US Municipal Bond Defaults and Recoveries, 1970-2014

This study updates our statistics and observations concerning the default, loss, and rating transition experience of municipal bond issuers for 2014, as well as for the historical period since 1970. We cover Moody’s-rated US state and local governments, not-for-profit hospitals, housing agencies, colleges and universities, and other municipalities that have long-term debt ratings. Key findings include:

» There were no Moody’s rated municipal defaults in 2014, though a number of public finance credits experienced a sharp deterioration in credit quality as reflected by their transition to deeply speculative grade ratings.

» Since US municipals were migrated to the global scale, US municipal default rates have been broadly aligned to the US corporate default rates by like-rating category.

» Our base case outlook continues to be that the combination of tax base or revenue losses from the Great Recession, a very slow recovery, long-term demographic changes, and the growing balance sheet leverage from debt-like entitlements such as pensions and other post-employment benefits (OPEB) will continue to pressure many local governments, creating a “new normal” of a more fragile budgetary balance.

» We expect that the US municipal finance market will continue to be characterized by few bankruptcies or defaults. However, developments since the end of 2014 have reinforced the notion that municipal bankruptcy, though rare, is becoming a more commonly applied tool to reorganize liabilities in the public sector in situations of extreme stress.

» Historically, our municipal ratings have been as predictive as our corporate ratings in differentiating defaulters from non-defaulters. The typical US municipal defaulter carried a lower rating than 96% of all other US municipal ratings one year in advance of default, and 88% of all issuers five years in advance of default; by comparison, the typical corporate defaulter carried a lower rating than 91% (84%) of all other corporate ratings one year (five years) ahead of default.
Introduction

The US public finance sector is remarkable for its variety and diversity. Compared to global corporate issuers and sub-sovereigns outside the US, the US municipal sector is highly disaggregated both by type of issuer and by legal pledge. The majority of Moody’s-rated issuers in this market are municipal governments of one form or another—states, counties, towns and cities and their component utility operations—along with more specialized government entities such as school districts. This group, though diverse, shares the common purpose of providing essential public services. Other public finance issuers include not-for-profit enterprises that provide an important public function such as housing, higher education or healthcare, but do so in a competitive environment. Still other issuers finance projects that can have relatively high enterprise risk (and value), such as sports and convention facilities or start-up transportation ventures. Given the heavy orientation toward general government and essential services, however, the sector is generally highly rated and historically has experienced lower average cumulative default rates than global corporate.

Many municipal governments have the ability to secure their debt with a general obligation (GO) pledge; that is, the debt is secured by the full faith credit and taxing power of the issuer. The GO pledge is not monolithic; some GO bonds have an unlimited tax (ULT) pledge, with the issuer promising to raise taxes as is as necessary to repay debt, while other GO bonds are limited as to the rate or amount of the pledged taxes. Even GO ULT pledges can vary state by state; for example, features such as a statutory lien or a dedicated debt service levy are not consistent. However, nearly half of all rated municipal bonds are not backed by a GO pledge. Non-GO bonds—predominantly revenue bonds—are repaid from revenues generated from an enterprise such as a water and sewer system, a hospital, a housing or infrastructure project, or from special taxes such as sales, gasoline, or hotel taxes, etc. Non-GO bonds also include debt backed by operating funds without a specific pledge, including lease revenues, appropriations and moral obligations. It is important to note that of the 95 Moody’s-rated municipal defaults since 1970, 87 were defaults on non-GO debt.

A major objective in preparing and publishing this report is to help assess the ranking and performance of municipal ratings and their global consistency with other rated sectors and industries. Where the data, and our forward view of expected outcomes, suggest either the under- or out-performance of public finance ratings, we may respond with rating adjustments as warranted. However, sector-wide adjustments are rare, and while outliers based on average performance over a 45-year study period may prompt questions about ratings performance, the answers are often more nuanced especially if the observed defaults are strongly cyclical or tightly clustered, or if a sector’s risk profile has evolved over time. At this time, we do not anticipate sector-wide adjustments for the US municipal sector.

We begin our report with a brief overview of the sector performance in 2014, followed by an examination of historical default, recovery and rating performance with a comparison to corporate issuers.

2 See Appendix D for a description of the methodology used in this default study.
No Moody’s-rated Municipal Defaults in 2014

No Defaults despite Pressures

Following a string of seven defaults in 2013, including those by Detroit, not one Moody’s-rated municipal entity defaulted on its debt in 2014, though a number of public finance credits experienced sharp deterioration in their credit quality as reflected by their transition to deeply speculative ratings. This trend included some prominent names among general governments—all of Puerto Rico’s many debt classes, for example—as well as healthcare and university credits, such as Yeshiva University and Franklin Pierce University.

The absence of defaults in 2014 is not really a harbinger of good times; we expect defaults to occur in years to come. We observe that many municipal credits have stabilized since the Great Recession by making significant adjustments: trimming budgets and spending, dipping into and then rebuilding reserves, and overall managing through difficult times. Our base case outlook continues to be that the combination of tax base or revenue losses from the Great Recession, a very slow recovery, long-term demographic changes, and the growing balance sheet leverage from debt-like entitlements such as pensions and OPEBs will continue to create headwinds for many local governments, creating a “new normal” of a more fragile budgetary balance. Among other things, this has left more governments with less margin and weaker positions from which to weather another sharp recession. We also continue to observe that pensions can ‘crowd-out’ other expenditures and pose persistent and rising cost pressures on local governments in many states.

Dominant Trends Have Not Changed

We identified many of these trends in our recent default studies, and we see no sign that the forces pressuring the public sector have abated. These forces include a still slow recovery and weak labor participation rate; aging demographics that affect consumer spending and service demands; and the continued growth of pension and health care entitlements that increase local government leverage and crowd out other budgetary demands.

In contrast to the median Ba1 rating for corporate credits, the median rating for US municipal credits remains at Aa3, which is a testament to the durability, broad stability, and subsequent low default rates of the sector. The number of public sector ratings below Baa3 (the investment grade threshold) remains low. At year-end 2014 it was 1.6%, compared to 1.3% at year-end 2011 – the highest percentage of ratings below Baa3 was achieved at year-end 2012 at 2.0% (0.3% and 4.0% for GOs and non-GOs, respectively).

The percentage of local governments with speculative ratings increased from 0.3% at year-end 2011 to 0.6% at year-end 2014. School districts, for example, were historically a rarity among high risk credits, as they are broadly stable, limited in purpose, and have debt typically paid through a general obligation unlimited tax pledge. Yet, in 2013, a B3 rated school district defaulted, and by year-end 2014 there were about 10 school districts with speculative-grade ratings, compared to six at year-end 2011.

Similarly, the number of speculative-grade local government cities and counties more than doubled since 2011. Since our last report, Atlantic City (NJ), Perry County (KY) and Kankakee County (IL), among others, have entered these ranks. There were a number of sharp downgrades (more than four notches) among smaller local governments, including three local governments in Puerto Rico, Salisbury City (NC) and two school districts. More recently in 2015 (and thus outside the scope of this study) five additional credits were...
downgraded by more than four notches including Penn Hills School District (PA) and Griggs County (ND), both downgraded by eight notches and Lindenhurst Park District (IL), downgraded by seven notches.

**Bankruptcy as a Cost-Cutting Tool**

Since December 2014, a small Rhode Island entity has filed under Chapter 9 after several attempts by the state to assist, and bankruptcy has been implied as a recourse for both Atlantic City (NJ) and Wayne County, (MI). Puerto Rico has proposed legislation to allow a Commonwealth bankruptcy, and the Illinois legislature is considering a bill, supported by the new Governor, that would allow local governments to file under Chapter 9. These developments have reinforced the notion that municipal bankruptcy, though still rare, is becoming a more commonly considered tool to adjust liabilities in the public sector in situations of extreme stress. Jefferson County in Alabama, Harrisburg in Pennsylvania and Detroit in Michigan have not only emerged from bankruptcy or receivership but have done so with the help of the capital markets, issuing new debt despite losses to pre-default bondholders that were as high as 88% (in the case of the Detroit pension obligation bonds). One compelling lesson emerging from the Detroit experience is that it is possible for a major city to enter and exit bankruptcy in a reasonable time frame (in this case, in 16 months) with a drastically deleveraged balance sheet and the opportunity for a new way forward. Taking this lesson into consideration, some financially distressed issuers are exploring a means of restructuring that has been rare in the public sector but long been common in the private sector. Local governments can merge or consolidate to relieve operating pressures, but they are generally regarded as perpetual entities that exist to provide key services—police and fire, courts and property records, roads, and public education. It is the very need to continue these essential services that renders bankruptcy potentially so valuable in times of extreme stress: the municipality must find a way forward.

Our public finance ratings reflect our expectation that the United States municipal finance market will generally continue to be characterized by few bankruptcies or defaults. The growing presence of bankruptcy does not alter our overall stable outlook on the state and local government sector, but it does underscore the trends we have long identified — emergence of significant pockets of pressure in the wake of the recent recession, ongoing challenges of balancing rising fixed costs against the anti-tax sentiment, and a tighter budgetary “new normal” that is less resistant to new shocks.

However, bankruptcy as an option can, in and of itself, increase risks to holders of public finance debt, particularly when significant pension liabilities are at play. With the exception of Central Falls, recent municipal bankruptcies have resulted in sizeable losses to debt holders, particularly when compared to long-term pension liabilities (see Exhibit 1) and despite the legal pledges behind the debt. The outcome of a municipal bankruptcy is likely unpredictable; it offers a route out of excessive leverage as in the case of Harrisburg or Jefferson County, but we now see that it may also result in preferential treatment of pensioners at the expense of bondholders. We have previously noted another pattern in recent municipal bankruptcies: pensions have been protected not only at the expense of debt liabilities but also the healthcare benefits (“other post-employment benefits” or OPEBs) promised to employees and retirees. While pensions and OPEBs are owned by the same group of creditors - past and present municipal employees – they typically constitute separate legal claims within the Chapter 9 plan of reorganization. This means that the small number of bankruptcy proceedings we have seen so far are treating these liabilities not as separate, equivalent unsecured claims but are effectively conflating them by looking to the identity of the claimants. This has generally not happened, say, with the different liens of debt affected by the bankruptcy, which may be held by the same individual investors. As a result, larger losses to bondholders than pensioners are very likely, particularly if pensioners are already being impaired through cuts to their healthcare benefits.
The pattern has been reinforced by the announcement of the proposed plan of adjustment by San Bernardino, the only remaining large city still in bankruptcy. In the proposed plan, the holders of San Bernardino’s largest single debt, its Pension Obligation Bonds, are offered a recovery of just 1% (or a loss of 99%), while its two smaller claims based on lease obligations will be honored 100%, for an all-in debt recovery of just 1%. Recoveries reflect Moody’s estimates and calculations; debt includes accrued interest as available. Moody’s estimates as of June 2015.
recovery of 19% (or a loss of 81%). In contrast, San Bernardino’s bankruptcy plan does not contemplate cutting pensions.

**US Public Finance Ratings Growth and Distribution**

The number of Moody’s-rated US public finance ratings has grown over the years.\(^6\) Broken out by GO and non-GO ratings, Exhibit 2 shows the annual population of ratings since 1970. From just over 3,300 ratings in 1970, the total number of ratings grew to about 15,400 by the end of 2014. Approximately 8,600 of the current municipal ratings (or just over a half) are assigned to GO bonds.

Exhibit 3 compares the current ratings distribution of US municipal issuers with the current distribution for global corporate issuers.\(^7\) Reflecting their low propensity to default, nearly all municipal issuers have investment-grade ratings, with 93% of issuers rated single-A or higher. By comparison, 21% of global corporate issuers are currently rated single-A or higher. By type of debt, roughly 62% and 51% of all GO and non-GO bonds, respectively, are rated Aa or higher. Only 3% of all non-GO debt are rated speculative-grade; the percent of GO bonds with speculative-grade ratings is very low at 0.5%, in line with the small number of GO defaults.

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\(^6\) Ratings included are those assigned to public long-term un-refunded debt issued by US state and local governments and for not-for profit healthcare, higher education, housing, infrastructure and other not-for-profit institutions in the municipal bond market. For non-GO debts we examine the ratings assigned to each distinct security class of debt and seniority debt, issued across all distinct financing purposes. For GO ULT and for GO LT debt we consider only one rating history for any given municipality as this debt is backed by the full revenue-producing power of the municipality independently of the financing purposes (see Appendix D for more detail on our methodology).

\(^7\) For more information on default statistics for Moody’s corporate issuers, see "Corporate Default and Recovery Rates, 1920-2014, March 2015 (1003691)".
Rating Transitions

Rating migration matrices provide a complete picture of rating dynamics over time—upgrades, downgrades, withdrawals and defaults. 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. The largest values in the average one-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. Cells left of the diagonal show upgrades while those to the right show downgrades.

Exhibit 4 presents and compares the municipal average one-year rating transition rates to those of corporate issuers for the period 1970-2014, while Exhibit 5 does the same but for the period since the start of the global recession in 2008 through 2014. Exhibits 6 and 7 present the same results but break-out transition rates for GO and non-GO ratings. These exhibits show that municipal ratings were more stable and withdrawn less frequently than were their corporate counterparts.

EXHIBIT 4
Average One-Year Rating Transition Rates, 1970-2014, Municipal vs. Corporate Issuers

<table>
<thead>
<tr>
<th>From/To:</th>
<th>Aaa</th>
<th>Aa</th>
<th>A</th>
<th>Baa</th>
<th>Ba</th>
<th>B</th>
<th>Caa-C</th>
<th>Default</th>
<th>Withdrawn</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>94.71%</td>
<td>1.59%</td>
<td>0.15%</td>
<td>0.04%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
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<td>95.58%</td>
<td>1.46%</td>
<td>0.04%</td>
<td>0.01%</td>
<td>0.00%</td>
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<td>0.00%</td>
<td>2.48%</td>
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<tr>
<td>A</td>
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<td>1.73%</td>
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<td>0.07%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>4.52%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.02%</td>
<td>0.04%</td>
<td>1.61%</td>
<td>91.16%</td>
<td>0.58%</td>
<td>0.06%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>6.51%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.05%</td>
<td>0.07%</td>
<td>0.47%</td>
<td>4.45%</td>
<td>82.23%</td>
<td>3.01%</td>
<td>0.55%</td>
<td>0.27%</td>
<td>8.89%</td>
</tr>
<tr>
<td>B</td>
<td>0.00%</td>
<td>0.12%</td>
<td>0.63%</td>
<td>1.73%</td>
<td>4.00%</td>
<td>79.05%</td>
<td>4.70%</td>
<td>2.83%</td>
<td>6.94%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.27%</td>
<td>0.77%</td>
<td>1.51%</td>
<td>2.34%</td>
<td>74.70%</td>
<td>7.40%</td>
<td>13.01%</td>
</tr>
</tbody>
</table>

The default column in Exhibit 4 does not precisely match the one-year cumulative default rate in Exhibit 14 because the cumulative default rates in Exhibit 14 are adjusted for rating withdrawals, while default and withdrawal are considered distinct end states in Exhibit 4.
### Average One-Year Rating Transition Rates, 1970-2014, Municipal vs. Corporate Issuers

<table>
<thead>
<tr>
<th>From/To:</th>
<th>Aaa</th>
<th>Aa</th>
<th>A</th>
<th>Baa</th>
<th>Ba</th>
<th>B</th>
<th>Caa-C</th>
<th>Default</th>
<th>Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corporate Issuers</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>87.34%</td>
<td>8.13%</td>
<td>0.62%</td>
<td>0.00%</td>
<td>0.03%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>3.87%</td>
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<tr>
<td>Aa</td>
<td>0.89%</td>
<td>84.55%</td>
<td>8.45%</td>
<td>0.50%</td>
<td>0.07%</td>
<td>0.02%</td>
<td>0.01%</td>
<td>0.02%</td>
<td>5.50%</td>
</tr>
<tr>
<td>A</td>
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<td>2.41%</td>
<td>86.14%</td>
<td>5.54%</td>
<td>0.54%</td>
<td>0.11%</td>
<td>0.04%</td>
<td>0.06%</td>
<td>5.12%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.04%</td>
<td>0.16%</td>
<td>3.96%</td>
<td>85.42%</td>
<td>3.84%</td>
<td>0.71%</td>
<td>0.16%</td>
<td>0.16%</td>
<td>5.55%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.01%</td>
<td>0.05%</td>
<td>0.33%</td>
<td>5.60%</td>
<td>75.78%</td>
<td>7.33%</td>
<td>0.65%</td>
<td>1.00%</td>
<td>9.27%</td>
</tr>
<tr>
<td>B</td>
<td>0.01%</td>
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<td>0.11%</td>
<td>0.29%</td>
<td>4.42%</td>
<td>73.57%</td>
<td>6.62%</td>
<td>3.45%</td>
<td>11.51%</td>
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<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.01%</td>
<td>0.02%</td>
<td>0.09%</td>
<td>0.36%</td>
<td>7.80%</td>
<td>65.02%</td>
<td>14.12%</td>
<td>12.58%</td>
</tr>
</tbody>
</table>

Notes:
1. The first cohort considered is the 1-yr cohort starting on January 1, 1970. The last cohort considered is the 1-year cohort starting on January 1, 2014.
2. Transition rates are averaged over cohorts spaced 1 month apart, as opposed to cohorts spaced 1 year apart.
3. Municipal ratings have been adjusted to be consistent with the Global Rating Scale.

