrack. The bonds were secured by lease payments made by the Racing Association of Central Iowa (RACI) and to the extent necessary, from an unconditional commitment

from the county. The bond default was precipitated by RACI's bankruptcy filing on November 27, 1991 which was in response to actions taken by the county to curtail the losses associated with the racetrack. The financial actions taken by the County included cutting back on RACI's subsidy which in turn, threatened its continued existence and led it to seek protection under Chapter 11 of the Bankruptcy Code. Although the County was prepared to fund the upcoming debt service payments, the funds it was to provide were subjected to the automatic stay under Section 362(a) of the Bankruptcy Code as a result of RACI's bankruptcy filing, and therefore the funds were unavailable to make the necessary debt service payment due.

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## 12) Connecticut Housing Authority, CT

- » CUSIP: 207747KS4
- » Default Date: July 1, 1994
- » Obligor: Connecticut Housing Authority
- » Issuer: Connecticut Housing Authority
- » Defaulted Bonds: Mortgage Revenue Bonds (New Haven FHA-Insured Projects); \$4.8 million of debt affected
- » Cause of Default: Delinquencies and defaults on the loans
- » Recovery: Not available.

Connecticut Housing Authority defaulted on a debt service payment due in July 1, 1994 on its Mortgage Revenue Bonds (New Haven FHA-Insured Projects). The bonds were issued to finance multi-family housing projects. The repayment of the bonds was secured by the underlying mortgage loans that were insured by FHA pursuant to Section 203(k) of the National Housing Act. Due to delinquencies and defaults on the loans, lengthy foreclosure proceedings, and less than full payment from HUD on the defaulted loans, the Authority was not able to make its required debt service payment.

Rating History - Not Available

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## 13) Orange County, CA

- » CUSIP: 68428LAN4
- » Default Date: December 6, 1994
- » Obligor: Orange County, CA
- » Issuer: Orange County, CA
- » Defaulted Bonds: Pension Obligation Series B; \$110 million of debt affected
- » Cause of Default: Orange County Investment Pool's investment losses
- » Recovery: Although the county was unable to fulfill its pledge to purchase any tendered bonds, all principal and interest payments were made. (Source: Moody's reports)

On December 6, 1994, Orange County, California filed bankruptcy petitions for both itself and the Orange County Investment Pool (OCIP). The County had pledged that the OCIP would purchase any tendered Pension Obligation Series B bond, but as a result of the bankruptcy filing, the OCIP was

unable to fulfill this obligation and the bonds defaulted on December 8, 1994. The County did not default on the scheduled principal and interest payments of the Series B bonds or any of its other long-term obligations.

The Orange County bankruptcy was the largest municipal bankruptcy in US history. Orange County's bankruptcy filing was a direct result of the investment losses incurred by the Orange County Investment Pool (OCIP) which amounted to approximately \$1.5 billion of the \$7.5 billion pool. The investment strategy of the County Treasurer involved investing in high-risk, interest rate sensitive securities and leveraging the pool to further increase returns. During the period when interest rates were on the decline and remained low, the OCIP succeeded in earning high returns. However, when interest rates began to rise in 1994, the OCIP experienced big losses. Adding to the financial distress of OCIP, when OCIP was unable to repay a \$1.2 billion loan to a Wall Street creditor, the creditor refused to extend the loan and started liquidating the securities that OCIP had pledged as collateral for the loan. To protect itself from other creditors, Orange County filed for bankruptcy for itself and OCIP.

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#### 14) Michigan Health Care Corporation, MI

- » CUSIP: 430586BM8
- » Default Date: June 1, 1995
- » Obligor: Michigan Health Care Corporation, MI
- » Issuer: Highland Park, MI Hospital Finance Authority
- » Defaulted Bonds: Revenue Bonds Series 1986, 1987 and 1992; \$262 million of debt affected
- » Cause of Default: Poor financial performance
- » Recovery: Approximately 24 to 54% of par, depending on series (Source: Bloomberg)

On June 1, 1995, Michigan Health Care Corporation defaulted on debt service due on its bonds issued by the Highland Park, MI Hospital Finance Authority and its bonds issued by the Detroit, MI Hospital Finance Authority. Michigan Health Care Corporation's main facilities were located in sites in and around the Detroit area which in the early 1990's was plagued with high unemployment and a decreasing population due to the contraction in the domestic automotive industry. The economic strain on the area, combined with an over-supply of beds in the Detroit health care market caused financial strain on the Corporation. Michigan Health Care Corporation filed for Chapter 11 Bankruptcy on March 31, 1995. This action was attributed to overwhelming legal expenses due to various litigation issues. The filing was preceded by several years of poor financial performance caused by unwise business decisions, high debt load, and high Medicaid and indigent patient load for which reimbursement was unable to cover costs. As a result of the bankruptcy filing, an automatic stay under Section 362(a) of the Bankruptcy Code was invoked and the bond trustee was prohibited from using funds on hand to pay the bonds resulting in a payment default.

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#### 15) Allegheny Health and Education Research Foundation, PA

- » CUSIP: 709172FJ4 (Delaware Valley Obligated Group); 717825BW2 (Graduate Health System)
- » Default Date: July 21, 1998
- » Obligors: Delaware Valley Obligated Group (DVOG) and Graduate Obligated Group (Graduate)

- » Issuer: Pennsylvania Higher Educational Facilities Authority (for DVOG); Philadelphia Hospitals and Higher Education Facilities Authority (for Graduate)
- » Defaulted Bonds: Delaware Valley Obligated Group and Graduate Obligated Group; approximately \$200 million of debt affected
- » Cause of Default: Financial deterioration, reduction in Medicaid payments
- » Recovery: DVOG bondholders continue to be paid under MBIA insurance; litigation on Graduate continues and so final distributions have not been made (Source: Moody's files)

On July 21, 1998 several entities of the Allegheny Health and Education Research Foundation (AHERF) filed to seek bankruptcy protection under Chapter 11 of the Bankruptcy Code, including the Philadelphia operations of Delaware Valley Obligated Group and Graduate Obligated Group as well as the parent, AHERF, and the physician organization, Allegheny University Medical Practices. The filing for bankruptcy protection by AHERF triggered an automatic stay under Section 362(a) of the Bankruptcy Code and as a result AHERF defaulted on some of its outstanding bond issues. The bankruptcy filing followed a long period of financial deterioration for AHERF and its subsidiaries. Beginning in the mid 1980's, AHERF began an expansion from its Pittsburgh base into the highly competitive Philadelphia health care market. From 1987 until 1997 the organization's debt grew from less than \$70 million to over \$1 billion, as AHERF acquired medical schools, numerous hospitals and physician practices.

AHERF's problems included operating in the highly competitive Philadelphia and Pittsburgh health care markets, and the curb in growth of Medicare reimbursements.. Other factors included the increased penetration of managed care plans that negotiated discounts on hospital fees, curbed admissions, and mismanaged and costly endeavors into physician practices. In 1998, AHERF attempted to strike a deal to sell a large portion of its Philadelphia holdings. When the deal later fell apart in June 1998, AHERF's options were limited, and one month later several of its entities filed for bankruptcy

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## 16) Boston Regional Medical Center, MA

- » CUSIP: 575851YA2
- » Default Date: February 1999
- » Obligor: Boston Regional Medical Center (BRMC)
- » Issuer: Massachusetts Health and Educational Facilities Authority
- » Defaulted Bonds: Revenue Bonds Series 1993B; \$30 million of debt affected
- » Cause of Default: Large operating deficits
- » Recovery: Approximately 20% recovery (Source: Moody's reports)

In February 1999, Boston Regional Medical Center (BRMC) declared bankruptcy and defaulted on principal and interest payments due on its Series 1993B bonds issued through Massachusetts Health and Educational Facilities Authority.

Ongoing deterioration of the hospital's balance sheet, characterized by a dangerously nominal cash position, a steadily increasing debt position due to use of local lines of credit, and a negative fund balance, were the result of four years of large operating deficits. On-going equity transfers to a

physician practice subsidiary also contributed to a rate violation of its debt service coverage test in fiscal 1997. An anticipated sale of the hospital did not occur as expected, causing the hospital to file for Chapter 11 bankruptcy protection and close the hospital. BRMC's assets were liquidated as part of the liquidation plan approved by the bankruptcy court. The proceeds of the sale of the hospital's tangible assets, including its hospital facility and property, was approximately \$22-23 million and was used to pay secured creditors and then unsecured creditors that included Series 1993 bondholders. At the time of the liquidation, approximately \$30 million of Series 1993 bonds were outstanding.