Source: Moody’s

Exhibit 5, which isolates the period since the start of the Great Recession, shows, on average, higher transition rates than the historical average for rated municipals. For example, as shown in Exhibit 4, about 95% of Aaa-rated municipal issuers were still rated Aaa 12 months later on average over the longer study period; this proportion fell to 88% for the period starting in 2008.

### Average One-Year Rating Transition Rates, 2008-2014, Municipal vs. Corporate Issuers

<table>
<thead>
<tr>
<th>From/To:</th>
<th>Aaa</th>
<th>Aa</th>
<th>A</th>
<th>Baa</th>
<th>Ba</th>
<th>B</th>
<th>Caa-C</th>
<th>Default</th>
<th>Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Municipal Issuers</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Aaa</td>
<td>87.84%</td>
<td>2.38%</td>
<td>0.25%</td>
<td>0.10%</td>
<td>0.04%</td>
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<td>9.39%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.13%</td>
<td>94.08%</td>
<td>1.75%</td>
<td>0.05%</td>
<td>0.01%</td>
<td>0.00%</td>
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<td>3.98%</td>
</tr>
<tr>
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<td>90.53%</td>
<td>1.17%</td>
<td>0.28%</td>
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<td>Baa</td>
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<td>Caa-C</td>
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<td>63.46%</td>
<td>13.83%</td>
<td>19.65%</td>
</tr>
</tbody>
</table>

Notes:
1. The first cohort considered is the 1-yr cohort starting on January 1, 2008. The last cohort considered is the 1-year cohort starting on January 1, 2014.
2. Transition rates are averaged over cohorts spaced 1 month apart, as opposed to cohorts spaced 1 year apart.
3. Municipal ratings have been adjusted to be consistent with the Global Rating Scale.

Source: Moody’s

Exhibits 6 and 7 present transition rates for non-GO ratings and for GO ratings for the periods 1970-2014 and 2008-14, respectively. For both periods, while non-GO and GO ratings exhibit similar stability rates, GO debts are more stable than non-GO debts.
### Average One-Year Rating Transition Rates, 1970-2014, General Obligation vs. Non-General Obligation

<table>
<thead>
<tr>
<th>From/To:</th>
<th>Aaa</th>
<th>Aa</th>
<th>A</th>
<th>Baa</th>
<th>Ba</th>
<th>B</th>
<th>Caa-C</th>
<th>Default</th>
<th>Withdrawn</th>
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</thead>
<tbody>
<tr>
<td>Non-General Obligation</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>94.61%</td>
<td>0.90%</td>
<td>0.16%</td>
<td>0.06%</td>
<td>0.01%</td>
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<td>0.13%</td>
<td>0.02%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>5.03%</td>
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<td>90.58%</td>
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<td>0.02%</td>
<td>6.27%</td>
</tr>
<tr>
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<td>0.08%</td>
<td>0.34%</td>
<td>4.58%</td>
<td>79.07%</td>
<td>4.20%</td>
<td>0.85%</td>
<td>0.40%</td>
<td>10.46%</td>
</tr>
<tr>
<td>B</td>
<td>0.00%</td>
<td>0.18%</td>
<td>0.55%</td>
<td>4.94%</td>
<td>74.95%</td>
<td>6.58%</td>
<td>4.05%</td>
<td>8.09%</td>
<td></td>
</tr>
<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.29%</td>
<td>0.84%</td>
<td>1.34%</td>
<td>0.00%</td>
<td>74.83%</td>
<td>7.59%</td>
<td>13.08%</td>
</tr>
<tr>
<td>General Obligation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>94.94%</td>
<td>3.14%</td>
<td>0.13%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>1.78%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.37%</td>
<td>96.23%</td>
<td>1.37%</td>
<td>0.03%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>1.98%</td>
</tr>
<tr>
<td>A</td>
<td>0.01%</td>
<td>1.88%</td>
<td>93.45%</td>
<td>0.52%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>4.12%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.01%</td>
<td>0.04%</td>
<td>2.57%</td>
<td>82.75%</td>
<td>4.28%</td>
<td>0.30%</td>
<td>0.11%</td>
<td>0.04%</td>
<td>6.70%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.09%</td>
<td>0.06%</td>
<td>0.69%</td>
<td>4.23%</td>
<td>78.72%</td>
<td>0.95%</td>
<td>0.04%</td>
<td>0.05%</td>
<td>6.16%</td>
</tr>
<tr>
<td>B</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.79%</td>
<td>2.07%</td>
<td>2.15%</td>
<td>88.92%</td>
<td>0.99%</td>
<td>0.42%</td>
<td>4.66%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>3.56%</td>
<td>6.11%</td>
<td>17.03%</td>
<td>5.09%</td>
<td>12.21%</td>
</tr>
</tbody>
</table>

#### Notes:
1. The first cohort considered is the 1-yr cohort starting on January 1, 1970. The last cohort considered is the 1-year cohort starting on January 1, 2014.
2. Transition rates are averaged over cohorts spaced 1 month apart, as opposed to cohorts spaced 1 year apart.
3. Municipal ratings have been adjusted to be consistent with the Global Rating Scale.

Source: Moody's

### Average One-Year Rating Transition Rates, 2008-2014, General Obligation vs. Non-General Obligation

<table>
<thead>
<tr>
<th>From/To:</th>
<th>Aaa</th>
<th>Aa</th>
<th>A</th>
<th>Baa</th>
<th>Ba</th>
<th>B</th>
<th>Caa-C</th>
<th>Default</th>
<th>Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-General Obligation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>82.62%</td>
<td>2.39%</td>
<td>0.41%</td>
<td>0.16%</td>
<td>0.05%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>14.37%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.14%</td>
<td>91.67%</td>
<td>2.18%</td>
<td>0.06%</td>
<td>0.02%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>5.91%</td>
</tr>
<tr>
<td>A</td>
<td>0.00%</td>
<td>1.52%</td>
<td>89.26%</td>
<td>1.57%</td>
<td>0.51%</td>
<td>0.02%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>7.67%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.01%</td>
<td>0.12%</td>
<td>2.57%</td>
<td>82.75%</td>
<td>4.28%</td>
<td>0.30%</td>
<td>0.11%</td>
<td>0.04%</td>
<td>9.82%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.06%</td>
<td>0.15%</td>
<td>0.50%</td>
<td>5.60%</td>
<td>70.85%</td>
<td>0.95%</td>
<td>0.95%</td>
<td>0.03%</td>
<td>16.69%</td>
</tr>
<tr>
<td>B</td>
<td>0.00%</td>
<td>0.55%</td>
<td>0.00%</td>
<td>1.62%</td>
<td>4.53%</td>
<td>68.28%</td>
<td>11.86%</td>
<td>3.59%</td>
<td>9.57%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.30%</td>
<td>0.00%</td>
<td>1.82%</td>
<td>65.45%</td>
<td>12.28%</td>
</tr>
<tr>
<td>General Obligation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>95.63%</td>
<td>2.36%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.03%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>1.97%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.11%</td>
<td>95.64%</td>
<td>1.47%</td>
<td>0.03%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>2.73%</td>
</tr>
<tr>
<td>A</td>
<td>0.00%</td>
<td>1.70%</td>
<td>92.23%</td>
<td>0.80%</td>
<td>0.06%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>5.20%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.00%</td>
<td>0.08%</td>
<td>3.16%</td>
<td>73.91%</td>
<td>2.37%</td>
<td>0.31%</td>
<td>0.01%</td>
<td>0.13%</td>
<td>20.03%</td>
</tr>
<tr>
<td>Ba</td>
<td>1.27%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>9.90%</td>
<td>73.79%</td>
<td>8.64%</td>
<td>0.52%</td>
<td>0.15%</td>
<td>5.73%</td>
</tr>
<tr>
<td>B</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>7.57%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>3.70%</td>
<td>22.22%</td>
<td>14.81%</td>
<td>37.04%</td>
<td>22.22%</td>
</tr>
</tbody>
</table>

#### Notes:
1. The first cohort considered is the 1-yr cohort starting on January 1, 2008. The last cohort considered is the 1-year cohort starting on January 1, 2014.
2. Transition rates are averaged over cohorts spaced 1 month apart, as opposed to cohorts spaced 1 year apart.
3. Municipal ratings have been adjusted to be consistent with the Global Rating Scale.

Source: Moody's

At the issuer level, downgrades have outpaced upgrades over any 12-month period for every monthly cohort since 2009, although such deterioration in credit quality seems to have stabilized since mid-2012. Exhibit 8 shows that the notch-weighted drift started trending down as early as 2007 and has been negative since mid-2008. (The notch-weighted drift defined as the average upgraded notches per issuer minus the
average downgraded notches per issuer. It measures the net average number of notches a credit will change over the length of the study horizon, 12-months in Exhibit 8).

This deterioration in municipal credit quality is partly a reflection of the deterioration in the economy that started in 2008: macroeconomic challenges associated with declines in housing prices, stagnant economic growth, increased unemployment, and lower business and consumer spending all had impact on municipal credit quality. As the unemployment rate fell below 8% and house price inflation turned positive sometime in the second half of 2012 (and other macroeconomic factors continued to improve), the decline in municipal credit quality slowed, although we still had more downgrades than upgrades on a notch-weighted basis.

**EXHIBIT 8**

**Drift and Volatility Ratios of US Municipal Issuers**

<table>
<thead>
<tr>
<th>Notch-Weighted Downgrade Ratio</th>
<th>Notch-Weighted Upgrade Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notch-Weighted Drift</td>
<td>Notch-Weighted Volatility</td>
</tr>
</tbody>
</table>

*Source: Moody’s*

**Cumulative Default Rates**

Only 95 Moody’s-rated municipal issuers defaulted on their bonded debt or related guarantees during the period 1970-2014. Exhibit 9 shows the default counts by purpose. The vast majority of defaults were in the housing sectors (with one-year default rate of 0.09% and 4.58% for speculative-grade housing issuers) and healthcare (with one-year default rate of 0.09% or 1.63% for speculative-grade healthcare issuers only). Only eight GO bond issuers, including cities, counties and other districts, defaulted on GO bonds in the 45-year study period (the one-year default rate for GO bonds is 0.002% and 0.21% for speculative-grade GO bond issuers). One of those GO bond defaults occurred in 2012: the city of Wenatchee, WA; and three in 2013: Pontiac City School District, MI and the City of Detroit, MI General Obligation Limited Tax and General Obligation Unlimited Tax bonds (see the case studies in Appendix A, for details surrounding these defaults).

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9 For a comprehensive study of the recession on US municipal issuers see “The Impact of US Federal Fiscal and Economic Strain on Municipal Credits.”

10 This study does not capture Moody’s-rated note defaults, although some detail on short-term defaults is provided in Appendix C.
EXHIBIT 9
Defaults by Sector, 1970-2014

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Number of Defaults</th>
<th>Percentage</th>
<th>One-Year Default Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>44</td>
<td>46.3%</td>
<td>0.088%</td>
</tr>
<tr>
<td>Hospitals &amp; Health Service Providers</td>
<td>23</td>
<td>24.2%</td>
<td>0.090%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>9</td>
<td>9.5%</td>
<td>0.010%</td>
</tr>
<tr>
<td>Education</td>
<td>4</td>
<td>4.2%</td>
<td>0.010%</td>
</tr>
<tr>
<td>Cities</td>
<td>4</td>
<td>4.2%</td>
<td>0.017%</td>
</tr>
<tr>
<td>Counties</td>
<td>3</td>
<td>3.2%</td>
<td>0.025%</td>
</tr>
<tr>
<td>Special Districts</td>
<td>0</td>
<td>0.0%</td>
<td>0.000%</td>
</tr>
<tr>
<td>State Governments</td>
<td>0</td>
<td>0.0%</td>
<td>0.000%</td>
</tr>
<tr>
<td>Pool Financings</td>
<td>0</td>
<td>0.0%</td>
<td>0.000%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0%</td>
<td>0.000%</td>
</tr>
<tr>
<td>Non General Obligation</td>
<td>87</td>
<td>91.6%</td>
<td>0.034%</td>
</tr>
<tr>
<td>General Obligation</td>
<td>8</td>
<td>8.4%</td>
<td>0.002%</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>100%</td>
<td>0.015%</td>
</tr>
</tbody>
</table>

Source: Moody's

The median rating one year before default for all municipal issuers is Ba3, while the modal rating one-year before default is B3. Moreover, 90% of all defaulted issuers were rated speculative-grade one year before default (Exhibit 10). The median (as well as the modal) rating for defaulted issuers five years before default was Baa3, one notch above speculative-grade.

EXHIBIT 10
Rating Before Default

Exhibit 11 shows the number of US municipal defaults by year. There have been 32 defaults since the recession started in 2008, increasing the number of defaults per year. That said, the one-year default rate still remains low, at an average of 0.03% across all ratings, compared to an average of 0.02% for the entire period of study.
Exhibit 12 shows the median rating one-year before default (green dots) as well as the minimum and maximum rating held one year before the default (vertical blue lines). For example, of the seven Moody’s-rated defaults in 2013, the maximum rating one-year before default was B2 and the minimum rating was Caa2. The median rating was Caa1. Also shown is the population median rating held one year before default (blue line), at Ba3. The higher ratings held one year before default are clustered around the late 1980s and early 1990s. These defaults are characterized by high recovery rates. For example, the defaults of Baldwin County (1988), Polk County (1991), and Orange County (1994), were all rated A1 one year before default.
and all had recoveries of 100%. The other two defaults in these cluster, Metropolitan Hospital (1989) and City of Choate - Symmes Hospitals, both rated Baa1 one year before default, also had high recovery rate of 60% or higher.11

EXHIBIT 13 presents one-year through ten-year average cumulative default rates (CDR) for municipal and corporate issuers over the entire period of study. CDRs are calculated by averaging the default experience of cohorts made up of Moody’s-rated credits formed at monthly frequencies throughout the study period. The average CDR tells us the historically-observed probability that a credit with a particular rating that would have otherwise remained outstanding will default during a specified length of time. Because cohorts are formed at a monthly frequency and then averaged over, these rates are only conditional on a credit’s rating independent of its seasoning.12

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11 There was one additional default in this cluster, Connecticut Housing Authority, rated Aa2 one year before default, with unknown recovery.

12 Monthly cohorts have the advantage of capturing rating changes that occur within a calendar year. The default rates are calculated based on cohorts of all debts holding a given rating at the start of a given month for every month between 1970 and 2012 and are withdrawn adjusted. For a detailed explanation of how the cumulative default rates are calculated, please see pages 2-5 of the Special Comment “Glossary of Moody’s Ratings Performance Metrics,” September 30, 2011.
Importantly, the historical default rates show that Moody's ratings accurately rank-order default risk at any given horizon for both municipal and corporate issuers, as the probability of default rises with lower ratings.

At first glance, a comparison between total municipal and corporate issuer default rates would suggest that municipal default rates for each rating category have been, on average, lower than their corporate counterparts. However, the time series of default rates for US municipal bonds are not strictly comparable with the time series of default rates for global corporate issuers during the study period. In 2010 US municipal bonds were recalibrated and migrated to the global scale. While we adjusted the rating histories of the bonds that were outstanding at the time of this migration to the global scale, ratings that were withdrawn prior to the recalibration, about half of all ratings, were not adjusted, and hence those default rates are not strictly comparable with default rates of their corporate counterparts.\textsuperscript{13}

\textsuperscript{13} For more information on the recalibration process, see "Recalibration of Moody's US Municipal Ratings to its Global Rating Scale."
How Have Municipal Ratings Performed Since the Recalibration of the US Municipal Scale?

In May 2010, Moody’s recalibrated ratings in the US municipal sector so that the expected credit risk associated with those ratings would be aligned with the meaning of Moody’s ratings assigned in the corporate sector. Following the recalibration issuers with similar ratings in those two sectors face broadly similar rates of expected credit losses when measured over long periods of time over multiple cycles.14

Since the recalibration, the US municipal sector and the US corporate sectors have shared fairly similar macroeconomic and sector risk environment, as the US has been growing consistently, albeit slowly, causing municipal tax revenues and corporate profits in the aggregate to trend upward. As a consequence, during this five-year period defaults in each sector have been driven predominantly by idiosyncratic issues, rather than sector-wide shocks, and default rates by rating category in both sectors have been low.

The tables below compare the corporate and municipal default rate experience by rating category since the date of the recalibration. As shown, municipal default rates have been the same or slightly higher than corporate default rates for all rating categories and all investment horizons since the recalibration, with the exception of the default experience of Caa-C issuers. Of course, the sample period is much too short to draw inferences from realized default experience about what we may see over long periods of time in the future. However, the limited evidence that does exist suggests that the recalibration – which generally raised municipal ratings relative to corporates – was sufficient to achieve the alignment of ratings in these two sectors.15

<table>
<thead>
<tr>
<th>US Corporate</th>
<th>Cumulative Default Rates: Post-recalibration Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>Year 1</td>
</tr>
<tr>
<td>Aaa</td>
<td>0.00%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.00%</td>
</tr>
<tr>
<td>A</td>
<td>0.00%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.03%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.00%</td>
</tr>
<tr>
<td>B</td>
<td>0.36%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>8.17%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US Municipals</th>
<th>Cumulative Default Rates: Post-recalibration Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>Year 1</td>
</tr>
<tr>
<td>Aaa</td>
<td>0.00%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.00%</td>
</tr>
<tr>
<td>A</td>
<td>0.00%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.04%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.04%</td>
</tr>
<tr>
<td>B</td>
<td>2.77%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>11.93%</td>
</tr>
</tbody>
</table>

Note: The post-recalibration period calculations start in July 2010. Source: Moody’s

---

14 Similar credit loss expectation does not mean we expect that realized credit losses will turn out the same by rating category, as that will depend on the inherently unpredictable magnitude and frequency of realized shocks in the two sectors. Rather, the similarity in expectation means simply that, “similarity in expectation”, such that we do not have a view ex ante which of the two sectors will experience higher credit losses by rating category.

15 See appendix G for a more extensive comparison between US municipal default rates and corporate default rates.
### Cumulative Default Rates, Average over the Period 1970-2014, General Obligation vs. Non-General Obligation

<table>
<thead>
<tr>
<th>Rating</th>
<th>Non-General Obligation</th>
<th>General Obligation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 2</td>
</tr>
<tr>
<td><strong>Non-General Obligation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>A</td>
<td>0.01%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.02%</td>
<td>0.08%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.42%</td>
<td>1.23%</td>
</tr>
<tr>
<td>B</td>
<td>4.20%</td>
<td>8.08%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>8.03%</td>
<td>11.45%</td>
</tr>
<tr>
<td>Speculative-Grade</td>
<td>0.01%</td>
<td>0.02%</td>
</tr>
<tr>
<td>All Rated</td>
<td>0.03%</td>
<td>0.07%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating</th>
<th>General Obligation</th>
<th>General Obligation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 2</td>
</tr>
<tr>
<td><strong>General Obligation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaa</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Aa</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>A</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Baa</td>
<td>0.00%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Ba</td>
<td>0.05%</td>
<td>0.13%</td>
</tr>
<tr>
<td>B</td>
<td>0.43%</td>
<td>0.86%</td>
</tr>
<tr>
<td>Caa-C</td>
<td>5.42%</td>
<td>5.71%</td>
</tr>
<tr>
<td>Investment-Grade</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Speculative-Grade</td>
<td>0.21%</td>
<td>0.35%</td>
</tr>
<tr>
<td>All Rated</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

**Notes:**
1. The first cohort considered is the 1-yr cohort starting on January 1, 1970. The last cohort considered is the 1-year cohort starting on January 1, 2014.
2. Transition rates are averaged over cohorts spaced 1 month apart, as opposed to cohorts spaced 1 year apart.
3. Municipal ratings have been adjusted to be consistent with the Global Rating Scale.

Source: Moody’s

The average trailing twelve-month speculative-grade municipal default rate since the financial crisis has increased to 2.2% from an average of 0.8% for the 1991-2007 period. However, the trailing twelve-month speculative-grade municipal default rate had started to increase before the recession: the average default rate between 2003 and the start of the recession was higher, at 3.5%, driven by the defaults in the housing sector (Exhibit 15). Still, this default rate is well below the wave of defaults predicted by some market commentators\(^{16}\) and its increase is also not comparable with the increase in the corresponding default rates for similarly rated corporate issuers (Exhibit 15). However, the effects of the financial crisis are far from over, and we might still see some of those effects translated into persistently higher default rates in the near term.

\(^{16}\) Such forecasts typically apply to the total, both rated and unrated, municipal market. See for example [http://www.bondview.com/blog/muni-defaults-whitney-and-roubini-32611/](http://www.bondview.com/blog/muni-defaults-whitney-and-roubini-32611/).
The one-year default rate of GO issuers on GO bonds, which averaged 0.001% for period before the start of the 2008 recession, has increased to a 0.010% average for the 2008-2014 period. Six out of the eight GO defaults occurred since the start of the financial crisis. The one-year default rate for speculative-grade GO bonds increased from an average of 0.04% for the period to 2008 to a 1.71% average for 2008-2014.

Recovery Rates

To the extent data are available, Exhibit 16 presents ultimate recovery rates for each of the 95 Moody's-rated municipal defaults since 1970. Ultimate recovery rates are calculated, whenever possible, as the discounted recovery rate based on the value creditors actually received at the resolution of the default event relative to what they should have contractually received, inclusive of any accrued interest.17 Note that recovery rates do not include payments received from insurance providers or other types of guaranty.

Average ultimate recoveries on Moody's-rated municipal bonds (at about 64%) are higher than those on senior secured bonds of corporate issuers (53% on average over a similar time period). However, municipal recovery rates are highly variable across individual bonds, with some recovering 100 cents on the dollar while others receiving just 2 cents on the dollar. GO bonds experience higher recovery rates than non-GO bonds during the study period.

17 For further details on the ultimate recoveries, see the circumstances surrounding the various defaults in Appendix A.
## Recovery Rates for Defaulted Municipal Issuers, 1970-2014

<table>
<thead>
<tr>
<th>Defaulted Obligor</th>
<th>Default date</th>
<th>Purpose</th>
<th>Security Class</th>
<th>Seniority</th>
<th>Ultimate Rating at Recovery Default(1)</th>
<th>Rating 1-Year Before Default</th>
<th>Rating 5-Year Before Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake Bay Bridge and Tunnel District(2)</td>
<td>7/1/1970</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% Baa2 Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Midlands Community Hospital</td>
<td>1/1/1978</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>85%-100% Caa2 Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Hilton Head Hospital</td>
<td>1/1/1978</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>85%-100% Ca Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Washington Power Supply System(3)</td>
<td>8/1/1983</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>40% WR WR</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Belfield (City of), ND</td>
<td>4/1/1987</td>
<td>Cities</td>
<td>GO (ULT)</td>
<td>Senior</td>
<td>55% of principal Ba2 Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Vanceburg (City of), KY</td>
<td>12/1/1987</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% Caa2 Caa2 A2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Baldwin County, AL</td>
<td>10/1/1988</td>
<td>Counties</td>
<td>GO (LT)</td>
<td>Senior</td>
<td>100% A1 A1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Metropolitan Hospital</td>
<td>12/1/1989</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>64% Caa2 Baa1 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Choate (City of) - Symmes Hospitals</td>
<td>1/1/1990</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>61% Caa2 Baa1 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Northwest General Hospital</td>
<td>4/1/1991</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>33% C Caa2 Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Downtown Hospital Association</td>
<td>8/1/1991</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% of principal and 50% of interest</td>
<td>WR Baa2 Baa2</td>
<td>n/a</td>
</tr>
<tr>
<td>Polk County, IA</td>
<td>12/1/1991</td>
<td>Counties</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>100% A2 A1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Orange County, CA</td>
<td>12/6/1994</td>
<td>Counties</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>100% A1 A1 A1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Michigan Health Care Corporation</td>
<td>6/1/1995</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>10% Caa2 B Ba2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Graduate Health System (via AHERF)</td>
<td>7/21/1998</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>41.5% projected Caa1 Ba2 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Delaware Valley Obligated Group (via AHERF)</td>
<td>7/21/1998</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>Pending B3 n/a n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Boston Regional Medical Center</td>
<td>2/1/1999</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>20% Caa2 B2 Baa2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Greater Southeast Healthcare System</td>
<td>5/27/1999</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>Less than 50% Caa3 Baa3 Baa2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Tarrant Housing Finance Corporation</td>
<td>11/15/1999</td>
<td>Housing</td>
<td>Single Family Whole Loans</td>
<td>Senior</td>
<td>Unknown Caa3 B3 B2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Marine Military Academy</td>
<td>5/1/2000</td>
<td>Education</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% of principal Baa2 Baa2 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Citizens' General Hospital</td>
<td>1/1/2001</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% Caa3 Baa3 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Genesea Hospital</td>
<td>5/1/2001</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>Undisclosed Caa2 B3 B1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Erie County Hospital Authority / Metro Health Center</td>
<td>7/1/2002</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>21% B1 B1 B1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Nebraska Investment Finance Authority / Yorkshire Development Project</td>
<td>10/1/2002</td>
<td>Housing</td>
<td>Multi-Family Subordinated</td>
<td>Senior</td>
<td>100% of principal B1 B1 A2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>St. Francis Medical Center</td>
<td>11/1/2002</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>Less than 100% for the uninsured bonds B3 Baa3 A3</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Indianapolis Econ Dev Authority / The Meadows (aka Phoenix Project)</td>
<td>7/1/2003</td>
<td>Housing</td>
<td>Multi-Family Subordinated</td>
<td>Senior</td>
<td>4% Caa3 Caa3 B2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Lakeview Apartments</td>
<td>1/1/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Subordinate</td>
<td>2% B1 Baa3 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Cicero Local Development Corporation</td>
<td>11/1/2003</td>
<td>Cities</td>
<td>Lease Rental</td>
<td>Subordinate</td>
<td>10% of principal Ba2 Baa2 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Tarrant County Housing Finance Corporation - Fair Oaks Apartments</td>
<td>1/1/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Junior subordinated</td>
<td>2% Caa2 Baa3 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Mercy Hospital and Medical Center</td>
<td>1/2/2004</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% B2 B2 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>National Benevolent Association</td>
<td>2/16/2004</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>100% Caa3 Baa3 Baa1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Magnolia Apartments</td>
<td>5/1/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>66% recovery on senior series and 0% on unrated subordinate series Caa1 Ba1 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Westridge Apartments</td>
<td>6/1/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Subordinate</td>
<td>0% Caa1 Baa1 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>6/1/2005</td>
<td></td>
<td></td>
<td>Senior</td>
<td>60% Caa1 Baa1 n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
## Recovery Rates for Defaulted Municipal Issuers, 1970-2014

<table>
<thead>
<tr>
<th>Defaulted Obligor</th>
<th>Default date</th>
<th>Purpose</th>
<th>Security Class</th>
<th>Seniority</th>
<th>Ultimate\ Ratering at Recovery\ Default</th>
<th>Rating 1-Year Before Default</th>
<th>Rating 5-Year Before Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 Fort Worth Osteopathic Hospital</td>
<td>8/1/2004</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>21% for the uninsured series</td>
<td>Baa3</td>
<td>Baa3</td>
</tr>
<tr>
<td>36 Bay Club at Mesa Cove</td>
<td>9/1/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Subordinate</td>
<td>36% of principal</td>
<td>Caa2</td>
<td>B3</td>
</tr>
<tr>
<td></td>
<td>9/1/2005</td>
<td></td>
<td></td>
<td></td>
<td>Insured bonds paid in full by MBIA</td>
<td>B1</td>
<td>Ba2</td>
</tr>
<tr>
<td>37 Riverbend Apartments</td>
<td>9/15/2004</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Junior Subordinate</td>
<td>94%</td>
<td>B2</td>
<td>Ba1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate</td>
<td>100%</td>
<td>Ba1</td>
<td>A3</td>
</tr>
<tr>
<td>38 Crossroads Apartments</td>
<td>12/31/2004</td>
<td>Housing</td>
<td>Multi-Family: Credit Enhanced</td>
<td>Senior</td>
<td>The senior series was paid by bond insurance policy and proceeds from foreclosure</td>
<td>B1</td>
<td>Ba2</td>
</tr>
<tr>
<td>39 Legacy at Anderson</td>
<td>2/1/2005</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>86% recovery on senior series and 89% on taxable series</td>
<td>A1</td>
<td>A1</td>
</tr>
<tr>
<td>40 Park at Wells Branch Apartments</td>
<td>6/1/2005</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Subordinate</td>
<td>100% par plus accrued via refinancing</td>
<td>Caa1</td>
<td>Ba3</td>
</tr>
<tr>
<td>41 Ashton Place and Woodstock Apartments</td>
<td>8/1/2005</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>96%</td>
<td>B2</td>
<td>Baa3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate</td>
<td>2%</td>
<td>Ca</td>
<td>Ba2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Junior Subordinate</td>
<td>0%</td>
<td>C</td>
<td>B2</td>
</tr>
<tr>
<td>42 River Falls Project</td>
<td>1/1/2006</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>100%</td>
<td>Ba3</td>
<td>Ba2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate</td>
<td>100%</td>
<td>B3</td>
<td>B1</td>
</tr>
<tr>
<td>43 Lee County Industrial Development Authority, Legacy at Lehigh Project</td>
<td>6/1/2006</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>100%</td>
<td>B2</td>
<td>B2</td>
</tr>
<tr>
<td>44 Cameron Crossing Project I &amp; II / Greenville Housing Finance LLC</td>
<td>6/1/2006</td>
<td>Housing</td>
<td>Mortgage</td>
<td>Senior</td>
<td>85% of principal</td>
<td>B2</td>
<td>B2</td>
</tr>
<tr>
<td>45 Canterbury3 Fountains/River Falls/Puckett Place</td>
<td>9/1/2006</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Senior</td>
<td>36% of principal</td>
<td>Ca</td>
<td>Ba2</td>
</tr>
<tr>
<td>46 Forum Health</td>
<td>9/1/2006</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>100%</td>
<td>Ba2</td>
<td>Ba1</td>
</tr>
<tr>
<td>47 Jefferson Commons at the Ballpark</td>
<td>1/1/2007</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Subordinate</td>
<td>Less than 1%</td>
<td>Caa2</td>
<td>Ba3</td>
</tr>
<tr>
<td></td>
<td>1/1/2009</td>
<td></td>
<td></td>
<td>Senior</td>
<td>Unknown</td>
<td>Caa3</td>
<td>Ba3</td>
</tr>
<tr>
<td>48 Tampa Home Mortgage Series 1983 A</td>
<td>4/1/2007</td>
<td>Housing</td>
<td>Single-Family: Whole Loans</td>
<td>Senior</td>
<td>37%</td>
<td>Caa3</td>
<td>Caa3</td>
</tr>
<tr>
<td>49 Sankofa Shule (A Michigan Public School Academy)</td>
<td>12/1/2007</td>
<td>Education</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>5% of principal and accrued interest expected</td>
<td>Ca</td>
<td>Caa3</td>
</tr>
<tr>
<td>50 Nob Hill Apartments</td>
<td>12/1/2007</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Senior</td>
<td>100% par plus accrued upon foreclosure and sale</td>
<td>Ba3</td>
<td>Ba1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate</td>
<td>50%</td>
<td>B1</td>
<td>Ba3</td>
</tr>
<tr>
<td>51 North Oakland Medical Center</td>
<td>2/1/2008</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>10.50%</td>
<td>B3</td>
<td>Ba3</td>
</tr>
<tr>
<td>52 Jefferson (County of ) Sewer Enterprise, AL</td>
<td>4/1/2008</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>54%</td>
<td>Caa3</td>
<td>A3</td>
</tr>
<tr>
<td>53 Jefferson (County of), AL</td>
<td>9/15/2008</td>
<td>Counties</td>
<td>GO (LT)</td>
<td>Senior</td>
<td>88%</td>
<td>Ba3</td>
<td>Aa2</td>
</tr>
<tr>
<td>54 Fullerton Village at DePaul University</td>
<td>12/1/2008</td>
<td>Housing</td>
<td>Revenue</td>
<td>Senior</td>
<td>Pending</td>
<td>C</td>
<td>B3</td>
</tr>
<tr>
<td>55 St. Louis Industrial Development Authority / St Louis Convention Center Hotel Project</td>
<td>12/15/2008</td>
<td>Infrastructure</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>34%</td>
<td>Caa2</td>
<td>Caa2</td>
</tr>
<tr>
<td>56 Harrisburg (City of)</td>
<td>6/1/2009</td>
<td>Cities</td>
<td>GO (ULT) and GO- guaranteed</td>
<td>Senior</td>
<td>75%</td>
<td>Ba2</td>
<td>Ba2</td>
</tr>
<tr>
<td>57 Lower Bucks Hospital</td>
<td>12/15/2009</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>Approximately 33% estimated</td>
<td>Caa3</td>
<td>B3</td>
</tr>
</tbody>
</table>
### Exhibit 16