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### 17) Greater Southeast Healthcare System, MD

- » CUSIP: 741710AN7
- » Default Date: May 1999
- » Obligor: Greater Southeast Healthcare System
- » Issuer: Prince George's County, MD
- » Defaulted Bonds: Revenue Bonds Series 1993; \$46 million of debt affected
- » Cause of Default: Decreasing Medicaid reimbursement, declining patient volume
- » Recovery: Less than 50% recovery (Source: Moody's reports)

In May 1999, Greater Southeast Healthcare System filed for bankruptcy protection and suspended payments on its approximately \$46 million of outstanding Series 1993 bonds issued through Prince George's County, MD. Greater Southeast Healthcare System was a community based health delivery system that included two hospitals, three nursing homes, a physician care network, and extensive community based programs. The system's flagship, 450- bed Greater Southeast Community Hospital, was located in the southeast quadrant of Washington D.C. with a much smaller 33-bed facility in Fort Washington, Prince George's County. Prior to the bankruptcy, Greater Southeast Healthcare System was viewed as an essential service provider in an urban part of Washington D.C., characterized by an aging, declining population with below average socioeconomic characteristics reflected in an increasing reliance on governmental payers.

The organization's weak financial profile deteriorated significantly with changes in reimbursement from Medicaid, legislative changes which eliminated DC Medicaid Disproportionate Share payments to the system, and continued market forces which contributed to the system's declining patient volume and lower reimbursement rates.

These revenue pressures coupled with management turnover and labor disputes further contributed to a rapidly deteriorating financial profile. Even after the filing, there were discussions that the District of Columbia might provide some financial assistance given the essentially of the system in the area; however, the District failed to do so. In

November 1999, the courts approved the sale of Greater Southeast Community Hospital to Doctors Community Healthcare Inc. for \$22.5 million.

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### 18) Tarrant County Housing Finance Corporation

- » CUSIP: 876394CD7
- » Default Date: November 15, 1999

- » Obligor: Tarrant County Housing Finance Corporation, TX
- » Issuer: Tarrant County Housing Finance Corporation
- » Defaulted Bonds: Home Mortgage Revenue Bonds, Series 1983A
- » Cause of Default: Asset deterioration, mortgage insurer cancelled all policies
- » Recovery: Not Available.

Tarrant County Housing Finance Corporation defaulted on its Home Mortgage Revenue Bonds, 1983 Series A on November 15, 1999 when it failed to make a required redemption payment to bondholders. The bonds were issued to finance a pool of single family mortgage loans. Many of the mortgage loans were originally covered by Primary Mortgage Insurance policies issued by Tigor Mortgage Insurance Company. A mortgage pool policy was also issued by Tigor. Tigor began experiencing financial difficulties in early 1986 and in 1988 all mortgage guarantee policies issued by Tigor were cancelled. The pool suffered significant asset deterioration as a result of defaulted loans that were not covered by insurance.

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### 19) Marine Military Academy, TX

- » CUSIP: 413007AA3
- » Default Date: May 2000
- » Obligor: Marine Military Academy
- » Issuer: Harlingen Higher Education Facilities Corporation, TX
- » Defaulted Bonds: Revenue bonds Series 1995 and 1997; \$10.4 million of debt affected
- » Cause of Default: Civil lawsuits against the Academy
- » Recovery: Full principal recovery; partial payment of interest accrued during bankruptcy (Source: Moody's reports)

In May 2000, Marine Military Academy declared bankruptcy and suspended payments on its \$10.4 million of Series 1995 and 1997 debt issued through the Harlingen Higher Education Facilities Corporation, TX. The Academy is the defendant in several civil lawsuits in which claimants have accused the Academy of not adequately supervising cadets in connection with hazing incidents that occurred between 1993 and 1997. The potential liabilities of the Academy due to the litigation exceeded the Academy's insurance coverage. As a protective measure, the Academy filed for bankruptcy and suspended payments on its debt. In 2004, the Academy emerged from bankruptcy and resumed making debt service payments on outstanding bonds. The Academy separately negotiated with bondholders for the 1995 and 1997 bonds for settlement of obligations. While all principal payments will be made for both series of bonds, bondholders did not receive the full value of interest accrued during bankruptcy.

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### 20) Citizens' General Hospital, PA

- » CUSIP: 961008GD5
- » Default Date: First Quarter, 2001
- » Obligor: Citizens' General Hospital (CGH)

- » Issuer: Westmoreland County Industrial Development Authority, PA
- » Defaulted Bonds: Series 1998; \$30 million of debt affected
- » Cause of Default: Operating losses
- » Recovery: Full repayment of principal and accrued interest (Source: Bloomberg)

In the first quarter of 2001, Citizens' General Hospital (CGH) defaulted on approximately \$30 million Series 1998 bonds issued through the Westmoreland County Industrial Development Authority. CGH was a small primary and secondary care facility located in New Kensington, Pennsylvania. Due to its small size and pressures stemming from the highly competitive Pittsburgh healthcare market, the hospital incurred several years of sizable operating losses. As a result of the hospital's poor performance, CGH shut down operations on November 4, 2001. In the beginning of 2001, a forbearance agreement was signed by CGH, requiring the hospital to transfer all available and future funds directly to the bond trustee for the benefit of bondholders. Consequently, by August 2003, CGH bondholders were fully repaid all owed principal and accrued interest.

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## 21) Genesee Hospital, NY

- » CUSIP: 610755PP9
- » Default Date: May 2001
- » Obligor: Genesee Hospital
- » Issuer: Monroe County Industrial Development Agency, NY
- » Defaulted Bonds: Series 1991A tax-exempt and Series 1991B taxable; \$32.5 million of debt affected
- » Cause of Default: Operating losses and overspending on capital
- » Recovery: Final resolution expected by April 2007 (tender offer extended for most of the bonds from the two large institutional holders)

In May 2001, Genesee Hospital defaulted on approximately \$32.5 million of its Series 1991A tax-exempt and Series 1991B taxable bonds issued through the Monroe County Industrial Development Agency (NY). Starting in 1998, Genesee Hospital recorded operating losses of \$15 million in 1998, \$6 million in 1999 and \$18.5 million in 2000. Due to large operating losses, ViaHealth, Genesee's parent company, announced that it would be shutting down the hospital in the second quarter of 2001. Although certain bank loans were guaranteed by ViaHealth, neither series of the 1991 bonds were guaranteed, and while ViaHealth is also the parent of Rochester General Hospital, neither entity is legally obligated on Genesee's debt. The company was legally dissolved and certain unsecured creditors were paid in January 2007. All of Genesee's outstanding collateral is expected to be liquidated and bondholders are expected to receive final payouts by April 2007.

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## 22) Metro Health Center, PA

- » CUSIP: 295200ND7
- » Default Date: July 01, 2002
- » Obligor: Metro Health Center
- » Issuer: Erie County Hospital Authority, PA

- » Defaulted Bonds: Series 1992; \$9 million of debt affected
- » Cause of Default: Low liquidity levels and unprofitable operations
- » Recovery: Approximately 21% recovery (Source: Trustee notice to bondholders)

On July 1, 2002 Metro Health Center, PA declared bankruptcy and defaulted on its \$9.9 million Series 1992 Hospital Revenue Bonds issued through Erie County Hospital Authority. The trustee allowed Metro Health to attempt to reorganize and operate as a debtor in possession in bankruptcy, rather than immediately seeking its liquidation.

Metro Health Center was the smallest hospital in a highly competitive market, surrounded by two large tertiary hospitals and a similarly sized osteopathic hospital. With two large viable hospitals in the vicinity, there was little need in the community for the services provided by Metro Health. Due to a 17% decline in inpatient admissions and a 19% decline in revenues between 1998 and 2001, Metro Health had to tap into its cash reserves to fund continuing operations. As a result of the hospital's low liquidity levels and unprofitable operations, Metro Health Center closed its doors effective July 1, 2003.