**Recovery Rates for Defaulted Municipal Issuers, 1970-2014**

<table>
<thead>
<tr>
<th>Defaulted Obligor</th>
<th>Default date</th>
<th>Purpose</th>
<th>Security Class</th>
<th>Seniority</th>
<th>Ultimate Rating at Recovery Default</th>
<th>Rating 1-Year Before Default</th>
<th>Rating 5-Year Before Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las Vegas Monorail</td>
<td>1/13/2010</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>2% Ca Caa2 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Waters at Northern Hills Apartments</td>
<td>2/1/2010</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Subordinate</td>
<td>100% par plus accrued upon sale of project Ca B3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honey Creek Apartments</td>
<td>4/1/2010</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Subordinate</td>
<td>100% par plus accrued via refinancing Ca B3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOH-Golf Villas, Rivermill, Village Square Apartments</td>
<td>6/1/2010</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Senior Subordinate</td>
<td>75% Caa1 Caa1 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whispering Palms Apartments</td>
<td>7/1/2010</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Senior</td>
<td>100% Caa1 B1 B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pegasus Landing &amp; Pegasus Pointe at University of Central Florida</td>
<td>10/1/2010</td>
<td>Housing</td>
<td>Revenue</td>
<td>Senior</td>
<td>Pending Caa3 Baa3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rutland Place Apartments</td>
<td>11/1/2010</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Senior</td>
<td>73.6% of principal Caa1 Caa1 B3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boston Industrial Development Finance Authority / C rosstown Center Project</td>
<td>5/24/2011</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>Pending Caa3 Caa3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Rosa Bay Bridge Authority</td>
<td>7/1/2011</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>5.08% Ca B3 B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charitable Leadership Foundation</td>
<td>7/1/2011</td>
<td>Education</td>
<td>Revenue</td>
<td>Senior</td>
<td>Pending Ca Caa1 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern California Logistics Airport Authority / the City of Victor Valley and Victorville Economic Development Authority</td>
<td>12/1/2011</td>
<td>Cities</td>
<td>Tax Allocation/Increment</td>
<td>Subordinate</td>
<td>Pending B1 Ba2 n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KidsPeace, Inc</td>
<td>1/15/2012</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>9.3% for principal and accrued interest; excludes any value for new bonds Caa2 Caa2 B2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wenatchee (City of), WA</td>
<td>6/1/2012</td>
<td>Cities</td>
<td>GO (LT)</td>
<td>Senior</td>
<td>100% B2 A1 A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockton (City of), CA(1)</td>
<td>6/28/2012</td>
<td>Cities</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>50% Caa3 Baa2 A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Opportunity for Housing-Colinas, LLC</td>
<td>7/1/2012</td>
<td>Housing</td>
<td>Multi-Family: Unenhanced</td>
<td>Subordinate</td>
<td>100% Caa2 B3 B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oakdale (City of) Sewer Enterprise</td>
<td>8/31/2012</td>
<td>Infrastructure</td>
<td>Revenue</td>
<td>Senior</td>
<td>93.5% Baa1 A3 A1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jefferson (County of), AL</td>
<td>1/1/2013</td>
<td>Counties</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>100% Ca Caa2 Aa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Penn Allegheny Health System</td>
<td>4/30/2013</td>
<td>Healthcare</td>
<td>Revenue</td>
<td>Senior</td>
<td>87.5% for most debt; remainder pending Ca Caa1 Ba3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pontiac City School District, MI</td>
<td>5/1/2013</td>
<td>School District</td>
<td>GO (LT)</td>
<td>Senior</td>
<td>100% B2 B2 A2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Detroit, MI</td>
<td>6/14/2013</td>
<td>Cities</td>
<td>Lease Rental</td>
<td>Senior</td>
<td>12% Caa3 B3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Detroit, MI</td>
<td>7/18/2013</td>
<td>Cities</td>
<td>GO (ULT)</td>
<td>Senior</td>
<td>69% Caa3 B3 Baa3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Detroit, MI</td>
<td>7/18/2013</td>
<td>Cities</td>
<td>GO (LT)</td>
<td>Senior</td>
<td>41% Ca Caa1 B1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detroit Academy of Arts &amp; Sciences, MI</td>
<td>10/1/2013</td>
<td>Education</td>
<td>Revenue</td>
<td>Senior</td>
<td>49% Caa2 Caa2 Ba1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Estimated Average Recovery(1)** 64%

**Estimated Median Recovery** 75%

Notes:

1. Dun & Bradstreet rated Chesapeake Bay Bridge and Tunnel District at the time of default. The ratings of the issuer's debt were migrated into Moody's portfolio of ratings around 1972.
2. Ratings were withdrawn on Washington Power Supply System a year and a half before default. Similarly, the ratings on Downtown Hospital Association were withdrawn a month before default.
3. Rating histories are adjusted for the recalibration to the global scale to the extent that ratings were outstanding at the time of the recalibration (see Appendix E for more details). In instances where more than one debt with the same financing purpose and security class exist at a given point in time for a given obligor, we choose the worst rating to represent that obligor's rating for the specific financing purpose and security class (see Appendix D for more details on the methodology).
4. n/a indicates no Moody's ratings at the time.
5. Average and median recoveries are over the recoveries of the most senior debt across all defaults for which we have recovery information.
6. For purposes of this study, California pension obligation bonds and certificates of participation are categorized as "lease rental" because they are secured by a general fund pledge, which analytically we view as more similar to a lease rental pledge than to a limited or unlimited general revenue pledge.

Source: Moody's
Accuracy Measures

The cumulative default rates presented in Exhibit 13 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 calculate the average defaulter position (AP), which measures the ordinal power of ratings. The position of any credit is defined as the share of credits rated equal to or better than it, assuming each credit occupies the midpoint of its rating category. The AP is simply the average position of the defaulted credits. Intuitively, a more powerful rating system should have lower-rated defaults and higher rated non-defaults, meaning the average position of defaulters should be high for an effective rating system. AP is bounded between 0 and 1, with 1 indicating perfect sorting power, 0.5 indicating no power, and 0 indicating perfectly negative power. 18

By this measure, municipal ratings have generally greater levels of accuracy than corporate ratings in differentiating defaulters from non-defaulters. For example, over the entire period 1970-2014, the one-year AP of municipal issuers was 0.96, and for corporate issuers of 0.88. The five-year AP is 0.91 and 0.84 for municipal and corporate issuers respectively.

Exhibit 17 reveals that between 1970 and 2014, the average default position for municipal issuers has been mostly above that the average default position for corporate issuers. However, Exhibit 17 also reveals that AP can be volatile if there is a single highly rated defaulter. For example, the default of Baldwin City in late 1988, which was rated A1 one-year before default, is responsible for the first spike in Exhibit 17; a similar effect is seen due to the default of Connecticut Housing Authority in July 1994, rated Aa2 one-year before default.

---

18 A discrete rating system can never obtain an AP of 1 (or 0), hence we make a correction for the default rate itself. For details, please see “Glossary of Moody’s Rating Performance Metrics.”
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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.
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70) City of Wenatchee, WA
71) City of Stockton, CA
72) American Opportunities for Housing—Colinas, LLC, TX
73) City of Oakdale Sewer Enterprise, CA
74) Jefferson County Public Building Authority (Jefferson County Lease)
75) West Penn Allegheny Health System, PA
76) Pontiac City School District, MI
77) City of Detroit, MI Certificates of Participation
78, 79) City of Detroit, MI Limited Tax and Unlimited Tax General Obligation
80) Detroit Academy of Arts & Sciences, MI
1) **Chesapeake Bay Bridge & Tunnel District, VA**

- CUSIP: 165141A (applied retroactively as bond issue preceded CUSIPs)
- Default Date: July 1, 1970
- Obligor: Chesapeake Bay Bridge and Tunnel District
- Issuer: Chesapeake Bay Bridge and Tunnel District
- Cause of Default: Insufficient vehicle toll revenues led to the failure to pay interest on $100 million third lien (interest only) Series C bonds beginning July 1970, six years after project completion in April 1964.
- Recovery: Increased traffic and toll revenues linked to the military build-up in the region in the late 1970s enabled the District to emerge from default in 1985 by repaying all past due interest. After refilling various reserve accounts, the District began redeeming Series C bonds in 1988.

The Chesapeake Bay Bridge and Tunnel is a classic example of a transportation infrastructure project that defaulted after over-optimistic projections of toll revenues proved unrealistic. Conceived of as a permanent replacement for the traditional ferry service between Virginia Beach and the southern tip of Eastern Shore across the mount of Chesapeake Bay, the project was authorized by the state of Virginia and bonds were sold in 1956. At the time, the 17.6 mile project was an engineering marvel, comprising two one-mile tunnels in mid Bay linked by 12 miles of two-lane trestle causeways with four man-made islands and two truss bridges; most of the project, including the tunnels, was built using prefabricated components. The bridge-tunnel configuration was necessary to ensure that the Navy’s access to the Atlantic from its bases in Hampton Roads would not be blocked. Construction commenced in September 1960 and was finished in April 1964, financed entirely by the $200 million 1960 revenue bond issuance.

The 1960 toll revenue bonds comprised $70 million First Pledge Series A, $30 million Second Pledge Series B, and $100 million Third Pledge Series C; the Series C was interest only, without any scheduled amortization, and was to be redeemed with excess revenues at the bottom of the funds flow beginning July 1970.

The project’s original financial feasibility reflected the assumption that a new highway linking Delaware and Virginia Beach would take north-south traffic from I-95/I-5, while the destination attraction was actually much more local. The project risk was, however, hinted at in the bond structure, where the third-lien interest-only Series C bonds comprised half of principal. Ultimately, the Series C bonds were taken out of default by the late 1970 military buildup in Hampton Roads, which led to substantial residential development on the Eastern Shore and the growth of daily commuting traffic over the bridge-tunnel.

The project was subsequently widened with a parallel trestle causeways beginning in 1995.

2) **Midlands Community Hospital**

- CUSIP: 803728A
- Default Date: January 1978
- Obligor: Midlands Community Hospital
- Issuer: Sarpy County Hospital Authority Number 1
- Cause of Default: Inability to recruit physicians.
Recovery: 100% of missed principal payments due between January 1978 and January 1982 were paid between nine months and three years late. (Source: Moody’s reports).

Doctors Hospital in Omaha, Nebraska was an aging hospital with declining patient usage and outdated equipment when, in the 1960s, its board of directors decided to close it and build a new 208-bed replacement called Midlands Community Hospital, located 12 miles from Omaha in the town of Papillion. The ability to recruit physicians from Doctors Hospital in Omaha to practice at Midlands Community was a key factor in the future success of the new facility, but this 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. While no interest payments were missed, the principal payments due between January 1978 and January 1982 were paid between nine months and three years late, with the final catch-up payment made September 1, 1992.

3) Hilton Head Hospital, SC

CUSIP: 074349AH4
Default Date: January 1, 1978
Obligor: Hilton Head Hospital
Issuer: Beaufort County
Defaulted Bonds: Revenue Series 1974; approximately $11 million of debt affected.
Cause of Default: Over-optimistic feasibility forecasts and low patient utilization levels.
Recovery: Bonds were redeemed at par plus call premium from the proceeds of the sale of the hospital. (Source: Moody’s files).

In 1974, Beaufort County, South Carolina issued $11.2 million of revenue bonds to finance the first healthcare facility on Hilton Head Island, which was to be repaid from gross revenues of the hospital. The development of healthcare facilities on the Island was considered desirable given the already substantial growth of residential, retirement, and resort facilities on Hilton Head, which was expected to continue. The feasibility study for the new hospital accordingly projected high utilization of the proposed 40 acute-care and 40 skilled nursing beds, and indicated that revenues would be sufficient to cover debt service after use of the capitalized interest fund. After construction, however, it became apparent that the growth forecasts for the Island had been overestimated, in part because of the national economic recession of 1974-75. Further, the hospital opened without being adequately staffed in certain areas so that patient flow was lost to hospitals in nearby Savannah, GA. Patient utilization and revenues were thus well below projected levels, financially straining the hospital. In April 1976, the hospital missed payments on a sixth 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.

The bonds ultimately became current in December 1988, and were called in full in January 1995.

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

CUSIP: 939821
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).

The WPPSS default was a classic example of the potentially speculative nature of a construction project, where the confluence of cost overruns, schedule delays, design changes, and project management errors ultimately led to a bond default. It was also an example of how a nominally strong security pledge can be undercut when a project financing no longer has an economic rationale.

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 multiple projects, in part caused by a redesign to meet new safety standards, drove the combined cost of completing the projects to three to four times the original estimate. At the same time, the demand for energy was declining due to energy conservation triggered by high energy bills and a regional economic slowdown. In January 1982, WPPSS abandoned construction on Projects 4 and 5. In January 1983, however, the public utilities participating in WPPSS were obligated to begin repaying the debt incurred by the abandoned projects, even though the participants would never see any electricity from the projects. To repay the debt, the utilities would have had to dramatically increase electricity rates on their customers.

The uproar from the rate increases resulted in legal 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 to that date.

5) Belfield, ND

CUSIP: 077689C
Default Date: April 1987
Obligor: Belfield
Issuer: Belfield
Defaulted Bonds: General Obligation; $1.9 million of debt affected.
Cause of Default: Insufficient property taxes to repay existing debt.
Recovery: Approximately 55% of principal (Source: Moody’s files).
The oil boom of the early 1980s led to a severe housing shortage in portions of North Dakota as high paying jobs began attracting workers and their families. In order to help accommodate this influx of new residents, the town of Belfield, North Dakota, issued general obligation bonds to extend roads and water and sewer infrastructure to a tract of land planned for residential development. The bonds were expected to be repaid with taxes collected from the new properties within the development, but were backed by a GO UBT pledge. Within a few years, however, the oil market sharply reversed and the regional economic boom collapsed, as did the population influx. With only three homes built on the Belfield tract, the property taxes generated were insufficient to repay the existing debt. A deficiency levy was subsequently instituted on all properties in Belfield to make up the shortfall, but this levy rose to levels that forced an increasing number of homeowners to abandon their properties or otherwise fail to pay their property taxes. Ultimately, the town council refused to raise the levy any further and Belfield defaulted on its outstanding debt.

In July 1991, bondholders agreed to accept a settlement of 55% of principal, with no back interest. The settlement was paid through a combination of the town’s deficiency levy and some state defaults.

<table>
<thead>
<tr>
<th>6) Vanceburg, KY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUSIP: 921547A</td>
</tr>
<tr>
<td>Default Date: December 1, 1987</td>
</tr>
<tr>
<td>Obligor: Vanceburg</td>
</tr>
<tr>
<td>Issuer: Vanceburg</td>
</tr>
<tr>
<td>Cause of Default: Rising project costs, delays in completion, and consequent lawsuit by a key wholesale customer.</td>
</tr>
<tr>
<td>Recovery: Bondholders received par plus accrued interest through May 26, 1988 from the sale of the project. (Source: Moody’s files).</td>
</tr>
</tbody>
</table>

Vanceburg issued its electric revenue bonds in 1979 to fund the construction of a new hydroelectric generating plant. The bonds were secured by a lien on revenues of the Vanceburg Electric System, but the bulk of the power produced from the new plant was to be sold to the Hamilton, Ohio Electric Utility, which was Vanceburg’s largest electricity customer. The project was plagued by a series of problems including cost overruns, the sitting of the transmission lines that would deliver the power from Greenup to Hamilton, and a six-month delay in overall project completion. In 1984, the City of Hamilton 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.

<table>
<thead>
<tr>
<th>7) Baldwin County, AL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUSIP: 057845A, 057845B</td>
</tr>
<tr>
<td>Default Date: October 1, 1988</td>
</tr>
<tr>
<td>Obligor: Baldwin County</td>
</tr>
<tr>
<td>Issuer: Baldwin County</td>
</tr>
<tr>
<td>Defaulted Bonds: General Obligation Warrants Series 1984 and 1985; approximately $6 to $8 million of debt affected.</td>
</tr>
</tbody>
</table>
Cause of Default: Diversion of funds to meet operating obligations instead of debt service.

Recovery: 100% of principal and interest (Source: Moody's reports).

On October 1, 1988, Baldwin County defaulted on two series of outstanding General Obligation Warrants when, faced with insufficient funds on hand, officials decided to use available monies to pay for operating expenses instead of scheduled debt service payments. The County carried an “A” rating on the bonds at the time. Moody’s dropped the County’s rating to “B” that month as a result of the default. With help from trustee AmSouth Bank, County management was able to come up with sufficient funds 15 days later, and bondholders received 100% of past due principal and interest.

8) Metropolitan Hospital, PA

CUSIP: 717826
Default Date: December 1989
Obligor: Metropolitan Hospital
Issuer: Philadelphia Hospitals Authority
Cause of Default: Low occupancy rates led to financial distress.
Recovery: Approximately 64% of par (Source: Moody's files).

The Philadelphia Hospitals Authority bonds were issued to construct Metropolitan Hospital, a new osteopathic facility located in downtown Philadelphia. Primarily due to low occupancy rates, the hospital began 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, triggering the default.

Settlement disbursements on the defaulted bond commenced December 1991 after the October 29 plan of reorganization was approved, which involved liquidating the hospital's three buildings. Through December 1994, six partial settlement payments were distributed, totaling $40.726 million to bondholders; settlement distributions included interest and partial principal payments ranging from about 25% to 65% of par.

9) Choate-Symmes Hospitals, MA

CUSIP: 575850D
Default Date: January 1, 1990
Obligor: Choate-Symmes Hospitals (City of Choate)
Issuer: Massachusetts Health and Educational Facilities Authority
Defaulted Bonds: Revenue Bonds Series 1982; $32 million of debt affected.
Cause of Default: Liquidity shortfall triggered by return of over-collected revenues.
Recovery: Approximately 61% of par (Source: Moody's files).

The 1982 Massachusetts Health and Educational Facilities Authority bonds were issued to help Choate-Symmes modernize its aged plant, thereby remedying code deficiencies, easing capacity constraints, and centralizing 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 over-collected revenue. The hospital was unable to deal with the resulting liquidity loss, leading it to file for bankruptcy protection in October 1989. The liquidity shortfall remained unresolved, and Choate-Symmes failed to make its debt service payment due on its revenue bonds on January 1, 1990. The hospital emerged from bankruptcy by August 1990, and with the sale of sister facilities began partial repayment to bondholders that October, who received a combination of replacement bonds and cash equivalent to 61% of original par.

10) Northwest General Hospital, MI
   » CUSIP: 594648PW1
   » Default Date: April 1991
   » Obligor: Northwest General Hospital
   » 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 and competitive position.
   » Recovery: Approximately 24% of par (Source: Moody’s files).

The Series 1980 bonds were issued by the Michigan State Hospital Finance Authority to construct an addition to Northwest General Hospital, a 104-bed facility located in Detroit. Despite both the expansion project and ongoing financial and managerial support from an outside organization, Botsford General Hospital, Northwest General’s financial operations progressively deteriorated throughout the 1980s. 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 admitting physicians were all cited as reasons for the eventual closure of Northwest General Hospital by its management in September 1990. The Michigan State Hospital Finance Authority provided funds to make the debt service payment immediately due in October 1990, although it was not legally obligated to do so. With no ongoing operations and no further external support, the bonds defaulted in April 1991.

The subsequent sale of the hospital and its equipment, collections of accounts receivables, and other remaining funds enabled the trustee to make an initial distribution of about $800,000 to bondholders in September 1991. A final distribution was made December 15, 1993, bringing total recovery to about $1,867 per bond, equivalent to 33% of par.

11) Downtown Hospital Association, TN (dba Downtown General Hospital)
   » CUSIP: 162405AL8
   » Default Date: August 1, 1991
   » Obligor: Downtown Hospital Association
   » Issuer: Chattanooga Health and Education Facilities Board
   » Defaulted Bonds: Revenue Series 1975; $2.2 million of debt affected.
   » Cause of Default: Inability to respond to changing Medicare reimbursement and competitive environments.
   » Recovery: All principal and approximately 50% of interest owed (Source: Moody’s files).

In 1975, Chattanooga Health and Education Facilities Board issued bonds to finance the construction of Downtown General Hospital, a new 54-bed facility in Chattanooga that replaced an aging hospital of a
similar size. The bonds were secured by a first lien on gross revenues of the hospital. However, by the 1980s several changes in the healthcare industry began to adversely affect smaller hospitals like Downtown General, the most notable of which was the introduction of the Medicare Prospective Payment System (PPS) and the broader shift away from exclusively inpatient services. Downtown General handled neither transition well. The move from cost basis to a PPS for Medicare reimbursement hurt the hospital financially, and its inability to diversify into new service lines rendered it susceptible to competition from outpatient services. 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 fully depleted, triggering the default.

At this point, bondholders agreed to a two year moratorium on interest payments in the hope that this would allow the hospital time to regain its financial health, but Downtown also put itself up for sale. The hospital was ultimately sold by the spring of 1993, and the proceeds enabled the bonds to be called in April 1993.

12) Polk County, IA

» CUSIP: 731211A
» Default Date: December 1991
» Obligor: Polk County
» Issuer: Polk County
» Cause of Default: Bankruptcy court stay of County debt service payments.
» Recovery: Reportedly 100% through proceeds of the 1993 refunding issue. (Sources: Moody's files, Polk County debt filings).

The Polk County default was an early example of the automatic stay provisions blocking debt service payments to bondholders. Polk County’s 1984 Sports Facility Revenue Bonds had been issued to finance track construction at Prairie Meadows racetrack; the bonds were secured by lease payments from the Racing Association of Central Iowa (RACI), but also by an unconditional commitment from Polk County to the extent necessary. Because of its ultimate responsibility for the debt, the County began taking action to curtail losses associated with the racetrack, including cutting back on RACI’s subsidy. In response, RACI sought protection under Chapter 11 of the Bankruptcy Code and filed for bankruptcy on November 27, 1991. Although the County had advanced funds for the upcoming debt service payments, these monies were subjected to the automatic stay under Section 362(a) of the Bankruptcy Code as a result of RACI’s filing, and so were unavailable to make the necessary debt service payment due December 1, 1991. The bankruptcy court subsequently released sufficient funds to pay this debt service on January 10, 1992. Funds were again released in May 1992, which paid accrued interest on the late December 1991 payment, but which covered only 95% of the debt service due June 1, 1992. The County’s appropriation for the December 1992 payment was also delayed. By spring 1993, RACI emerged from bankruptcy; Polk County refunded the defaulted 1984 lease revenue bonds with GO debt in June 1993, which reportedly made whole all bondholders owed principal, interest, and accrued interest.

13) Connecticut Housing Authority, CT

» CUSIP: 207747KS4
» Default Date: July 1, 1994
» Obligor: Connecticut Housing Authority
» Issuer: Connecticut Housing Authority
CREDIT POLICY

Defaulted Bonds: Mortgage Revenue Bonds (New Haven FHA-Insured Projects, Series 1983); $4.8 million of debt affected.

Cause of Default: Delinquencies and defaults on the loans.

Recovery: Not available.

Connecticut Housing Authority’s Mortgage Revenue Bonds were issued to finance multi-family housing projects in the city of New Haven. The repayment of the bonds was secured by the underlying mortgage loans that were in turn insured by the Federal Housing Administration (FHA) pursuant to Section 203(k) of the National Housing Act. The housing projects performed poorly. Loan delinquencies and defaults, less than full payment from the US Department of Housing and Urban Development (HUD) on the defaulted loans, and lengthy foreclosure proceedings all combined to shrink program revenues to the points where the Authority was unable to make its scheduled debt service payments.

14) Orange County, CA

CUSIP: 68428LAN4

Default Date: December 6, 1994

Obligor: Orange County

Issuer: Orange County

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, interest and accrued interest payments were made to bondholders by 1996.

(Sources: Moody’s reports, external reports).

The Orange County default and bankruptcy was the result of a liquidity crisis triggered by investment losses. At the time, it was the largest municipal bankruptcy in US history.

In late 1994, the Orange County Investment Pool (OCIP) suffered losses of approximately $1.5 billion out of a total $7.5 billion pool. The County Treasurer had pursued an investment strategy involving high-risk, rate-sensitive securities, and leveraging of the pool to maximize returns. During the period when interest rates had declined and remained low, the OCIP strategy succeeded. However, when interest rates began to rise in 1994, OCIP’s gains turned into very large losses. The liquidity crisis was triggered when OCIP was unable to repay a $1.2 billion loan to a Wall Street creditor, who refused to extend the loan and began selling the securities that OCIP had pledged as collateral. To protect itself from other creditors, Orange County filed for bankruptcy for itself and OCIP on December 6, 1994.

Separately, the County had pledged that the OCIP would purchase any tendered Pension Obligation Series B bonds. As a result of the bankruptcy filing, however, OCIP was unable to fulfill this pledge and the pension bonds defaulted on December 8, 1994. The County did not, however, default on the scheduled principal and interest payments of the Series B bonds or any of its other long-term obligations.

It the aftermath of the filing, Orange County successfully petitioned the bankruptcy court to release funds for upcoming monthly interest payments on four series of short-term Tax and Revenue Anticipation Notes (TRANs) and Teeter Plan Notes, but payments were delayed by a few days each in January and February pending court approval. By March, however, the County had improved its procedures with the bankruptcy court, and note interest payments were timely thenceforward.
15) Michigan Health Care Corporation, MI

- CUSIP: 430586, 251145AA6
- Default Date: June 1, 1995
- Obligor: Michigan Health Care Corporation
- Issuer: Highland Park Hospital Finance Authority
- Cause of Default: Service area decline, long-term financial strain, and automatic stay from bankruptcy.
- Recovery: Approximately 24 to 54% of par, depending on series (Source: Bloomberg).

Michigan Health Care Corporation’s main facilities were located in and around the Detroit area, which by the early 1990s was suffering from high unemployment and population losses from the contraction in the domestic automotive industry. The Corporation was increasingly strained by competition from an oversupply of beds in the Detroit healthcare market, substantial litigation costs, high debt, and inadequate reimbursement for its high Medicaid and indigent patient load. These factors eventually caused Michigan Health Care Corporation to file for Chapter 11 Bankruptcy on March 31, 1995. An automatic stay under Section 362(a) of the Bankruptcy Code was invoked as a result of the bankruptcy filing, and the bond trustee was prohibited from using funds on hand to pay debt service, resulting in the June 1, 1995 payment default.

16 & 17) Allegheny Health and Education Research Foundation, PA

- CUSIP: 709172 (Delaware Valley Obligated Group); 717825, 717903 (Graduate Health System)
- Default Date: July 21, 1998
- Obligors: Delaware Valley Obligated Group (DVOG) and Graduate Health System (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 Health System; approximately $200 million of debt affected.
- Cause of Default: Financial deterioration, reduction in Medicaid payments, and an eventual bankruptcy filing.
- Recoveries: Pending the AHERF bankruptcy case was closed on May 29, 2013, according to bond trustee. AHERF reportedly plans to make a final distribution in or about June 2014, and that no further distributions will be made to creditors, including bondholders, after that time.
- DVOG: Although retail bondholders continue to be paid in full under MBIA insurance, it is unclear whether DVOG has paid any amounts to MBIA.
- Graduate: 41.5% recovery of principal and accrued interest, pending any final disbursements in June 2014 as mentioned above. Through June 2013, bondholders had received distributions of $75.015 million in principal (relative to $155.940 mm outstanding par) and $3.783 million in interest. (Sources: trustee’s reports; Moody’s files).

On July 21, 1998, following a long period of financial deterioration, Allegheny Health and Education Research Foundation (AHERF) filed to seek bankruptcy protection under Chapter 11 of the Bankruptcy Code. The filing triggered an automatic stay under Section 362(a) of the Code and as a result AHERF defaulted on some of its outstanding bond issues.
The filing by AHERF as the parent organization included several other entities including the Philadelphia operations of Delaware Valley Obligated Group and Graduate Health System, as well as the physician organization, Allegheny University Medical Practices.

Beginning in the mid 1980’s, AHERF began an expansion from its Pittsburgh base into the highly competitive Philadelphia healthcare 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 healthcare 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 costly endeavors into physician practices. In 1998, AHERF attempted to sell a large portion of its Philadelphia holdings. When the transaction later fell apart in June 1998, AHERF’s options were limited, and one month later several of its entities filed for bankruptcy.

AHERF’s successor entity went on to manage a large Pittsburgh area health network. Although operationally unrelated to its forbear, West Penn Allegheny Health System was unable to sustain its competitive position and has commenced a major restructuring in 2013 that has resulted in a default via a forced exchange.

18) Boston Regional Medical Center, MA

- CUSIP: 575851
- Default Date: February 1999
- Obligor: Boston Regional Medical Center (BRMC)
- Issuer: Massachusetts Health and Educational Facilities Authority
- Cause of Default: Large operating deficits.
- Recovery: Approximately 20% recovery (Source: Moody’s reports).

In February 1999, Boston Regional Medical Center (BRMC) declared bankruptcy after several years of financial decline, which resulted in a default on principal and interest payments due on the Series 1993B bonds.

Four years of large operating deficits steadily eroded the hospital’s balance sheet, which became characterized by a dangerously low cash position, steadily increasing debt due to use of local lines of credit, and a negative fund balance. Ongoing equity transfers to a physician practice subsidiary also contributed to a 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 $23 million and was used to pay secured creditors first, and then unsecured creditors including Series 1993 bondholders. The partial distribution to bondholders was reportedly made December 9, 2005. At the time of the liquidation, approximately $30 million of Series 1993 bonds were outstanding.
19) Greater Southeast Healthcare System, MD

- **CUSIP:** 741710A
- **Default Date:** May 1999
- **Obligor:** Greater Southeast Healthcare System
- **Issuer:** Prince George’s County
- **Defaulted Bonds:** Revenue Bonds Series 1993; $46 million of debt affected.
- **Cause of Default:** Decreasing Medicaid reimbursement, declining patient volume, and managerial problems resulting in system bankruptcy.
- **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. 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, the 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 for a portion of Washington D.C. This service area, however, was characterized by an aging and declining population, below average socioeconomic indicators, and an increasing reliance on governmental payers.

The System’s financial situation deteriorated significantly with changes in reimbursement from Medicaid, a legislative elimination of D.C. Medicaid Disproportionate Share payments, and new market forces, which together contributed to the declining patient volume and lower reimbursement rates. Management turnover and labor disputes further weakened the System’s credit profile, leading to the May 1999 bankruptcy filing and suspension of debt service payments.

Given the local importance of the System, it was thought that the District of Columbia might provide some financial assistance post-filing, but this did not materialize. In November 1999, the sale of Greater Southeast Community Hospital to Doctors Community Healthcare Inc. for $22.5 million was approved. The sale enabled a partial recovery for bondholders, and the resulting distribution was reportedly made on December 10, 2001.

20) Tarrant County Housing Finance Corporation

- **CUSIP:** 876394D
- **Default Date:** November 15, 1999
- **Obligor:** Tarrant County Housing Finance Corporation
- **Issuer:** Tarrant County Housing Finance Corporation
- **Defaulted Bonds:** Home Mortgage Revenue Bonds, Series 1983A; $37.225 million of debt affected.
- **Cause of Default:** Asset deterioration, mortgage insurer canceled all policies.
- **Recovery:** Not available.

The Tarrant County Housing Finance Corporation default resulted from deterioration in the underlying mortgages compounded by the cancellation of its mortgage guarantee and pool policies.
The Home Mortgage Revenue 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 Ticor Mortgage Insurance Company, which also issued the mortgage pool policy. Ticor began experiencing financial difficulties in early 1986 and in 1988 all mortgage guarantee policies issued by Ticor were cancelled. The pool suffered significant asset deterioration as a result of defaulted loans that were not covered by insurance, which led to a failure to make a required redemption payment to bondholders on November 15, 1999.

21) Marine Military Academy, TX  
   - CUSIP: 413007A  
   - Default Date: May 2000  
   - Obligor: Marine Military Academy  
   - Issuer: Harlingen Higher Education Facilities Corporation  
   - 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 had been the defendant in several civil lawsuits accusing the Academy for not adequately supervising cadets in connection with hazing incidents that occurred between 1993 and 1997. The potential liabilities of the Academy from the litigation exceeded its insurance coverage, and as a protective measure it 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 a settlement with bondholders for the 1995 and 1997 bonds. While all principal payments were made for both series of bonds, bondholders did not receive the full value of interest accrued during bankruptcy.

22) Citizens’ General Hospital, PA  
   - CUSIP: 961008G  
   - Default Date: First Quarter, 2001  
   - Obligor: Citizens’ General Hospital (CGH)  
   - Issuer: Westmoreland County Industrial Development Authority  
   - Cause of Default: Operating losses reflecting competition and scale.  
   - Recovery: Full repayment of principal and accrued interest (Source: Bloomberg).

Citizens’ General Hospital was a small primary and secondary care facility located in New Kensington, Pennsylvania. Given to its small size and pressures stemming from the highly competitive Pittsburgh healthcare market, the hospital incurred several years of large 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. Subsequently, by August 2003, CGH bondholders were fully repaid all owed principal and accrued interest.
23) Genesee Hospital, NY

- CUSIP: 610755P
- Default Date: May 2001
- Obligor: Genesee Hospital
- Issuer: Monroe County Industrial Development Agency
- Cause of Default: Operating losses and overspending on capital.
- Recovery: Undisclosed; an October 2003 distribution of 6.71% of principal was reported but final distributions following the sale of the property in 2006 are unknown. (Source: Bloomberg).

The May 2001 Genesee Hospital defaulted followed a string of serious operating losses between 1998 and 2000 that ultimately caused it to be shut down by its parent, ViaHealth, in the second quarter of 2001. Although certain of Genesee’s bank loans were guaranteed by ViaHealth, neither series of the 1991 bonds were; Rochester General Hospital, another ViaHealth entity, was also not legally obligated on Genesee’s debt. The Genesee Hospital company was legally dissolved and the project property was sold in April 2006 for redevelopment; certain unsecured creditors were paid in January 2007.

24) Metro Health Center, PA

- CUSIP: 295200N
- Default Date: July 01, 2002
- Obligor: Metro Health Center
- Issuer: Erie County Hospital Authority
- Cause of Default: Low liquidity levels and unprofitable operations.
- Recovery: Approximately 21% recovery (Source: Trustee notice to bondholders).

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. Following a 17% decline in inpatient admissions and a 19% decline in revenues between 1998 and 2001, Metro Health began tapping its cash reserves to fund continuing operations. As a result of the hospital’s low liquidity levels and unprofitable operations, Metro Health Center declared bankruptcy on July 1, 2002 and defaulted on its Series 1992 bonds. It finally closed its doors effective July 1, 2003.

The bankruptcy trustee allowed Metro Health to attempt to reorganize and operate as a debtor-in-possession in bankruptcy, rather than immediately seeking its liquidation. 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%. 
25) Yorkshire Development Project, NE

- **CUSIP:** 639673HU9
- **Default Date:** October 1, 2002
- **Obligor:** Nebraska Investment Finance Authority (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:** Poor property management and upkeep that led to a loss of Section 8 subsidies for many units.
- **Recovery:** Bondholders recovered 100% of principal (Source: Bloomberg).

The Series 1993 Multi-Family Housing Revenue Bonds issued through the Nebraska Investment Finance Authority financed the acquisition and rehabilitation of 63 housing units in Omaha, Nebraska, which were subsidized by Section 8 Housing Assistance Payments from HUD.

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 an outright payment default on the $140,000 of principal and $15,618.75 of interest due on October 1, 2002. The project was sold relatively quickly thereafter, on May 2, 2003, and in the final distribution bondholders recovered 100% of principal.

26) St. Francis Medical Center, PA

- **CUSIP:** 04232L, 01728AP
- **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 and market competition.
- **Recovery:** Ambac-insured Series 1992 bonds paid in full; final recovery on other series unknown but less than 100%. (Source: Moody’s reports).

St. Francis Medical Center’s November 2002 default resulted from its inability to compete in a challenging Pittsburgh market, which produced several years of increasing operating losses and a 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 sell off portions of the system.

The default directly affected approximately $50 million of insured Series 1992 bonds and approximately $29 million of uninsured Series 1997 bonds. However, St. Francis Medical Center had also acted as a guarantor to St. Francis Hospital of New Castle, which defaulted on $15 million of its Series 1992 bonds, as well as St. Francis Health Care Services, which defaulted on approximately $3 million of its Series 1993 bonds. 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%.

27) Meadows/ Phoenix Project, IN

- CUSIP: 455261Q
- Default Date: July 1, 2003
- Obligor: Phoenix
- 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.

The Indianapolis Economic Development Authority bonds were issued to fund construction of The Meadows, a 330-unit Section 8 assisted apartment project that was later renamed the Phoenix Project.