On June 6, 2005, the bondholders of the defaulted Series 1992 bonds received approximately \$910 of principal and interest for every \$5,000 bond (representing about 18% recovery.) On September 15, 2005, after liquidation of the hospital's collateral, the bond Trustee declared a final payment to bondholders of \$110.67 for each \$5000 bond.

Interest payments of \$17.67 and \$17.98 were made for each \$5000 bond with maturities of 2012 and 2022, respectively. As the result of that liquidation payment, bondholder's total principal and accrued interest recovery rate was approximately 21%.

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### 23) Yorkshire Development Project, NE

- » CUSIP: 639673HU
- » Default Date: October 1, 2002
- » Obligor: Yorkshire Development LTD
- » Issuer: Nebraska Investment Finance Authority
- » Defaulted Bonds: Multi-Family Housing Revenue Bonds, Series 1993; \$1,500,000 of debt affected
- » Cause of Default: Loss of Section 8 subsidy for many units as a result of poor property condition
- » Recovery: Bondholders recovered 100% of principal

(Source: Bloomberg)

On October 1, 2002, bonds issued through the Nebraska Investment Finance Authority defaulted due to a failure to make a debt service payment. The bonds were issued to finance the acquisition and rehabilitation of 63 housing units which were subsidized by

Section 8 Housing Assistance Payments from HUD in Omaha, Nebraska in June 1993. By 1998, many units in the project had fallen into disrepair and 20 of the units failed to meet the local housing authority's physical inspection standards, rendering them ineligible to receive the Section 8 subsidy. The unwillingness and inability of the property owners to repair the debilitated housing units led to

the project's further financial deterioration and payment default on \$140,000 of principal and \$15,618.75 of interest due October 1, 2002. The final distribution occurred after the project was sold on May 2, 2003. Bondholders recovered 100% of principal.

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#### 24) St. Francis Medical Center, PA

- » CUSIP: 04232LAN5
- » Default Date: November 2002
- » Obligor: St. Francis Medical Center
- » Issuer: Allegheny County Hospital Development Authority, PA
- » Defaulted Bonds: \$50 million of AMBAC-insured Series 1992 bonds; \$29 million of uninsured Series 1997 bonds. St. Francis Medical Center also acted as a guarantor to St. Francis Hospital of New Castle (which defaulted on \$15 million of its Series 1992 bonds) and St. Francis Health Care Services (defaulted on approximately \$3 million of its Series 1993 bonds)
- » Cause of Default: Operating losses
- » Recovery: With the exception of the Series 1992 St. Francis Medical Center bonds, which were insured by Ambac and paid in full, the final recovery for the bondholders was less than 100%. (Source: Moody's reports)

In November 2002, St. Francis Medical Center defaulted on debt service payment on its insured Series 1992 bonds (approximately \$50 million) and its uninsured Series 1997 bonds (approximately \$29 million) issued through Allegheny County Hospital Development Authority. St. Francis Medical Center also acted as a guarantor to St. Francis Hospital of New Castle (which defaulted on \$15 million of its Series 1992 bonds) and St. Francis Health Care Services (defaulted on approximately \$3 million of its Series 1993 bonds.) Partially due to challenges associated with operating in a very competitive Pittsburgh market, St. Francis Medical Center experienced increasing operating losses, and growing dependence on investment income to offset operating deficits. Prompted by a steady decline in the system's cash position, in August 2002, St. Francis Medical Center entered into an asset purchase agreement with regional organizations to purchase certain fixed assets of the system. A partial distribution of principal and accrued interest of approximately \$2,447.03 per \$5000 bond was paid to bondholders on November 17, 2003. A settlement with creditors was reached in December 2003 and a final distribution of settlement proceeds was made in January of 2004. With the exception of the Series 1992 St. Francis Medical Center bonds, which were insured by Ambac and paid in full, the final recovery for the bondholders was less than 100%.

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#### 25) Meadows/ Phoenix Project, IN

- » CUSIP: 455261QE
- » Default Date: July 1, 2003
- » Obligor: Quinn I Limited Partnership
- » Issuer: Indianapolis Economic Development Authority
- » Defaulted Bonds: City of Indianapolis Economic Development Revenue, Series 1993A; \$3,600,000 of debt affected
- » Cause of Default: Low occupancy due to location and crime-related history

- » Recovery: 4% for Series 1993A, maturing 7/1/2004, 4% for Series 1993A, maturing 7/1/2009, 4% for Series 1993A, maturing 7/1/2014, and 5% for Series 1993A, maturing 7/1/2023 (Source: Bloomberg)

On July 1, 2003, bonds issued through the Indianapolis Economic Development Authority defaulted when debt service payments were missed. The bonds were issued to fund The Meadows Section 8 Assisted Project (later renamed the Phoenix Project), a 330 – unit apartment project in urban Indianapolis. Several factors contributed to the financial difficulties that ultimately led to default on debt service payment. The project is located in an economically depressed, high-crime region. The occupancy rate was impacted by the location of the project, as the occupancy rate fell to 75% after several murders occurred on the property in 1997 and occupancy fluctuated between 70% and 85% in subsequent years. Significant capital improvement expenses and high turnover costs added to financial difficulties. The Debt Service Reserve Fund was depleted by July 2003, and the property entered into monetary default under the mortgage documents. Without sufficient funds to cover debt expenses, the bonds defaulted. On November 30, 2005, distributions were made on Series 1993A bonds of varying dates of maturity. The average rate of recovery on the bonds was 4.37%.

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## 26) Lakeview Apartments, TX

- » CUSIP: 89438NAA
- » Default Date: July 1, 2003 (Series 2001C and Series 2001D); July 1, 2005 (Series 2001A)
- » Obligor: Agape Austin Area Housing, Inc.
- » Issuer: Travis County Housing Finance Corporation
- » Defaulted Bonds: Travis County Housing Finance Corporation Multifamily Housing Revenue Bonds,
- » Senior Series 2001A, Junior Series 2001C and Subordinate Series 2001D; \$27,690,000 of debt affected
- » Cause of Default: Adverse rental market conditions
- » Recovery: Senior bondholders recovered 8%; Junior bondholders recovered 3%; Subordinate bondholders recovered less than 1%. (Source: Trustee notice to bondholders)

On July 1, 2003, Series 2001C and 2001D issued by the Travis County Housing Finance Corporation defaulted due to lack of debt service payment. On July 1, 2005, Series 2001A defaulted due to missed payments as well. In December 2001, the bonds were sold to finance the acquisition and rehabilitation of the Lakeview Apartments Project, a 504-unit project in Austin, Texas. Initially, revenues were strong, due to sufficient market demand, the presence of an experienced management team, and the property's good physical condition. However, by July 2002, revenues had fallen after a significant decrease in occupancy caused by a downturn in the Austin economy and a softening in demand for multifamily affordable housing. Revenues became insufficient to cover the full debt service payments and each Debt Service Reserve Fund was tapped. By July 2003, the Debt Service Reserve Funds for Series 2001C and Series 2001D were insufficient to cover the full payment due to bondholders. Persistent financial deterioration led to a Series 2001A default on January 1, 2005. On June 7, 2005, the final distribution to bondholders provided a recovery of 8% for Senior Series 2001A, 3% for Junior Series 2001C, and less than 1% for Subordinate Series 2001D.