The financial difficulties that ultimately led to the project’s default primarily derived from its location in an economically depressed, high-crime section of Indianapolis. In 1997, a few years after project completion, several murders occurred on the property, which caused the occupancy rate to fall to 75%; occupancy fluctuated between 70% and 85% in subsequent years. High tenant turnover and significant capital improvement expenses added to financial difficulties. The Debt Service Reserve Fund was depleted by the time of the July 2003 debt service date; the property entered into monetary default under the mortgage documents and without sufficient funds to cover debt expenses, the bonds defaulted on July 1, 2003. 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%.

28) Lakeview Apartments, TX

- CUSIP: 89438NA
- Default Date: July 1, 2003 (Series 2001C and Series 2001D); July 1, 2005 (Series 2001A)
- Obligor: Lakeview Apartments
- Issuer: Travis County Housing Finance Corporation
- Cause of Default: Adverse rental market conditions.
- Recovery: Senior bondholders recovered 8.83%; Junior bondholders recovered 3.8%; Subordinate bondholders recovered less than 2%. (Source: Trustee notice to bondholders).

The Travis County Housing Finance Corporation bonds were sold in December 2001 to finance the acquisition and rehabilitation of the Lakeview Apartments, a 504-unit project in Austin, Texas. Initial project revenues were strong, reflecting sufficient market demand, the presence of an experienced management team, and the good physical condition of the apartments. However, as early as July 2002 revenues began to falter, as a downturn in the Austin economy and a softening in demand for multifamily affordable housing...
caused a significant decrease in occupancy. Revenues became insufficient to cover the full debt service payments, and the debt service reserve fund for each series 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, leading to a default for these Series on the July 1, 2003 payment date. Persistent financial deterioration then caused 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 2000D.

29) Cicero Local Development Corporation, NY

- CUSIP: 171731A
- Default Date: November, 2003
- Obligor: Cicero Local Development Corporation (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: Over-optimistic development projections, followed by failures to honor obligations under a lease.
- Recovery: Approximately 10.3% of par. (Source: Bloomberg).

The Cicero Local Development Corporation (CLDC) default was caused not only by poor project performance and revenue shortfall, but also because the Town of Cicero failed to honor its lease obligation to cure the resulting debt service deficiency. Cicero subsequently cured the deficiency, but the Town then failed to include an appropriation for the lease in its 2004 budget, leading to a second default.

The CLDC undertook the financing for two ice rinks, a recreational center, and associated residential and commercial developments with the support of the Town of Cicero through its obligations under the Series 2001 Lease Appropriation Bonds. Although the construction was completed as anticipated, CLDC did not realize any revenues from the project because estimates of utilization proved to be overly optimistic. As the result of the project’s poor operating performance, CLDC’s reserve fund was initially tapped for the November 2002 debt service payment and then fully depleted following the May 2003 payment. CLDC then entered into discussions with a developer for a land sale, which was expected to close prior to the next debt service payment on November 1, 2003. As reported by the issuer’s counsel, the proposed sale fell through on October 27, leaving a debt service funding shortfall. Although the Town of Cicero had a legal obligation under the lease to cure the $244,000 deficiency in the bond fund, it failed to do so, 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 then failed to include the appropriation for the lease in its 2004 budget. Consequently, no funds were available to meet the debt service payment due in May 2004, inducing CLDC’s second default. On October 28, 2005 the Trustee commenced a foreclosure sale on the mortgages securing the obligations, generating approximately $2,000,000. Ultimately, the bondholders recovered $1.57 million of the $15.3 million par outstanding, or approximately 10.3%.

30) Fair Oaks Apartments, TX

- CUSIP: 876394N
- Default Date: January 1, 2004
- Obligor: Tarrant County HFC-Fair Oaks Apts. TX
Issuer: Tarrant County Housing Finance Corporation


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).

The Maple Avenue Economic Development Corporation (MAEDC) issued bonds through the Tarrant County Housing Finance Corporation to finance the Fair Oaks Apartment Project, which was an affordable housing project located in Euless, Texas. As early as December 2002, the financial health of Fair Oaks had deteriorated because of adverse rental market pressures and low rent revenues. 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 an 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, no funds were available 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 2000 A and 2000 B recovered 70% on principal, Series 2000 C recovered 2% and Series 2000 D recovered 1%.

31) Mercy Hospital and Medical Center, IL

CUSIP: 45200

Default Date: January 2, 2004

Obligor: Mercy Hospital and Medical Center

Issuer: Illinois Health Facilities Authority


Cause of Default: Weak cash management and trustee error.

Recovery: Default cured in full on Feb 17, 2004 (Source: Trustee notices to bondholders).

The Mercy Hospital and Medical Center default had its origins in declining liquidity and operating performance, which had begun in 2000. In addition, management turnover was high, hindering administrative focus and consistency that may have contributed to the default, which was clearly avoidable.

At year-end 2003, Mercy Hospital had transferred $2.1 million of the approximate $6 million in its debt service reserve fund into the Bond Fund to pay for the upcoming interest due on January 2, 2004. While Mercy had expected the bond trustee to tap the debt service reserve fund to make the $3,505,000 principal payment to bondholders, the trustee had the option to not do so, and in fact, did not tap the reserve, resulting in a payment default. Moody’s estimates that Mercy had approximately $15 million of unrestricted cash on hand as of January 2, 2004, more than sufficient to have transferred an amount to the trustee adequate to fully pay principal due, thereby avoiding default. Shortly after the January default, Mercy transferred $5,303,005 to the trustee derived from the sale of two building properties. On February 17, 2004, the trustee made the full payment of principal ($3,505,000) and accrued interest ($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.
32) 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 senior living sponsor National Benevolent Association (NBA), and 25 of its affiliates voluntarily filed to seek bankruptcy protection under Chapter 11 of the Bankruptcy Code, marking what was then one of the largest not-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 reorganization 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.

33) Magnolia Park Apartments, GA

» CUSIP: 184160H
» Default Date: May 2004
» Obligor: Magnolia Apartments
» 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.

Clayton County Housing Authority’s Series 1999A bonds were secured by the revenue from the Magnolia Park Apartments, a 328-unit project located 12 miles south of Atlanta. The project had been built in 1972 for low- to moderate-income tenants, and for most of its history enjoyed a high occupancy rate given a stable local rental market and economy. However, Magnolia Park’s occupancy rate fell sharply to 73% by December 2002 after an economic downturn. Rent concessions, bad debt expenses and unbudgeted legal fees further reduced the project’s revenue, and the trustee began tapping the debt service reserve fund to make the required bond payments due in July 2003 and December 2003. The project was foreclosed upon in May 2004, prior to the scheduled July 2004 debt service payment, but it sold for less than the outstanding principal and interest due to bondholders, thus producing the default. Bondholders ultimately recovered approximately 67% of outstanding principal and interest from the sale of the Magnolia Park property.
34) **Westridge Apartments, TX**
   - **CUSIP**: 876394P
   - **Default Date**: June 1, 2004 (Subordinate Series 2001C); June 1, 2005 (Series 2001A, 2001B)
   - **Obligor**: Westridge Apartments
   - **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**: Overall rated bondholders received 60%, 55% of unrated junior bondholders included. (Source: Moody’s files).

The default on the Series 2001 bonds secured by the Westridge Apartments project in Fort Worth was due to adverse rental market pressures and low rental revenue. Although Westridge had maintained an occupancy rate near 90%, this was the result of deep concessions, including "move-in specials" and other incentives that decreased rental revenue. Concurrently, the project’s utility expenses increased dramatically which reduced operating income to levels insufficient to afford the capital repairs necessary across many apartment units. Monetary default occurred when Series 2001 C interest payments were not made on June 1, 2004. Series 2001 A and 2001 B defaulted one year later after continued financial difficulties.

On May 1, 2007, the Trustee conducted the Foreclosure Sale and sold the Westridge Apartments Project to the highest bidder for $3,400,000.

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**Housing Sector Defaults Driven by Stand-Alone Multifamily Financings and Unique Circumstances**

The vast majority of the defaults in the housing sector—18 of the total 29—can be attributed to bonds issued to finance stand-alone, uninsured multifamily ("affordable") properties using tax-exempt bonds. This was the only form of subsidy for these projects, which in exchange were geared to low- and moderate-income tenants and priced at below market rental rates. Although the properties were older, with limited amenities and ‘curb appeal’, they had historically experienced strong occupancy levels such that their lower rent levels would continue to make them attractive to low- and moderate-income tenants.

By 2003, however, the single family market began heating up with low mortgage interest rates and easier homeownership credit conditions for first-time buyers, which put unusual pressure on the multifamily rental market. With local rental rates dropping at all properties, including newer market rate properties, the rent advantage of the older affordable properties deteriorated and vacancy levels grew as tenants opted to live in higher quality properties. With higher vacancy rates and an only limited ability to raise rents sufficient to cover expenses, the financial position of these properties deteriorated, often rapidly. With limited outside resources to mitigate the weakened financial position, 12 of the 18 projects defaulted between 2003 and 2008.

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35) **Fort Worth Osteopathic Hospital, TX**
   - **CUSIP**: 875906
   - **Default Date**: August, 2004
   - **Obligor**: Fort Worth Osteopathic Hospital
   - **Issuer**: Tarrant County Health Facilities Development Corporation
» 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).

Fort Worth Osteopathic Hospital had begun experiencing severe financial difficulties since the late 1990s because of low healthcare reimbursement rates and its small size compared to nearby competitor hospital systems. Facing insufficient operating funds, the hospital sought to partner with these larger and more established systems. However, potential merger negotiations failed, forcing the hospital to close its doors on October 10, 2004.

The hospital’s main campus and ancillary facilities were sold at an auction in February 2005 for $7 million, well under its assessed value of over $38 million. As the result of the proceeds collected from post-default liquidation, holders of the uninsured Series 1993 bonds recovered approximately 21% of the principal and interest due.

36) Bay Club at Mesa Cove Project, AZ

» CUSIP: 566823Q

» Default Date: September 1, 2004

» Obligor: Bay Club at Mesa Cove

» Issuer: County of Maricopa Industrial Development Authority

» 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.


The 472-unit Bay Club at Mesa was an affordable housing project located in the Maricopa County rental market, which was competitive for this type of housing. Bay Club achieved high occupancy rates, but only 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; lacking necessary repairs, many apartments were taken off the rental market, worsening the revenue situation. Lack of income finally led the trustee to make debt service payments from the Series 2000 B Debt Service Reserve Fund, and ultimately led to default on the Series 2000 B bonds on September 1, 2004. 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.

The Series 2000 A bonds were insured by MBIA, and had defaulted September 1, 2005; the Series 2000 C bonds were unrated by Moody’s.

37) Riverbend Apartments, FL

» CUSIP: 14052TA

» Default Date: September 15, 2004

» Obligor: Riverbend Apartments

» Issuer: Capital Trust Agency

Cause of Default: Adverse rental market conditions and poor management.

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).

The Series 2002 A-Capital Trust Agency bonds were issued to finance the acquisition and rehabilitation of the 296-unit Riverbend Apartments affordable housing complex in Tampa, Florida. Between March and May 2004, the occupancy rate declined from 88% to 81%, primarily due to poor rental market conditions and inadequate management. The project did not generate sufficient revenues to pay for routine maintenance, and many apartments were taken offline due to the need for substantial repairs; the increase in deferred maintenance expenses sharply amplified the financial difficulties caused by the decline in the occupancy rate. By August 2004, 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, which we classify 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 was 99.7%, and the final resolution date was December 21, 2005.

38) Crossroads Apartments, TX

CUSIP: 876394Q
Default Date: December 31, 2004
Obligor: Crossroads Apartments
Issuer: Tarrant County Housing Finance Corporation
Defaulted Bonds: Multifamily Housing Revenue Bonds, Senior Series A $13,300,000 of debt affected; Subordinate Series 2001C, $1,500,000 of debt affected.
Cause of Default: Adverse rental market conditions, unexpected rise in costs.

The Series 2001 bonds were issued to finance the acquisition and improvement of Crossroads Apartments, a 292-unit multifamily rental property located in Fort Worth. The Senior Series 2001 A was insured by MBIA.

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, and the project’s utilities cost also rose unexpectedly. By June 2004, project revenues were insufficient to meet debt service requirements, and the trustee tapped and nearly depleted the subordinate debt service reserve fund to make the scheduled debt service payment. The reserve fund was insufficient to make the full principal and interest payments due to subordinate bondholders on December 31, 2004, whereupon the Subordinate Series 2001 C bonds defaulted.
On April 6, 2011, the trustee posted Crossroads Apartment for sale by foreclosure. The project was sold and final distributions were made to the holders of the Senior Bonds from the foreclosure sale proceeds and funds drawn from the MBIA bond insurance policy. There was no distribution to Subordinate Series 2001 C bondholders, who experienced 0% recovery.

39) Legacy at Anderson Project, SC

- CUSIP: 837036
- Default Date: February 1, 2005
- Obligor: Legacy at Anderson
- Issuer: South Carolina Jobs-Economic Development Authority
- 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: 86%-89% for Series 2002A; 89% for Series 2002B (Source: Trustee notice to bondholders).

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, which provided for both the construction loan and the permanent loan. However, the USDA found that the project did not meet the necessary conditions to secure the permanent loan; the USDA’s, interpretation of the regulations was that the permanent loan was not in force and could not be drawn upon to cover shortfalls in the project’s mortgage. While the lender challenged the USDA’s interpretation of Section 538, the trustee decided that all monies-including those in the debt service reserve funds-would be retained to serve what in the trustee’s perception was the best long-term interest of the bondholders. As a result, the February 1, 2005 debt service was not made. The property was subsequently sold, and on October 6, 2006, the trustee made a distribution of $8,000,000 to bondholders using proceeds from the sale. 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.

40) Park at Wells Branch Apartments, TX

- CUSIP: 894386HK0
- Default Date: June 1, 2005
- Obligor: Park at Wells Branch Apartments
- Issuer: Travis County Housing Finance Corporation
- Defaulted Bonds: Multifamily Housing Revenue Bonds Subordinate Series 2002 C; $1.33 million of debt affected.
- Cause of Default: Weakening of rental market.
- Recovery: 100% of par plus accrued interest.

The Park at Wells Branch is a 304-unit apartment complex comprising of 18 separate buildings located in the north Austin metropolitan area in Travis County, Texas. The property had begun experiencing financial difficulties in 2003 with a softening of the local rental market; from 2000 to 2003, Austin experienced an oversupply of new multifamily developments, with completions outpacing net absorption. The Park’s
occupancy rates fell during that time to a low of 80%, at which point the property offered substantial concessions to tenants. By the end of 2007 the occupancy levels had 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 Subordinate Series 2002 C debt in 2004, and the project defaulted on the debt service payments due June 1, 2005.

After this initial event of default Subordinate Series, bondholders were paid in August, but the subsequent interest payment due in December 2005 was not made until June of 2007. Debt service payments remained sporadic and either late or missed entirely. Fund balances provided to Moody’s by the Trustee showed that the Series 2002 C Subordinate debt service reserve fund had been depleted. The unrated Series 2002 D Junior Subordinate bonds are presumed to have been in default as well throughout this period. The Series 2002A Senior debt, however, continued to be paid, with a fully funded debt reserve fund; these bonds were insured by National Public Finance Guarantee (formerly MBIA).

CHC, the owner of the property, has contributed substantial amounts to the property to fund working capital and debt service requirements, and has been making such contributions since 2003.

In 2013, the Park at Wells Branch project was refinanced, enabling the defeasance of all three series on August 27, 2013 at 100% of par plus accrued interest, thus curing the outstanding default on rated Subordinate Series 2002 C debt.

41) Ashton Place and Woodstock Apartments, TX

- CUSIP: 88271FA
- Default Date: August 1, 2005
- Obligor: Ashton Place & Woodstock Apartments Project
- Issuer: Texas State Affordable Housing Corp.
- Cause of Default: Low occupancy rates, rehabilitation work, poor financial performance.
- Recovery: Estimated by Moody’s at 85.5% for senior bonds, under 2% for subordinate bonds and 0% for junior bonds based the results of foreclosure and final distribution reports. (Source: September 2009 Moody’s report).

The bonds are secured by two cross-collateralized projects, Woodstock Apartments and Ashton Place Apartments, located in Fort Worth and Galveston, respectively. The financial performance of both apartment complexes in this transaction had been poor preceding the default, with low occupancy rates in particular at the Woodstock Apartments. The high vacancies pushed management to reduce rental rates in an effort to become more competitive with other projects in the area, but this only strained revenues further ultimately triggering the default in 2004 the reserve accounts were depleted.

The two projects securing the bonds were sold in September 2008 at a foreclosure sale for $2,500,000 and $1,000,000, respectively. The Trustee also received insurance proceeds related to damage at the Ashton Place Apartments of $4,367,325 and $54,143 in refunds of unearned insurance premiums. In the Revised Notice of Final Distributions, the Trustee reported a final distribution of $816,774 attributable to the principal balance for the Series A bonds, and $16,551 attributable to the principal balance for the Series C bonds. In December 2008 and March 2009, the Trustee made two distributions to the Series A bondholders totaling approximately $6,589,318 of outstanding principal.
Moody’s estimates the following recovery on the outstanding principal balances: approximately 85.5% for the Series A bondholders, less than two percent recovery for the Series C bondholders, and no recovery for the Series D bondholders.

**42) River Falls Project, CO**

- **CUSIP:** 051558A
- **Default Date:** January 1, 2006
- **Obligor:** River Falls Project (Senior Series A, Subordinate Series C)
- **Issuer:** Aurora Housing Authority
- **Defaulted Bonds:** Senior Series 1999A, $17.1 million of debt affected; Subordinate Series 1999C, $2.045 million of debt affected.
- **Cause of Default:** Slowdown in market for rental properties compounded by trustee decision to retain reserve funds.
- **Recovery:** Project sold, all bonds redeemed at 100% plus interest in May 2007.