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## 27) Cicero Local Development Corporation, NY

- » CUSIP: 171731AD4
- » Default Date: November, 2003
- » Obligor: CLDC
- » Issuer: CLDC (pledged by the Town of Cicero)
- » Defaulted Bonds: Revenue Annual Lease Appropriation bonds, Series 2001A; \$15.3 million of debt affected
- » Cause of Default: Operating losses; The Town of Cicero failed to honor its lease obligation to cure a \$244,000 deficiency in the bond fund. Subsequently the Town of Cicero failed to include appropriation for the lease in its 2004 budget, leading to a second default
- » Recovery: Approximately 10.3% (Source: Bloomberg)

Cicero Local Development Corporation (CLDC) defaulted on its Revenue Annual Lease Appropriation bonds, Series 2001A in November 2003 when it failed to make a required payment to bondholders. Cicero Local Development Corporation signed an agreement for construction of two ice rinks, a recreational center, as well as residential and commercial developments. Although the construction was completed in 2002, CLDC did not realize any revenues from the project due to overestimated utilization projections. As the result of its poor operating performance, CLDC's reserve fund was depleted following the November 2002 and May 2003 debt service payments. CLDC was in discussions with a developer for a land sale expected to close prior to November 1, which the issuer's counsel reported fell through on October 27 with no additional source of revenue anticipated prior to November 1. The Town of Cicero, although legally required, failed to honor its lease obligation to cure a \$244,000 deficiency in the bond fund, causing a missed payment to bondholders on November 1, 2003. The Town of Cicero subsequently fulfilled its obligation under the lease and cured the November 1 debt service deficiency, but failed to include the appropriation for the lease in its 2004 budget. Consequently, funds were not available to meet the debt service payment due in May 2004, inducing CLDC's second default. On October 28, 2005 the Trustee commence a foreclosure sale on the mortgages securing the obligations, generating approximately \$2,000,000. Ultimately, the bondholders recovered approximately 10.3% or \$1.57 million of the \$15.3 million of debt outstanding.

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## 28) Fair Oaks Apartments, TX

- » CUSIP: 876394NJ
- » Default Date: January 1, 2004
- » Obligor: Maple Avenue Economic Development Corporation (MAEDC)
- » Issuer: Tarrant County Housing Finance Corporation
- » Defaulted Bonds: Tarrant County Housing Finance Corporation Multifamily Housing Revenue Bonds (Fair Oaks Apartment Project) Senior Series 2000A and 2000B, Junior Series 2000C and Junior Subordinate Series 2000D; \$8,785,000 of debt affected
- » Cause of Default: Adverse rental market conditions

- » Recovery: Senior Series bondholders recovered 70.32%; Junior Series bondholders recovered 1.69%; Junior Subordinate Series bondholders recovered 1.31%. (Source: Bloomberg)

On January 1, 2004, the bonds issued through the Tarrant County Housing Finance Corporation defaulted due to failure to make debt service payment.

The Maple Avenue Economic Development Corporation (MAEDC) issued bonds through the Tarrant County Housing Finance Corporation to finance the Fair Oaks Apartment Project. Fair Oaks was an affordable housing project located in Euless, Texas. By December 2002, the financial health of Fair Oaks had deteriorated primarily due to adverse rental market pressures and low rental revenue. New luxury apartment units became available in the Tarrant County submarket, and offered amenity packages and move-in specials that forced Fair Oaks to make deep pricing concessions in attempt to maintain occupancy. Although the occupancy rate stabilized at approximately 90%, the project's rental revenue was insufficient to cover both the maintenance and debt service expenses of the property. By January 2004 and after multiple taps on Debt Service Reserve Funds, available funds were insufficient to pay the full interest due to bondholders. On December 19, 2005, the final distribution was made by the Tarrant County Housing Finance Corporation using proceeds from the foreclosure sale. Bondholders of Senior Series 2000A and 2000B recovered 70% on principal, Series 2000C recovered 2% and Series 2000D recovered 1%.

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## 29) Mercy Hospital and Medical Center, IL

- » CUSIP: 45200KNC8 and 45200LEL6
- » Default Date: January 2, 2004
- » Obligor: Mercy Hospital and Medical Center
- » Issuer: Illinois Health Facilities Authority
- » Defaulted Bonds: Series 1992 and 1996; \$63 million of debt affected
- » Cause of Default: Weak cash management
- » Recovery: Default cured in full on Feb 17, 2004 (Source: Trustee notices to bondholders)

On January 2, 2004, Mercy Hospital and Medical Center defaulted on principal payments due on its Series 1992 and Series 1996 bonds issued by the Illinois Health Facilities Authority. In the beginning of 2000, Mercy Hospital experienced a decline in both liquidity and operating performance. In addition, management turnover was high, leading to lack of focus and consistency which may have contributed to the default. At year-end of 2003, the Mercy Hospital maintained approximately \$6 million in its Debt Service Reserve Fund (DSRF), and had transferred \$2.1 million into the Bond Fund to pay for the upcoming interest due on January 2, 2004. While Mercy had hoped for the bond trustee to tap the DSRF to disburse the \$3,505,000 principal payment to bondholders, the trustee had the option not to do so, and in fact, did not tap the DSRF, resulting in a payment default. Moody's estimates that Mercy had approximately \$15 million of unrestricted cash on hand as of January 2, 2004, sufficient to have transferred the principal amount due to the trustee, thereby avoiding default. Following the January 2, 2004 default, Mercy transferred \$5,303,005.41 to the trustee derived from the sale of its two building properties. On February 17, 2004, the trustee made the full repayment of principal (\$3,505,000) and accrued interest (in the amount of \$29,989.44) owed to bondholders, curing the January 2, 2004 default. In April 2005, Mercy retired all of its outstanding rated debt with proceeds derived from bank loans and asset sales.

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### 30) National Benevolent Association (NBA), MO

- » CUSIP: Multiple
- » Default Date: February 16, 2004
- » Obligor: National Benevolent Association
- » Issuer: Multiple
- » Defaulted Bonds: Debt of National Benevolent Association and 25 affiliates; approximately \$153 million of debt affected
- » Cause of Default: Unsuccessful operations and losses in aggressive investment portfolio
- » Recovery: 100% recovery of interest and principal paid in April 2005 (Source: Trustee notice to bondholders)

On February 16, 2004, National Benevolent Association (NBA), and 25 of its affiliates voluntarily filed to seek bankruptcy protection under Chapter 11 of the Bankruptcy Code. The bankruptcy filing marked one of the largest non-for-profit enterprises to file for Chapter 11. At the time of bankruptcy filing, NBA had approximately \$153 million of Moody's rated debt outstanding issued primarily to finance NBA's expansion of its senior care facilities. Unprofitable operations of its senior living facilities coupled with losses incurred due to a stock market decline, forced NBA to file for bankruptcy protection.

Pursuant to the Chapter 11 re-organization plans, NBA sold some of its senior living facilities and other assets to pay off its creditors. Payment from the sale proceeds covered 100% of outstanding principal, 100% of accrued interest through the February 16, 2004 bankruptcy filing, and interest payments at rates ranging from 2.17% to 2.4% for the period from February 16, 2004 to April 18, 2005.

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### 31) Magnolia Park Apartments, GA

- » CUSIP: 184160HV4
- » Default Date: May 2004
- » Obligor: Magnolia Park Housing Foundation, LLC
- » Issuer: Clayton County Housing Authority
- » Defaulted Bonds: Multifamily Housing Revenue Bonds, Series 1999A; \$10,100,000 of debt affected
- » Cause of Default: Adverse rental market conditions, insufficient proceeds from foreclosure sale to cover outstanding principal and interest
- » Recovery: Approximately 67% of principal and interest. (Source: Moody's issuer report dated May 19, 2004)

In May 2004, Clayton County Housing Authority's Series 1999A bonds defaulted when bondholders recovered less than the full principal amount outstanding after the foreclosure of the property. The bonds were secured by the revenue from the Magnolia Park Apartments project, a 328-unit project located 12 miles south of Atlanta. The project was built in 1972 and housed low to moderate income tenants. The stable Atlanta rental market, healthy local economy and high occupancy rate contributed

to the initial strength of the project. However, after a downturn in the local economy, the occupancy rate of the project fell to 73% by December 2002. Rent concessions, bad debt expenses and unbudgeted legal fees further reduced the project's revenue. The trustee tapped the Debt Service Reserve Fund in July 2003 and December 2003 to make the required debt service payments. The bonds defaulted in May 2004, before the scheduled July 2004 debt service payment, because the project was foreclosed upon and sold for less than the outstanding principal and interest due to bondholders. After the sale of the project in May 2004, bondholders recovered approximately 67% of outstanding principal and interest from the proceeds of the project's sale.

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### 32) Westridge Apartments, TX

- » CUSIP: 876394PV
- » Default Date: June 1, 2004 (Subordinate Series 2001C); June 1, 2005 (Series 2001A, 2001B)
- » Obligor: PWA Coalition of Dallas, Inc.
- » Issuer: Tarrant County Housing Finance Corporation
- » Defaulted Bonds: Tarrant County Housing Finance Corporation, Texas, Housing Revenue Bonds (Westridge Apartments Project) Senior Series 2001A and 2001B, Subordinate Series 2001C; \$5,600,000 of debt affected
- » Cause of Default: Adverse rental market conditions
- » Recovery: Pending

On June 1, 2004, Series 2001C issued by the Tarrant County Housing Finance Corporation defaulted due to lack of interest payment. On June 1, 2005, Series 2001A and 2001B defaulted due to missed payment as well. The default on bonds secured by the Westridge Apartments Project, located in Fort Worth, Texas, was primarily due to adverse rental market pressures and low rental revenue. Although Westridge had maintained an occupancy rate near 90%, this was accomplished by making deep concessions, offering move-in specials and other incentives that decreased rental revenue. Concurrently, the project's utility expenses increased dramatically and reduced operating income to levels insufficient to afford the capital repairs needed by many apartment units. The Series 2001C Debt Service Reserve Fund was tapped to make interest payments on December 1, 2003. Monetary default occurred when Series 2001C interest payments were not made on June 1, 2004. Series 2001A and 2001B defaulted one year later after continued financial difficulties. To date, PWA Coalition of Dallas, Inc. has entered into a "Renovation Plan" in attempt to revive the financial health of Westridge Apartments. There has been no indication of the final distribution to bondholders.

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### 33) Fort Worth Osteopathic Hospital, TX

- » CUSIP: 875906HP7
- » Default Date: August, 2004
- » Obligor: Fort Worth Osteopathic Hospital
- » Issuer: Tarrant County Health Facilities Development Corporation TX
- » Defaulted Bonds: MBIA insured Series 1993, Series 1996 and Series 1997 bonds totaling \$79.7 million; \$7.1 million of Series 1993 bonds were uninsured

- » Cause of Default: Operating losses
- » Recovery: Uninsured bondholders recovered 21% of principal and interest (Source: Moody's files)

In August of 2004, Fort Worth Osteopathic Hospital defaulted on its outstanding debt, including Series 1997, Series 1996 and 1993 bonds issued through the Tarrant County Health Facilities Development Corporation. The default affected \$79.7 million of debt, of which \$7.1 million was uninsured. Primarily due to low healthcare reimbursement rates and its small size, compared to nearby hospital systems, Fort Worth Osteopathic Hospital experienced severe financial difficulties since the late 1990's. Facing insufficient operating funds, the hospital sought partnerships with other established hospital systems. However, when negotiations concerning a potential merger failed, the hospital closed its doors on October 10, 2004. As the result of the proceeds collected from post-default liquidation, the recovery rate for bondholders holding the uninsured Series 1993 bonds was approximately 21% of the principal and interest due.

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### 34) Bay Club at Mesa Cove Project, AZ

- » CUSIP: 566823QA
- » Default Date: September 1, 2004
- » Obligor: Bay Club Housing Corporation
- » Issuer: Industrial Development Authority of the County of Maricopa
- » Defaulted Bonds: Maricopa County Industrial Development Authority Multifamily Housing Revenue Bonds (Bay Club at Mesa Project) Subordinate Series 2000B; \$2,200,000 of debt affected
- » Cause of Default: Adverse rental market conditions, maintenance problems
- » Recovery: 35% for Series 2000B (Source: Bloomberg)

On September 1, 2004, Maricopa County Industrial Development Bond Series 2000B defaulted when the issuer failed to make the debt service payment. Series 2000A was insured by MBIA and Series 2000C was unrated by Moody's. The 472 – unit Bay Club affordable housing property was located in the Maricopa County rental market, which was a competitive market for affordable housing. High occupancy rates at Bay Club were achieved through rental discounts and other concessions. As a result, rental revenue was insufficient to cover the capital expenditures needed to repair mold, piping leaks and other maintenance problems, and many apartments were taken off the rental market because of such difficulties. Lack of income led the trustee to make debt service payments from the Series 2000B Debt Service Reserve Fund, and ultimately led to default on the Series 2000B bonds. On November 25, 2005, the trustee made final distributions to bondholders following the sale of the property. Series 2000B bondholders recovered 35.47% of principal.

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### 35) River Bend Apartments, FL

- » CUSIP: 14052TAW
- » Default Date: September 15, 2004
- » Obligor: Wellington – Tampa LLC
- » Issuer: Capital Trust Agency

- » Defaulted Bonds: Multifamily Housing Revenue Bonds Senior Series 2002A, Taxable Series 2002B, Junior Series 2002C and Junior Subordinate Series 2002D; \$14,600,000 of debt affected
- » Cause of Default: Adverse rental market conditions
- » Recovery: 99.7%. The Majority Senior Bondholder purchased nearly all of the senior bonds as well as all of the junior bonds and subordinate junior bonds. The Majority Senior bondholder took possession of the project in lieu of payment. The remaining Senior bondholders (approximately 5% of total bondholders) who did not sell their loans to the Majority Senior Bondholder received 94% recovery. (Source: Trustee notice to bondholders)

On September 15, 2004, Wellington – Tampa, LLC declared bankruptcy, affecting \$14.6 million Multifamily Housing Revenue Bonds Series 2002 A-D issued through Capital Trust Agency, Florida. The bonds were issued in September 2002 to finance the acquisition and rehabilitation of River Bend Apartments affordable housing complex. The 296 – unit project was located in Tampa, and all of the units were required to be rented to low income tenants. Between March and May 2004, the occupancy rate declined from 88% to 81%, primarily due to poor rental market conditions and poor management of the project. The project did not generate sufficient revenues to pay for routine maintenance expenses, and many apartments were taken offline due to the need for substantial structural repairs. An increasing level of deferred maintenance expenses amplified the financial difficulties caused by the decline in the occupancy rate. By August 2004, Wellington – Tampa had stopped forwarding project revenues to service its debt, and on September 15 filed for Chapter 11 bankruptcy protection.

After the default on the bonds, the majority senior bondholder purchased nearly all of the senior bonds as well as all of the junior bonds and subordinate junior bonds. The majority senior bondholder took possession of the project in lieu of payment. We classify this purchase as a 100% recovery. The remaining senior bondholders (approximately 5% of total bondholders) who did not sell their loans to the majority senior bondholder received 94% recovery. The combined recovery is 99.7%.

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### 36) Crossroads Apartments, TX

- » CUSIP: 876394QE0
- » Default Date: December 31, 2004
- » Obligor: PWA Coalition of Dallas, Inc.
- » Issuer: Tarrant County Housing Finance Corporation
- » Defaulted Bonds: Multifamily Housing Revenue Bonds, Subordinate Series 2001C; \$1,500,000 of debt affected
- » Cause of Default: Adverse rental market conditions, unexpected rise in costs
- » Recovery: Pending

On December 31, 2004, Tarrant County Housing Finance Corporation's Series 2001C bonds defaulted when bondholders did not receive principal and interest payments. Senior Series 2001A is insured by MBIA. The bonds were issued to finance the acquisition and improvement of Crossroads Apartments, a 292-unit multifamily rental property located in Fort Worth, Texas. By July 2003, the project had begun to experience financial difficulties. The local affordable housing market had weakened, primarily due to competition from luxury housing complexes and low interest rates that encouraged prospective tenants to buy instead of rent housing. The cost of utilities rose unexpectedly.

By June 2004, the project's revenues were insufficient to meet debt service requirements, and the trustee tapped and nearly depleted the subordinate Debt Service Reserve Fund to make the necessary debt service payments. The reserve fund was insufficient to make the full principal and interest payments due to subordinate bondholders on December 31, 2004. To date, the Subordinate Series 2001C bonds remain in default. There has been no indication of a distribution to subordinate bondholders.