On January 1, 2006, the River Falls Project went into default following a trustee decision to retain reserve funds preventing full debt service payments on the Subordinate Series 1999 C bonds. The project was performing poorly, however. The Senior Series 1999 A bonds subsequently went into default as well before the May 2007 redemption following sale of the property.

The River Falls Project was a 511-unit apartment complex east of downtown Denver housing both low income and market rate tenants. The project exhibited weakening debt service coverage from declining total revenues and increased operating expenses between 2005 and 2006. Despite having sufficient coverage in the debt reserve fund to make the January 1, 2006 payment, the trustee elected not to tap the reserve fund for payment to bondholders, instead choosing to preserve these monies to cover costs and expenses associated with an anticipated 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. On July 1, 2006 the Project again defaulted on the Subordinate Series C bond debt service payments; in addition, it appears that the debt service reserve fund was tapped to pay interest on the Senior Series A bonds, while the mandatory sinking fund payment for the Senior bonds was deferred. No principal was due bondholders for either series before 2009 for the Senior Series A and 2029 for the Subordinate Series C, but both series were subject to semiannual mandatory sinking fund redemptions. By the spring of 2007, before the sale of the Project, the Senior Series A bonds were in default as to interest.

Negotiations commenced for the sale of the project in fall 2006. Upon completion of the sale in May 2007 all Series of outstanding bonds were redeemed at 100% plus accrued interest.

**43) Legacy at Lehigh Project, FL**

- **CUSIP:** 52349K
- **Default Date:** June 1, 2006
- **Obligor:** Lee County Industrial Development Authority
- **Issuer:** Lee County Industrial Development Authority
- **Cause of Default:** Inability to meet occupancy goals, and effective withdrawal of loan guaranty.
The Legacy at Lehigh project is another example of a default that was associated with an unfulfilled USDA guarantee.

The Legacy multifamily housing project was financed through a United States Department of Agriculture program that guaranteed both the construction loan and the permanent financing, though the latter would not take effect until the project achieved 90% occupancy for 90 days. Indeed, after successful completion of 24 month construction phase, the Legacy project was able to achieve no better than an 88% occupancy. The project consequently operated at a loss and began tapping the debt reserve fund to make the June 1, 2005 debt service payment, drawing it down to 28% of the required reserve amount. Without the loan guarantee, and after continuing to operate at a loss and with nearly fully depleted debt reserve funds, the project made only a partial interest payment on June 1, 2006.

The project was subsequently 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.

**44) Cameron Crossing Project I and II, SC**

- CUSIP: 396081A
- Default Date: June 1, 2006
- Obligor: Greenville Housing Finance LLC
- Issuer: Greenville Housing Finance LLC
- Cause of Default: Inability to meet occupancy goals, and effective withdrawal of loan guaranty.
- Recovery: 85% of principal for senior bondholders, 0% recovery for subordinate bondholders.

The Cameron Crossing Project is a third example of a housing development that defaulted when its USDA loan guarantee went unfulfilled because of an inability to meet occupancy thresholds.

The Series 2003 bonds were issued to finance the acquisition and construction of the Cameron Crossing I and II projects, respectively 134-unit and 64-unit components of a 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 combined construction and permanent loan guarantee. The permanent guarantee was conditioned upon achieving 90% occupancy for at least 90 consecutive days post-construction, or alternatively if an escrow had been established within specified terms. The project construction phase was completed successfully but Cameron Crossing was unable to reach the 90% occupancy level (24% as of June 2005, 75% as of June 2006) required for the USDA guarantee. The project operated at a loss, and began drawing down on the debt service reserve fund to pay interest and principal payments through 2005. By 2006 only 10% of the required reserve amount remained. Without the guarantee, no debt service payment was made on June 1, 2006, thereby triggering the default. The project was sold through foreclosure on November 6, 2006 to the lender, Allied Mortgage Capital Corporation. The lender and the trustee transferred title and the remaining trust funds to the Senior bondholders who, in exchange, tendered $12 million in Series 2003A bonds to the trustee for cancellation. This amount represented 85% of outstanding principal on the Senior bonds. No funds were available to pay the Subordinate Bondholders of the Series 2003 B and Series 2003 C.
45) Canterbury/3 Fountains/River Falls/Puckett Place, TX

» CUSIP: 698487A
» Default Date: September 1, 2006
» Obligor: Canterbury/3Fountains/River Falls/Puckett Pl
» Issuer: Panhandle Regional Housing Finance Corporation
» 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: Approximately 36% of principal.

The Series 2000 bonds were largely secured by revenue from four multifamily 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 four apartment complexes. In order to remain competitive, the project reduced rents and increased concessions, which resulted in net income substantially lower than had been forecast. The March 1, 2006 debt payment could only be made with the help of the debt service reserve fund, which dropped the 2006 debt service coverage ratio down to 0.64x, compared to 1.26x in 2005. The reserve fund balance was insufficient to fully cover the September 1 debt service payments, causing a default.

Since the event of default, the projects have generated sporadic interest payments, but no principal payment since March 1, 2006. In 2007 the trustee halted use of reserves to pay debt service in order to apply funds to conserve and maintain the projects.

The owner, American Housing Foundation, made contributions to the property in 2008 to bring the interest payments current, but following that the payment defaults continued. As of March 2010, the trustee indicated that they were using the remaining debt service reserves to pay the management fees and workout expenses, and make capital improvements. The owner remains in bankruptcy proceedings pending recovery of the local market.

On March 1, 2011, the trustee foreclosed upon all of the property and sold it, from which bondholders received an initial $8 million distribution. A further, final distribution of $679,179 was made on June 28, 2011, producing a total recovery against principal outstanding of about 36%.

46) Forum Health, OH

» CUSIP: 560060
» Default Date: September 2006 (forbearance agreement)
» Obligor: Forum Health
» Issuer: Mahoning County
» Cause of Default: Operating losses from competition and economic weakness.
» Recovery: Redeemed at full principal amount plus accrued interest (Source: Moody’s reports).
Forum Health triggered a technical default on its revenue bonds when it filed for bankruptcy protection on March 16, 2009, though default can be deemed to have occurred as early as September 2006, when the first of several forbearance agreements with creditors was signed.

The bankruptcy climaxed a multi-year struggle with cost controls, labor negotiations with a heavily (75%) unionized workforce, and declines in admissions and outpatient procedures that reflected competition from non-unionized hospitals as well as declining population and wealth in its Youngstown service area. Although Forum did not miss a debt service payment while in bankruptcy, it had negotiated a series of forbearance agreements with its banks and bond insurer from late 2006. While these agreements likely helped to postpone bankruptcy, they also hindered operating flexibility by requiring the transfer of more cash to reserves. The multiple forbearance agreements eventually coalesced into a single master agreement; in the days preceding the bankruptcy filing, when Forum’s unrestricted liquidity had dwindled to 17 days cash on hand, there was approximately triple this amount in the master forbearance agreement debt reserves.

On June 3, 2011, Moody's withdrew the Ca bond ratings for Forum Health. The rating withdrawal follows the purchase of Forum Health by Community Health Systems and the redemption of the bonds. The bonds were redeemed at the full principal amount plus accrued interest.

47) Jefferson Commons at the Ballpark, TX

- CUSIP: 882793
- Default Date: January 1, 2007
- Obligor: Jefferson Commons at the Ballpark
- Issuer: Texas Student Housing Authority
- Cause of Default: Decrease in rents due to competition.
- Recovery: Unknown for the senior bonds; less than 1% for the junior.

The Series 2001 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 senior bonds were insured through a policy provided by National Public Finance Guaranty (formerly MBIA Corp). The property housed mostly freshman and sophomore students who attended the University of Texas at Austin, but it was otherwise legally and financially unaffiliated with the University. The project’s occupancy rate was 97% at the time of purchase, 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 offerings and conventional rental properties in the submarket. With revenues and cash levels substantially lower than at the time of underwriting, the junior debt service reserve fund was tapped on July 1, 2005 to make payments for the Junior Series. The project continued to utilize reserve funds to pay Junior Series debt service until the junior reserves were depleted, and on January 1, 2007, the project defaulted on the interest payment due. The project began tapping reserves to pay for the Senior Series debt service on January 1, 2007; the senior reserve was depleted by the time of the January 1, 2009 debt payment, and at this point deficiencies in Senior Series debt service began to be covered by the bond insurance policy.

In December 2012, the Senior bonds were accelerated and fully paid off from proceeds of the National bond insurance policy along with available monies in the bond fund. Subsequent to this acceleration, the insurance policy on the Senior bonds was canceled and National was deemed owner of the bonds. In May 2013, the Senior bonds were sold off by National and new CUSIPS were assigned. National’s recovery on the
Senior bonds from the sale is unknown. A final distribution was made to junior bondholders in October 2014 that resulted in recovery of less than 1%.

48) **Tampa Home Mortgage Series 1983 A, FL**
   - CUSIP: 875157BF5
   - Default Date: April 1, 2007
   - Obligor: Tampa Home Mortgage Series 1983 A
   - Issuer: City of Tampa
   - Cause of Default: Mortgage delinquencies and bond structural issues.
   - Recovery: 37%

Tampa’s Series 1983 Home Mortgage Revenue Bonds were used to purchase single family mortgage loans along with a small percentage of home improvement loans. The bonds, which were secured by the pledged mortgage loan revenues and debt service reserves, primarily comprised serial and term bonds, but about 8% of principal consisted of call-protected multiplier bonds, similar in structure to a zero coupon instrument. However, the multiplier bonds had an accretion rate that was 0.40% higher than the mortgage rate, which worsened the program’s financial deterioration on top of the serious mortgage delinquencies that began to occur in the mid 1990s.

The bonds consequently began to undergo a series of sharp rating downgrades beginning in 1995. In 1998, the bonds were downgraded to Caa1 when the program-asset-to-debt ratio (“PADR”) fell below 100%, with a subsequent downgrade to Caa3 in 2005 when the PADR fell to 68%. In 2009, when the bonds were downgraded to C, the PADR had further declined to 47%.

The trustee issued three notices of default starting in 2006 with a technical default and continuing in 2007 with the first monetary default.

In October 2012 and February 2015, there were partial distributions totaling of $905,000 on the outstanding principal of $2,720,000, providing a recovery of approximately 37% when adjusting for time value of money.

49) **Sankofa Shule Charter School**
   - CUSIP: 80104PAA9, 80104PAB7
   - Default Date: December 1, 2007
   - Obligor: Sankofa Shule (A Michigan Public School Academy)
   - Issuer: Sankofa Shule (A Michigan Public School Academy)
   - Cause of Default: Low enrollment rates, reduction in state aid and history of mismanagement.
   - Recovery: Approximately 5% or less of principal and accrued interest based upon final auction of property in March 2014.

Sankofa Shule was a public school academy in Lansing, MI, that operated as a charter school authorized by Central Michigan University Board of Trustees. The school’s certificates of participation were secured by a pledge of 20% of Sankofa’s state aid.
Sankofa began operating in fiscal 1996, offering an African-centered, college preparation curriculum to students in grades kindergarten through four. Shortly after its debt issuance in 2000, Sankofa began to suffer from poor management and weak financial performance. In 2006, the school did not meet its enrollment targets; state aid was subsequently cut, the school’s authorizing charter was not renewed, and the school closed in June 2007. On December 1, 2007, Sankofa Shule failed to make its debt service payment and has been in default ever since.

Following the default, the receiver listed the school’s single facility with a real estate agent, but the listing never elicited any buyer interest in the property. In late 2012, the trustee reported that its agent lowered the sale price to $750,000 in an attempt to prompt a sale, which suggested a relatively low potential recovery for bondholders. In October 2013, the trustee announced that less than year’s reserves were on hand to cover ongoing administration and maintenance of the property, and that the building would be sold to the highest bidder at live auction unless bondholders contributed an additional $100,000 in reserves. This funding was not forthcoming, and the March 19, 2014 auction produced a bid of $134,000. A March 31, 2014 court hearing and judgment will allow the trustee to proceed with the sale of the property and make a final distribution from the trust estate. The February 15 disclosure also revealed that, aside from any proceeds from the auction, only $47,300 remains in the trust estate. Given the bid and depletion of other assets, and the accumulation of $1.178 million in accrued unpaid interest since the 2007 default, the overall anticipated recovery to bondholders will approximately 5% or less depending upon final trustee fees.

50) Nob Hill Apartments, TX

- CUSIP: 088379S
- Default Date: December 1, 2007
- Obligor: Nob Hill Apartments
- Issuer: Bexar County Housing Finance Corporation
- Defaulted Bonds: Multifamily Housing Revenue Refunding Bonds, Series 2001A; Subordinate Series 2001B; $15.7 million of debt affected over both series.
- Cause of Default: Low occupancy, rise in operational costs.
- Recovery: 100% of par plus accrued interest.

The Nob Hill Apartments Project, a 368-unit multi-family rental property, is located approximately eight miles north of the San Antonio, Texas central business district. The property began experiencing financial difficulties in 2005 when operating expenses began to outpace revenue growth, causing a decrease in debt service coverage. Both financial performance and occupancy deteriorated significantly over the next few years due to the severing of a relationship with Catholic Charities, an organization that placed families in the facility, as well as an increase in tenants who became delinquent in rent. Maintenance expenses also rose with an increase in turnover, and occupancy hit a low of 72% in May of 2007. The trustee did not tap the debt service reserve fund to cover the December 1, 2007 interest payment, thus triggering the interest payment default.

Since this initial 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. On June 1, 2011, Nob Hill defaulted on the principal for its senior series bonds.

The project manager for Nob Hill has changed and is now United Apartments Group. On August 5, 2013, the project was foreclosed upon by bondholders and sold to a new owner. The proceeds were sufficient to
enable an acceleration of the senior Series A and the subordinate Series B bonds on August 16 at 100% of par and accrued interest, thus curing these defaults. Unrated series C bonds were also accelerated at 100% of par but without payment of defaulted accrued interest.

51) North Oakland Medical Center, MI

» CUSIP: 732557A
» Default Date: February 1, 2008
» Obligor: North Oakland Medical Center
» Issuer: Pontiac Hospital Finance Authority
» Cause of Default: Operating losses, competition, and a decline in liquidity.

Located in Pontiac, Michigan, North Oakland Medical Center (NOMC) served an economically weak area that was also oversupplied with acute medical care, given two other competing hospitals. NOMC’s patient volumes suffered a multiyear decline, which proved to be a trend that was both unsustainable and irreversible. The hospital’s financial operations expenses were further strained by management turnover, which created unexpected costs both for severance obligations and staff replacement. NOMC experienced several years of operating losses and negative cash flow culminating in a sharp decline in unrestricted cash and investments. A new and experienced senior management team was brought in during the 2007 fiscal year but was unable to improve the financial situation substantially, leading to the February 2008 default on the Series 1993 bonds.

NOMC filed for Chapter 11 bankruptcy protection on August 26, 2008, and the rating was subsequently withdrawn. NOMC’s assets were sold in November 2008 for approximately $6 million. The bonds were not secured by any collateral interest in the assets that were included in the bankruptcy sale. However, NOMC distributed $3.771 million to bondholders from the proceeds of the sale and other trustee-held funds in November 2008. NOMC continued to liquidate its remaining assets since that time, and a final distribution of $217,774 was made to bondholders in April 2011, for a total distribution of $3,998,742.

52 & 53) Jefferson (County of), AL

» CUSIP: 472682
» Default Dates: Sewer Warrants, April 1, 2008; General Obligations, September 15, 2008;
» Obligor: Jefferson (County of) Sewer Enterprise, Jefferson (County of);
» Issuer: Jefferson (County of) AL
» Defaulted Bonds (warrants): Sewer Revenue and General Obligation; $3.47 billion of debt affected.
» Cause of Default: Excessive debt load from court-mandated capital improvements to a regional sewer system, compounded by a large liquidity shortfall linked to variable rate and swap exposure; bankruptcy and GO default preceded by invalidation of key County revenue source.
» Recovery: 54% par and accrued interest for Sewer Warrants. 19

The Jefferson County debacle had a long gestation period and was finally resolved in late 2013 with its emergence from bankruptcy and refinancings of sewer and general obligation debt. At the time of its filing, it was both the largest municipal default and the largest municipal bankruptcy in US history, affecting $3.47 billion of debt.

The problem began with the sewer warrants and was rooted in a longstanding inability to bring portions of an aging and complex regional sewerage system up to environmental standards. By the late 1990s, a lawsuit over the Cahaba River drainage basin resulted in a Federal court mandate for extensive capital improvements. In retrospect, the consent decree allowed Jefferson County officials and their financial advisors—a number of whom subsequently suffered criminal indictment—to lace the sewer capital plan with expansion projects unrelated to the immediate pollution mitigation effort. In the process, the county committed to a debt load that ultimately proved unaffordable; the debt structure in particular included swaps and variable rate instruments that were intended to moderate the high burden of servicing debt but which backfired, and created an enormous liquidity problem as markets and the financial counterparties who held much of the debt were roiled by the 2008 financial crisis. The first sewer default occurred in April 2008, followed by a general obligation default September 2008. The coup de grace, arguably, came with a 2011 court decision stripping the county of a major source of operating revenues that left it on a precarious financial footing. Key milestones are as follows:

- April 1, 2008: Initial default when the County fails to make a principal payment on sewer warrants (bank bonds) held by liquidity providers
- September 15, 2008: County fails to make principal payment on General Obligation bank bonds (warrants) held by liquidity providers
- November 4, 2009: SEC settles fraud charges against lead bank JP Morgan
- March 16, 2011: State supreme court finds Jefferson County’s 2009 Occupational Business and License Tax unconstitutional, effectively removing 40% of County General Fund revenues
- November 2011: Jefferson County files for Chapter 9 bankruptcy protection
- July 2011: First settlement proposal; approximate 60% recovery offer, 70% counteroffer reported
- April 1, 2012: County misses payments on non-bank held General Obligation warrants
- January 1, 2013: County finalizes forced exchange of Series 2006 Lease Revenue Warrants (see case study number 74)
- December 3, 2013: County formally emerges from bankruptcy; by the end of 2013 refines all outstanding sewer warrants and outstanding variable rate general obligation warrants with new issues of $1.785 billion and $105 million par respectively.