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### 37) Legacy at Anderson Project, SC

- » CUSIP: 837036CA
- » Default Date: February 1, 2005
- » Obligor: GF/Legacy Anderson, Inc.
- » Issuer: South Carolina Jobs-Economic Development Authority
- » Defaulted Bonds: South Carolina Jobs Economic Development Authority Multifamily Housing Revenue
- » Bonds, Series 2002A and Series 2002B; \$8,950,000 of debt affected
- » Cause of Default: Unanticipated withdrawal of USDA Section 538 loan guaranty and decision by bond trustee not to use the Debt Service Reserve Fund to cover shortfalls
- » Recovery: Initial Distribution on October 6, 2006: Series 2002A 86% – 89%; Series 2002B: 89% (Source: Trustee notice to bondholders)

On February 1, 2005, bond issued by the South Carolina Jobs-Economic Development Authority defaulted when bondholders did not receive debt service payments.

The bonds were issued to finance the acquisition and construction of a 102-unit senior housing facility in Anderson County, South Carolina. The security for the bonds was primarily provided by a mortgage loan guaranty from the United States Department of Agriculture Rural Development under its Section 538 Program. Although this guaranty provided the construction loan and the permanent loan for the project, the project did not meet the necessary conditions to secure the permanent loan according to the USDA. The USDA's interpretation of the regulations found that the permanent loan was not in force and could not be drawn upon to cover shortfalls in the project's mortgage. The lender challenged the USDA's interpretation of Section 538. In addition, the trustee decided that all monies – including those in the Debt Service Reserve Funds – would be retained to serve the trustee's perception of the best long-term interest of the bondholders, and as a result the February 1, 2005 debt service was not made. On October 6, 2006, the trustee made an initial distribution of \$8,000,000 to bondholders using proceeds from the sale of the property. The distribution provided Series 2002A bondholders with recovery rates ranging from 85.8% to 89.3% of principal and interest outstanding. Series 2002B bondholders recovered 88.8% of principal and interest outstanding. A final distribution will be made when the project manager completes the final accounting.

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### 38) Park at Wells Branch Apartments, TX

- » CUSIP: 894386
- » Default Date: June 1, 2005
- » Obligor: Park at Wells Branch Apartments, TX

- » Issuer: Travis County Housing Finance Corporation, TX
- » Defaulted Bonds: Multifamily Housing Revenue Bonds Junior Series 2002C, \$1.33 million of debt affected
- » Cause of Default: Weakening of rental market
- » Recovery: pending

On June 1, 2005, the Park at Wells Branch Apartments defaulted on their Junior Series 2002 revenue bonds when they failed to make scheduled interest payments in a timely manner.

Park at Wells Branch is a 304 unit apartment complex consisting of 18 apartment buildings and is located in the northern section of the Austin metropolitan area in Travis County, Texas. The property had been experiencing financial difficulties since 2003 largely due to the weakness in the Austin multifamily rental market. The local rental market experienced an oversupply of new developments with completions outpacing net absorption from 2000-2003. Occupancy rates fell during that time to a minimum of 80% at which point the property offered substantial concessions to tenants. By the end of 2007 the occupancy levels returned to 97% but the reduction in rental revenues caused the property's financial performance to deteriorate. Insufficient revenues forced the project to tap the debt reserve fund to service the Series 2002C subordinate debt in 2004 and defaulted on June 1, 2005.

After the event of default, bondholders were paid in August. A subsequent interest payment due in December 2005 was made in June of 2007 but payments continue to be late or missed entirely. Senior debt continues to be paid with a fully funded debt reserve fund.

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### 39) Ashton Place and Woodstock Apartments Project, TX

- » CUSIP: 88271FAE
- » Default Date: August 1, 2005
- » Obligor: Agape Ashton/ Woodstock, Inc.
- » Issuer: Texas State Affordable Housing Corporation
- » Defaulted Bonds: Texas State Affordable Housing Corporation Multifamily Housing Revenue Bonds, Junior Series 2001C and Subordinate Series 2001D; \$11,405,000 of debt affected
- » Cause of Default: Adverse rental market conditions
- » Recovery: Pending

On August 1, 2005, Series 2001C and Series 2001D issued by the Texas State Affordable Housing Corporation defaulted due to lack of debt service payment. In July 2001, bonds were issued to acquire two apartment properties: Ashton Place in Galveston, Texas, and Woodstock in Arlington, Texas. Both properties were located in desirable neighborhoods and had records of consistent operating expenses and high occupancy rates. However, by July 2002, changes in the rental market had impaired the financial performance of the properties. Low interest rates encouraged homeownership and dampened affordable housing demand. Luxury housing complexes in the vicinity reduced their rental rates and attracted tenants away from Ashton Place and Woodstock. In response, both properties made large market concessions to attract and maintain tenants. Vacancies and concessions drained the financial performance of the properties to the point where full debt service on the Junior and Subordinate bonds went unpaid on August 1, 2005.

To date, the Series 2001C and Series 2001D remain in default. There has been no indication of the final distribution on the bonds.

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#### 40) River Falls Project, CO

- » CUSIP: 051558
- » Default Date: January 1, 2006
- » Obligor: River Falls Project (Subordinate), CO
- » Issuer: Aurora Housing Authority, Co
- » Defaulted Bonds: Subordinate Series 1999C, \$2.1 million of debt affected
- » Cause of Default: Slowdown in market for rental properties
- » Recovery: Project sold, bonds redeemed at 100% plus interest

On January 1, 2006, the River Falls Project went into default when it failed to make principal payments on the Series 1999C bonds.

The River Falls Project is a 511 unit apartment complex east of downtown Denver which houses low income and market rate tenants. The project showed a decline in debt service coverage due to a decline in total revenue and an increase in operating expenses between 2005 and 2006. Despite having sufficient coverage in the debt reserve fund to make the January 1 payment, the trustee elected not to tap the reserve fund for payment to bondholders. Instead, the trustee chose to reserve the funds to cover costs and expenses associated with an inevitable default. On April 17, 2006 the trustee made a partial payment to bondholders, utilizing the revenues received from the borrower and investment income received after the January 1 payment was due.

Following the sale of the project, all outstanding bonds were redeemed in May 2007 at 100% plus accrued interest.

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#### 41) Legacy at Lehigh Project, FL

- » CUSIP: 52349K
- » Default Date: June 1, 2006
- » Obligor: Lee County Industrial Development Auth., FL
- » Issuer: Lee County Industrial Development Auth., FL
- » Defaulted Bonds: Mortgage Revenue Bonds, Senior Series 2003A and Taxable Senior Bonds Series 2003B, \$8.12 million of debt affected
- » Cause of Default: Higher than expected operating costs, unable to meet occupancy requirements
- » Recovery: 100% recovery of principal and accrued interest

On June 1, 2006, the Legacy at Lehigh project went into default when it failed to make a full interest payment to bondholders.

The multifamily housing project was financed with a loan which was guaranteed by United States Department of Agriculture with a combination construction/permanent guarantee. The USDA took

the position that once the 24 month construction period ended the permanent guarantee would not take effect until the project achieved 90% occupancy for 90 days. After successful completion of the construction phase, the housing project was unable to meet the minimum occupancy rate with a maximum of 88% capacity. The project operated at a loss and tapped the debt reserve fund to make June 1, 2005 debt service, drawing it down to 28% of the required reserve amount. After continuing to operate at a loss and almost depleted debt reserve funds, the project made only a partial interest payment on June 1, 2006.

The project was sold through foreclosure in Lee County Florida to Canyon Creek. The trustee distributed the proceeds to all of the Senior Bondholders and Series 2003A and 2003B bondholders received 100% of their principal as well as accrued interest.

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#### 42) Cameron Crossing Project I and II, SC

- » CUSIP: 396081
- » Default Date: June 1, 2006
- » Obligor: Greenville Housing Finance LLC
- » Issuer: Greenville Housing Finance LLC
- » Defaulted Bonds: Taxable Mortgage Backed Revenue Bonds, Series 2003A, \$14.36 million of debt affected
- » Cause of Default: Inability to meet occupancy goals
- » Recovery: 85% of principal for senior bondholders, 0% recovery for subordinate bondholders

On June 1, 2006, the Cameron Crossing Project went into default when it failed to make interest payments on its revenue bonds.

The bonds were issued to finance the acquisition and construction of Cameron Crossing I and II, a 134-unit and a 64-unit multifamily rental housing community located in Greenville County, South Carolina. The bonds were issued with a Section 538 guarantee by the United States Department of Agriculture in the form of a construction loan guarantee. On successful construction completion this would convert to a permanent guarantee if and when the projects achieved 90% occupancy for at least 90 consecutive days or if an escrow had been established in the amount and within the time limits previously specified. The project construction phase was completed successfully but was not able to reach the 90% occupancy level (24% as of June 2005, 75% as of June 2006) required to be guaranteed by the USDA. The project operated at a loss, drawing down on the debt reserve fund to pay interest and principal payments through 2005 and by 2006 there was only 10% of the required reserve amount remaining. No payment was made on June 1, 2006 signaling a default.

The project was sold through foreclosure on November 6, 2006 to the lender, Allied Mortgage Capital Corporation. The lender transferred the title and the trustee transferred the remaining trust funds to the Senior Bondholders who, in exchange for the title and remaining trust funds, tendered \$12m in Series 2003A bonds to the trustee for cancellation. This amount represents 85% of outstanding principal on the Senior Bonds. The trustee does not anticipate any funds being available to pay the Subordinate Bondholders of the Series 2003B and Series 2003C.

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#### 43) Canterbury/3 Fountains/River Falls/Puckett, TX

- » CUSIP: 698487
- » Default Date: September 1, 2006
- » Obligor: Canterbury/3Fountains/RiverFalls/PuckettI
- » Issuer: Panhandle Regional Housing Finance Corp., TX
- » Defaulted Bonds: Multi-Family Housing Revenue Bonds, \$24.16 million of debt affected
- » Cause of Default: Softening rental market and increased competition resulting in a decline in occupancy and net income
- » Recovery: Still in default

Amarillo Affordable Housing went into default on its Series C and D bonds when it failed to make its September 1, 2006 interest payments.

The bonds are largely secured by revenue from four multi-family rental properties located in Amarillo, Texas (Canterbury, Three Fountains, River Falls, and Puckett Place Apartments). A softening in the rental market combined with increased competition from neighboring developments offering superior amenities caused a decline in occupancy at all apartment complexes. In order to remain competitive, the project reduced rents and increased concessions resulting in substantially lower than forecasted net income. The March 1, 2006 debt payment was made with the help of the debt service reserve fund resulting in a 2006 debt service coverage ratio of 0.64x, down from 1.26x in 2005. The fund balance was insufficient to cover the September 1 payments, causing a default.

Since the event of default, Amarillo has made interest payments but has not made a principal payment since the event of default on March 1, 2006.

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#### 44) Jefferson Commons at the Ballpark, TX

- » CUSIP: 805790974
- » Default Date: January 1, 2007
- » Obligor: Jefferson Commons at the Ballpark, TX
- » Issuer: Texas Student Housing Authority
- » Defaulted Bonds: Student Housing Revenue Bonds Senior Series 2001A, Junior Series 2001B, \$36.48 million of debt affected
- » Cause of Default: Decrease in rents due to competition
- » Recovery: pending

On January 1, 2007 Jefferson Commons at the Ballpark defaulted on its Junior Series 2001B bonds when it failed to make an interest payment. The project defaulted on the Senior 2001A bonds on January 1, 2009.

The bonds were secured by and were issued to purchase a newly built 282 unit/768 bed student housing rental property located in Austin, Texas. The property houses mostly freshman and sophomore students who attend the University of Texas at Austin. When the project was purchased

the occupancy was 97% but fell to 79% in 2003 as a result of a softening of the submarket in Austin. This softening led to rent decreases and concessions in order to stay competitive with new student housing products and conventional rental properties in the submarket. Because of low cash levels due to revenue substantially lower than at the time of underwriting, there was a tap on the debt service reserve fund to make payments for the Junior Series on July 1, 2005. The project continued to utilize reserve funds to pay for the Junior Series until depleted and defaulted on the interest payment on January 1, 2007. The project tapped the reserve fund to pay for the Senior Series for January 1, 2007 and subsequent payments, defaulting on the January 1, 2009 Senior Series debt payment.

Since the initial default on the Junior Series in 2007, no additional interest payments have been made and the trustee has set the expectation that bondholders will not receive payments for the foreseeable future. The resolution of the Senior Series default is still pending.

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#### 45) Nob Hill Apartments, TX

- » CUSIP: 088379
- » Default Date: December 1, 2007
- » Obligor: Nob Hill Apartments, TX
- » Issuer: Bexar County Housing Finance Corporation, TX
- » Defaulted Bonds: Multifamily Housing Revenue Refunding Bonds, Subordinate Series 2001B, \$1.17 million of debt affected
- » Cause of Default: Low occupancy, Rise in operational costs
- » Recovery: pending

On December 1, 2007, the Nob Hill Apartments defaulted on their revenue refunding bonds when they failed to make interest payments on the Subordinate Series 2001B bonds.

The Nob Hill Apartments Project, a 368 unit multi-family rental property, is located approximately 8 miles north of the San Antonio central business district in Texas. The property began experiencing financial difficulties in 2005 when operating expenses growth began to outpace revenue growth, causing a decrease in debt service coverage. The financial performance and occupancy deteriorated significantly over the next few years due to the severing of a relationship with Catholic Charities (an organization that housed families in the facility), as well as an increase in tenants who were delinquent in rent. Maintenance expenses associated with an increase in turnover increased and occupancy hit a low of 72% in May of 2007. The trustee did not tap the debt service reserve fund and missed the December interest payment, going into default.

Since the event of default, the trustee has not paid any interest payments on the subordinate series of bonds. The trustee transferred \$750,000 from the debt service reserve fund to a repair and replacement fund in order to make substantial repairs to the facility.

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#### 46) North Oakland Medical Center, MI

- » CUSIP: 732557
- » Default Date: February 1, 2008
- » Obligor: North Oakland Medical Center, MI

- » Issuer: Pontiac Hospital Finance Authority, MI
- » Defaulted Bonds: Series 1993, \$38 million of debt affected
- » Cause of Default: Operating losses and a decline in liquidity
- » Recovery: pending

On February 1, 2008, North Oakland Medical Center defaulted on their bond obligations when they failed to make scheduled debt service payments.

The North Oakland Medical Center was located in the economically weak service area of Pontiac Michigan which has a median income well below state and national averages. Patient volumes experienced a multi year decline due to competition from two other hospitals creating an oversupply of acute medical care in the service area, unsustainable for the long run. The hospital experienced strain on expenses due to severance obligations to outgoing management and the acquisition of additional premium labor. These factors created multiple year operating losses and negative cash flow, ultimately contributing to a sharp decline in unrestricted cash and investments. New senior management with significant experience was brought in during the 2007 fiscal year but was unable to substantially alter the financial situation, leading to a default on the Series 1993 notes.

North Oakland Medical Center filed for Chapter 11 bankruptcy protection on August 26, 2008, and the rating was subsequently withdrawn.

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#### 47) Jefferson (County of), AL

- » CUSIP: 472682
- » Default Dates: Sewer Warrants, April 1, 2008; General Obligations, September 15, 2008;
- » Obligor: Jefferson (County of) AL
- » Issuer: Jefferson (County of) AL
- » Defaulted Bonds: Sewer Revenue and General Obligation, \$3.47 billion of debt affected
- » Cause of Default: Inability to meet liquidity needs
- » Recovery: pending

On April 1, 2008, Jefferson County failed to make a principal payment on sewer warrant bank bonds held by liquidity providers constituting an event of default. On September 15, 2008, Jefferson County failed to make a principal payment on General Obligation bank bonds held by liquidity providers constituting an event of default under the Trust Indenture and the Liquidity Facility. Downgrades of XL Capital and FGIC, who together insure over 90% of the county's sewer debt, led to a series of failed remarketings of the county's variable rate demand sewer debt, all of which was eventually put back to the liquidity providers. In addition, a series of failed auctions on the county's auction rate securities led to higher interest rates paid on these securities. Given the accelerated principal repayment of the \$567 million in variable rate demand sewer debt held by liquidity providers, combined with declines in the index on its swap agreements relative to the penalty interest rates on variable and auction rate securities, the county's debt service cash flow requirements increased dramatically. In addition, the downgrade of the county's sewer debt to below Baa2 constituted an

event of termination under the swap agreements, further compounding the demands on the sewer system's cash flows, as counterparties had the right to terminate the swaps if the county did not post collateral (estimated at \$184 million) or obtain an insurance policy, action which the county did not perform. In fact, the county stated in a notice dated March 4, 2008 that it had notified the swap counterparties that it did not intend to post collateral or provide insurance for its obligations under the Swap Agreements. The county entered into forbearance agreements with the liquidity providers and swap counterparties who waived their rights to demand accelerated payments while negotiations continued. The county's General Obligation variable rate demand bonds were also put back to liquidity providers and the county failed to make accelerated payments on these bonds on September 15, constituting an event of default under the documents related to those bonds. During that same month, the Trustee and the bond insurers filed suit in federal court requesting a receiver be appointed to manage the sewer system, including raising rates to meet ongoing obligations, but the judge subsequently rules that the federal government does not have the jurisdiction to influence rate-setting for a local public utility. Negotiations between all parties continue without solution, despite involvement of the state government, and eventually, the forbearance agreements lapse without further extensions. In November 2009, after the SEC settles securities fraud charges brought against JP Morgan, lead architect of the Jefferson County debt portfolio, the county sued JP Morgan, two former JP Morgan officials, and several other organizations and individuals involved in Jefferson County's bond financing of the previous decade. It is currently unknown if negotiations with liquidity providers, insurers and the trustee continue.

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#### 48) Fullerton Village at DePaul University, IL

- » CUSIP: 45202Q
- » Default Date: December 1, 2008
- » Obligor: Fullerton Village at DePaul University, IL
- » Issuer: Illinois Finance Authority
- » Defaulted Bonds: Series 2004 A and B, \$72.23 million of debt affected
- » Cause of Default: Low occupancy and insufficient revenue for debt service
- » Recovery: pending

Fullerton Village at DePaul University defaulted on their 2004 A and B bonds when they failed to make interest payments on December 1st 2008.

The housing development experienced low occupancy levels and low liquidity in recent years due to competition from more affordable on campus housing provided by the University as well as the community at large. The senior property manager was replaced with an affiliate of the project developer who is the sole bondholder of the unrated Series 2004 C debt but low occupancy levels were continued. At recent occupancy levels, the project is able to cover operating costs but not able to make debt service payments or replenish the debt service fund. On October 24, 2008 the trustee issued a notice to bondholders stating that debt reserve funds would not be used to make debt service until such time where revenues are strong enough to replenish the funds. This decision was overturned by the majority of bondholders and they were subsequently paid out of the debt service reserve fund, drawing it down to below required levels. The debt reserve funds were insufficient to make debt service payments on December 1, 2008 when the project defaulted.

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#### 49) St. Louis Industrial Development Authority (St. Louis Convention Center Headquarters Hotel Project), MO

- » CUSIP: 805245605
- » Default Date: December 15, 2008
- » Obligor: St. Louis Industrial Development Auth., MO
- » Issuer: St. Louis Industrial Development Auth., MO
- » Defaulted Bonds: Series 200A, \$98 million of debt affected
- » Cause of Default: Oversupply of new or renovated hotels, decline in convention spending by businesses
- » Recovery: pending

The St. Louis Industrial Development Authority defaulted on its debt obligations when it failed to pay the \$3.5 million interest payment due on December 15, 2008.

Since opening in 2003 the financial and operating performance of the \$277 million hotel has been significantly weaker than originally forecasted. Although the project had generated enough revenue to cover operating expenses, revenues had not been sufficient to cover debt service and to fully fund the furniture and fixtures account. The hotel's financial performance continued to decline due to the economic downturn, industry wide slowing convention center sales, and oversupply of new or recently renovated hotels in the project area. The demand for hotel services was further weakened by the demise of the TWA hub at Lambert-St. Louis International Airport and American Airlines' significant subsequent reduction in air service to St. Louis. In January 2009 the Series 2000A bondholders initiated foreclosure proceedings.

On February 9, 2009 the hotel was auctioned off to the trustee, UMB Bank for \$98 million. Although the bondholders have taken over ownership, the hotel continues to operate under the management of Renaissance Hotel Management Company.

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#### 50) Forum Health, OH

- » CUSIP: 560060
- » Default Date: March 16, 2009
- » Obligor: Forum Health
- » Issuer: Mahoning (County of) OH
- » Defaulted Bonds: Revenue Bonds series 2002A, Underlying rating, \$24.16 million of debt affected
- » Cause of Default: Operating losses from competition and economic weakness
- » Recovery: pending

Forum Health went into technical default on its revenue bonds when it filed for bankruptcy protection on March 16th 2009.

Forum Health struggled with cost controls due to labor negotiations with a heavily (75%) unionized workforce. The firm experienced multi-year declines in inpatient admissions and outpatient procedures. These declines were particularly severe at the Western Reserve facility due to competition from a new facility which opened in August 2007 as well as the general economic climate. Revenues were further hurt by a weakening service area marked by a declining population and below average wealth levels. Leading up to the bankruptcy there were declines in unrestricted cash to a low 17 days cash on hand. As operating losses continued, the system was required to transfer cash to the debt service reserve fund under a master forbearance agreement, further weakening the cash position.

Forum health is currently restructuring under Chapter 11 protection.

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### 51) Sierra Kings Health Care District, CA

- » CUSIP: 826331
- » Default Date: October 8, 2009
- » Obligor: Sierra Kings Health Care District, CA
- » Issuer: Sierra Kings Health Care District, CA
- » Defaulted Bonds: General Obligation Series 2009; General Obligation Election of 2006, Series 2007
- » Cause of Default: technical default due to bankruptcy filing; the time has not yet arrived to make its semi-annual GO debt service payment since the bankruptcy filing
- » Recovery: not applicable, as no GO debt default is expected

On October 8th, 2009, the Sierra Kings Health Care District went into technical default on its General Obligation bonds when it filed for chapter 9 bankruptcy protection, although we expect the district will continue to make full and timely GO debt service payments.

The district's financial operations have been severely strained in recent years as it endeavored to upgrade its hospital facilities, which are located in central San Joaquin Valley, and the resulting decline in net patient revenues during construction. The district was unable to meet its contractual obligations related to these facility improvements. This development appears to have been due in part to the district's use of some general obligation bonds and unrated revenue bond proceeds to pay for operating costs rather than construction costs. While continued district operations are not necessary for general obligation bond debt service to be levied, collected, and paid, it does raise the specter of a possible temporary disruption of debt service payments. We note that district management continues to operate while in bankruptcy. The district is currently restructuring under Chapter 9 bankruptcy protection.

## Appendix B: Methodology

### 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 Calculations

Moody's method for calculating cumulative default rates is a discrete-time approximation of the nonparametric continuous-time hazard rate approach.<sup>9</sup> Cumulative default rates are calculated from marginal default rates, which represent the probability that an issuer that has survived in the sample through a particular date will default over the next time interval (typically, one year) following that date.

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

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

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

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

<sup>9</sup> See Moody's Global Credit Research "Measuring Corporate Default Rates"

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.

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### Recovery Rate Calculations

Moody's estimates defaulted debt recovery rates using market bid prices observed roughly 30 days after the date of default. Recovery rates are measured as the ratio of price to par value. Using post-default prices to measure recovery (or its complement, loss severity) parallels common practice in the credit

default swaps market. Moreover, recovery rates measured in this way are most relevant for cash bond investors who liquidate their holdings shortly after default as often required by their portfolio governance rules or their own investment objectives. For investors holding defaulted securities until ultimate resolution, prices observed shortly after default are generally accepted as the market's estimate of discounted expected ultimate recovery rates.

The alternative approach of directly measuring ultimate realized recoveries presents a number of estimation challenges, including the appropriate discount rate to apply to cash-flows and valuing the assets used to pay creditor claims, which may include illiquid new securities (e.g., equity and derivative instruments) as well as physical assets. The table below defines the various ways Moody's calculates recovery rates.<sup>10</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.

### 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>11</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 when 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.

<sup>10</sup> This table is derived from Moody's Special Comment "Recovery Rates on Defaulted Bonds and Preferred Stocks"

<sup>11</sup> For a more detailed discussion of rating accuracy metrics see Moody's Global Credit Research "Measuring the Performance of Corporate Bond Ratings"

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