Several of these default milestones bear some discussion. By 2008, Jefferson County’s leverage and debt structure rendered it vulnerable to the turmoil of the ensuing, larger financial crisis, exposing it to what quickly became a cascade of failed remarketings and auctions, penalty rates, swap terminations, collateral calls, and principal accelerations. The sewer debt, over 90% of which was insured by XL Capital and FGIC, was hit first when these insurer were downgraded, causing a failed remarketing of the $567 million variable rate demand sewer debt, all of which was eventually put back to liquidity providers. At the same time, the county’s auction rate securities failed to find new buyers, causing interest payments to spike for these securities. Between the accelerated VRDO principal repayments and the penalty interest rates on variable and auction rate securities, the County’s debt service cash flow requirements increased dramatically.

20 Jefferson County’s Lower GO Leverage Fuels Higher Recovery than Sewer, March 2014 [165540]
The downgrade of the county’s sewer debt to below Baa2 then triggered a swap termination event compounding the demands on the sewer system’s cash flows with an estimated $184 million collateral call. The county officially notified swap counterparties on March 4, 2008 that it did not intend to post collateral or provide alternative insurance under the swap agreements, though it did enter into forbearance agreements with its liquidity and swap counterparties, who waived their rights to demand accelerated payments while negotiations continued. The county’s General Obligation variable rate demand warrants were also put back to liquidity providers, triggering the second event of default when the county could not meet accelerated payments on these bonds on September 15, 2008. During that same month, the Trustee and the bond insurers filed suit in federal court requesting that a receiver be appointed to manage the sewer system and raise rates sufficient to meet ongoing obligations; the judge subsequently ruled that the federal government did not have the jurisdiction to influence rate-setting for a local public utility. Negotiations between all parties continued without solution, and eventually, the forbearance agreements lapsed without further extensions.

The county’s fiscal problems worsened significantly in March 2011 when the Alabama Supreme Court ruled that Jefferson County’s occupational and business license tax was unconstitutional. The loss of the 0.45% tax on salaries created a $70 million hole in the County’s $317 million FY 2011(September 30) budget, equivalent to 40% of General Fund revenues, and it has not been replaced since. In November 2011 the county commission voted to file for Chapter 9 bankruptcy protection, exacerbating the risk to GO warrant holders who suddenly became unsecured obligors given the absence of a statutory lien for GO debt in Alabama. At the time of the filing, both GO variable-rate demand bank bonds and sewer variable-rate demand bank bonds were already in payment default but other county bonds were not. In March 2012, the county filed a resolution directing officials to skip the April 1 principal and interest payment on outstanding GO warrants in order to preserve an already narrow cash position. This constituted an event of default under the trust indenture, and was also the first payment default on county fixed rate GO warrants.

By mid-2013, the County was working out a recovery plan with creditors. The emergence from bankruptcy in December 2013 was facilitated by a very large refinancing of the sewer debt and a more modest one for the Series 2001B variable rate GO warrants producing the 54% sewer and 88% general obligation recoveries cited above. The bankruptcy and the loss of the occupational tax revenues forced the County to make other significant changes besides restructuring of debt. By the time it emerged from bankruptcy, Jefferson County had reduced overall operating expenditures by a third and cut full-time equivalent employment by 46%, a downsizing that was likely helped by the presence of a major city and other underlying local governments whose services and operations were not affected by the bankruptcy. Jefferson County still faces steep increases in sewer fees, but its recovery should be buoyed by an overall healthy regional economic base with low unemployment.
A Non-Defaulting Bond Pulled Into a Bankruptcy Proceeding: The Jefferson County School Warrants

At the time of its bankruptcy, Jefferson County also had $814 million in outstanding limited obligation school warrants across three separate series. This debt suffered no impairment, as the county consistently paid all debt service on time and in full from a pledge of a 1% Education Tax (sales tax) that was not part of Jefferson County’s general revenues.

One of the three series, Series 2005-B, had a modification to its terms during the county bankruptcy but one that we do not consider an impairment. This series, with $111 million outstanding, is a variable rate instruments with a standby bond purchase agreement (SBPA) originally provided by Depfa Bank. In June 2008, the Debt Service Reserve Fund (DSRF) surety bond provided by Ambac for the Series 2005-B warrants became ineligible under the terms of the Indenture upon Ambac’s downgrade below Aaa. During this time the county was unable to replenish the DSRF with cash within the required 12-month period because of its own liquidity issues.

As a result, the Trustee issued a Notice of Default dated December 28, 2009 and the Series 2005-B warrants were tendered to Depfa for purchase under the Standby Purchase Agreement (SBPA). The SBPA provided for a Bank Rate for bonds so tendered of prime + 200 bps, which rose to prime + 300 bps upon an Event of Default. The county began paying interest to Depfa at the default rate as due in June 2010. The county completely replenished the DSRF with cash in September 2012, curing one Event of Default, but by this time the county was 10 months into bankruptcy so an Event of Default remained, requiring that the county continue to pay interest at the Default Rate.

If the county and Depfa had not made any changes to the SBPA, the Bank Rate would have reverted back to prime +200 basis points upon the county’s exit from bankruptcy. However, in exchange for Depfa’s support for the county’s overall plan to exit bankruptcy, the county and Depfa agreed that effective August 31, 2013, the New Bank Rate would equal prime +225 bps. The county continued to pay the Default Rate up until the Effective Date of the bankruptcy exit (December 3, 2013) in case the bankruptcy exit failed. Once the county completed its exit, it was credited the difference between the Default Rate and the New Bank Rate for the period of August 31 through December 3.

The 2005-B school warrants provide an interesting example of how even an unimpaired debt can be pulled into a bankruptcy proceeding of the issuer.

54) Fullerton Village at DePaul University, IL (now 1237 West following project name change)

» CUSIP: 45202QA
» Default Date: December 1, 2008
» Obligor: Fullerton Village at DePaul University
» Issuer: Illinois Finance Authority
» Cause of Default: Low occupancy levels led to revenues insufficient for debt service.
» Recovery: Still pending. The project has not foreclosed and is able to cover operating expenses, and bondholders continue to receive partial payment from the project’s excess revenues.

Fullerton Village at DePaul University initially defaulted on their 2004 A and B bonds when the project failed to make interest payments on December 1, 2008. Net operating income has been sufficient to pay missed interest payments and additional accrued interest at the default rate, but not full debt service.
This student housing development suffered low occupancy levels attributable at least in part to the project architecture. The design-loft-style apartments with concrete floors and high ceilings was unconventional for student housing, and apparently created very noisy living quarters. 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 persisted. As a result of the drop in occupancy from 87% in Spring 2007 to 52% in Fall 2007, the project tapped debt service reserve funds on both the Senior and Subordinate bonds to make debt service payments on June 1, 2008. On October 24, 2008, the trustee issued a notice to bondholders stating that debt service reserve funds would not be used to make debt service until such time as revenues would be adequate to replenish any draws. This decision was overturned by the majority of bondholders, who were subsequently paid out of the debt service reserve fund, thus drawing it down to below required levels. The debt service reserve funds were subsequently fully depleted such that the project defaulted on December 1, 2008 on both the A and B Series. At current performance levels, the project is able to cover operating costs but is not able to make full debt service payments or replenish the debt service fund.

Since June 1, 2011, the Senior Series 2004A and the Subordinate Series 2004B Bonds remain in default. Project revenues, which include rental income from student residents as well as the retail spaces, have not been sufficient to meet full debt service payments, though interest and accrued interest payments have been met. Fall 2013 project occupancy is reported to be 89%, which reflects a slight weakening.

55) **St. Louis Industrial Development Authority (St. Louis Convention Center Headquarters Hotel Project), MO**

- CUSIP: 790906A, 79164T
- Default Date: December 15, 2008
- Obligor: St. Louis Industrial Development Authority
- Issuer: St. Louis Industrial Development Authority
- Defaulted Bonds: Series 2000A; $98 million of debt affected.
- Cause of Default: Oversupply of new or renovated hotels, decline in convention spending by businesses.
- Recovery: 34.10%

Since opening in 2003, the financial and operating performance of the $277 million, 917 room Convention Center Headquarters Hotel had been significantly weaker than originally forecasted. Although the project, also known as the Renaissance St. Louis Grand Hotel, generated enough revenue to cover operating expenses, revenues were not sufficient to cover debt service and to fund fully the furniture and fixtures account. The hotel’s financial performance continued to decline due to the broader economic downturn, the consequent slowdown in convention center bookings sales nationally, and the 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’ subsequent, significant reduction in air service to St. Louis.

The Series 2000A bondholders initiated foreclosure proceedings in January 2009 and shortly thereafter, on February 9, 2009 the hotel was auctioned off to the trustee, UMB Bank, for $98 million. Although bondholders took over ownership, the hotel continued to operate under the management of Renaissance Hotel Management Company. There was reportedly some improvement in operations, though it was uneven and not enough to remedy the default.
The hotel was ultimately sold in 2014, following delays due to a slump in the real estate market and the need to secure agreements between the buyers, the hotel operator, the city and the state. Distributions to bondholders, the final of which occurred in November 2014, provided a recovery of 34.10% on the debt.

56) City of Harrisburg, PA

- CUSIP: 41473E (add GO CUSIPs)
- Default Date: June 1, 2009 failure to honor city-guaranteed debt service on Harrisburg Authority Resource Recovery bonds and direct GO debt.
- Obligor: Harrisburg (City of)
- Issuer: Harrisburg Authority
- Total parity obligations affected: $352 million. (excludes non-parity $25 million project loan and $5 swap termination, both ultimately within final settlement)
- Cause of Default: Project enterprise risk, poor general government financial position independent of project, and consequent city failure to honor guarantee.
- Recovery: 75% of principal and past-due interest for aggregate GO and GO guaranteed bond and loan creditors.21

The City of Harrisburg’s September 2010 announcement in that it would miss an upcoming $3.3 million payment on general obligation bonds was well-publicized but was only a more visible symptom of its long-running financial problems. Fifteen months earlier, on June 1, 2009, the City failed to honor its debt service guarantee obligations on waste-to-energy debt issued by the Harrisburg Authority; the City had been making guarantee payments since June 2007, although the 2008 guarantee was paid using the proceeds of city-guaranteed working capital notes issued in 2007. The City subsequently missed more guarantee payments in 2009 and 2010, as well as swap payments on its guaranteed incinerator debt, leading up to the nonpayment on its direct general obligation bonds in 2012.

None of these actions resulted in missed payment for retail bondholders; GO-guaranteed incinerator project debt service was covered by a combination of reserve funds, Dauphin County guarantee payments, and bond insurance. Similarly, the city’s inability to pay its direct general obligation debt was initially covered by the State’s accelerated, emergency payment of state aid and thereafter by bond insurance.

The incinerator debacle in and of itself would have perhaps been a typical story of enterprise risk had the city not chosen to guarantee debt service for nearly $310 million of project debt; total City debt was approximately one-third that amount. The Harrisburg Authority began issuing bonds for an upgrade and retrofit of the waste-to-energy (WTE) facility from 1998-2003, but by 2007 the project was experiencing construction delays and cost overruns. To reverse the system’s deficit operations, which led to the draws on the city guarantee starting in June 2007, the Harrisburg Authority sought a sharp $100/ton increase in tipping fees on Dauphin County haulers. This proposal went into arbitration, and in 2009 was scaled back to less than $2/ton, prompting efforts to sell or lease the WTE project.

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21 For more information, please see our February 2014 publication, “Harrisburg’s GO Creditors Get Wide-Ranging Recovery Rates Averaging 75%, February 2014” (165369).
The focus on the troubled WTE project should not obscure the fact that Harrisburg’s own credit situation had deteriorated steadily since about 2007, when its financial reporting began to be seriously delinquent. Key milestones are as follows:

» 1985; Harrisburg builds a steam turbine at its waste incinerator, converting to a WTE facility
» 1998; The Harrisburg Authority, a component unit of the city, issues the first debt to fund the WTE upgrade; more debt for the upgrade is issued in 2002 and 2003, and the city issues a GO guarantee for the bonds
» 2005; Harrisburg Authority receives a $25 mm short-term loan from CIT Capital USA to complete the project
» 2008; Harrisburg Authority contracts with Covanta to operate the WTE facility and guarantees a $19.8 million loan from Covanta to the Authority for additional repairs
» June, 2009; The city begins defaulting on its GO guaranteed WTE debt
» 2010; Harrisburg enters Pennsylvania’s Act 47 Program for distressed municipalities
» October, 2011; Harrisburg’s city council files for Chapter 9 bankruptcy protection, absent state approval; Pennsylvania amends the Act 47 statute in order to appoint a receiver for the city
» November, 2011; The city council’s Chapter 9 filing is rejected by the Commonwealth Court, a PA appellate court; first receiver appointed by the state, David Unkovic, assumes office.
» March, 2012; Initial receiver resigns; city defaults on its direct GO bonds for the first time
» April, 2012; New receiver (General William Lynch) is appointed
» September, 2013; “Harrisburg Strong” recovery plan is approved by the Commonwealth Court.
» December 23, 2013: Two bond transactions designed to eliminate the prior debts of the city close
» March 1, 2014: Harrisburg officially exits state receivership and resumes payments on general obligation debt two weeks later.

The state’s involvement with the city has taken many forms, beginning in 2010 with various assistance grants and entry into the state’s Act 47 distressed municipalities program. In early 2011, the state-appointed coordinator overseeing the city proposed a fiscal recovery plan based upon selling off the WTE plant and leasing City parking authority assets, which was rejected by the council. Absent any plan to address the city’s financial troubles, Harrisburg filed for bankruptcy on October 12, 2011, despite newly passed legislation that prohibited Pennsylvania cities in distress from filing for bankruptcy. In the following month, the bankruptcy court ruled that the city’s bankruptcy petition was invalid; the judge also denied the city’s appeal.

Ultimately, the state played a key role in brokering the final settlement package, which involved two relatively complex bond financings in December 2013 that closely followed the original 2010 proposal. The Lancaster County Solid Waste Management Authority sold $129 million of revenue bonds that enabled it to purchase the WTE plant and redeem several series of WTE project bonds. A second $267 million bond issuance by the Pennsylvania Economic Development Financing Agency was used to redeem or defease all outstanding Harrisburg Parking Authority debt and redeem additional WTE project bonds. Both financings generated additional funds for creditor settlements. The state helped significantly to bolster the value of the assets underlying these transactions by contractual purchase of co-generated electricity from the WTE plant, and guaranteed usage of minimum number of parking spaces by state employees working in Harrisburg.
The upfront financial distributions consequently received by the GO and GO guaranteed creditors on December 23, 2013 were in aggregate 75% of the amount owed, including principal and past-due interest. This 75% represents an aggregate of the full recovery for the city’s direct GO bonds and a 66% recovery for the debts of The Harrisburg Authority that were guaranteed with a city GO pledge. Within the aggregate 75% recovery, individual creditors’ recoveries ranged widely:

» Covanta: 39%
» AGM: 60%
» Dauphin County: 75%
» AMBAC: 100%+ (direct GO creditor)

These up-front recoveries do not capture additional considerations in the form of future distributions of parking revenues, fees and various other economic benefits reflecting separate settlement reached with the city and the GO guaranteed creditors at closing.

As a matter of note, the $5 mm swap termination was paid in full as part of the settlement though not eligible for the GO guarantee under state statute. The non-guaranteed $25 mm CIT loan was also repaid as part of the settlement; under the terms of an earlier court settlement, CIT was paid ahead of GO guaranteed creditors but at 39% of par as per the court decision. Both of these settlements affected the amounts available to GO guaranteed creditors.

57) Lower Bucks Hospital

» CUSIP: 515741BW5 and 515741BX3
» Default Date: December 15, 2009
» Obligor: Lower Bucks Hospital
» Issuer: Langhorne Manor Higher Education and Health Authority
» Defaulted Bonds: Series 1992 Bonds; $24.9 million of parity debt affected.
» Cause of Default: Operating losses, cuts in state aid, patient admission declines.
» Recovery: Approximately 33% of par based on available information.

Lower Bucks Hospital struggled with growing operating losses since the late 1990s due to extreme market pressures, including lower reimbursement rates and sharp competition. In 2002, the hospital dissolved its relationship with Temple University, although a tenuous relationship to Temple University Health System remained. The hospital continued to experience several years of significant patient volume declines because of its very competitive market. In recent years, key physician specialists have left the market or aligned with other providers because of high medical liability costs in the Philadelphia area, which caused patients to shift to ambulatory or competing inpatient facilities. The hospital grew increasingly dependent on state funding for profitability, which has steadily dropped from $4.3 million in 2008 to $1 million in 2010, reflecting the state’s own fiscal pressures. In 2009, Lower Bucks applied for “distressed status” designation by the Pension Benefit Guaranty Corporation.

Lower Bucks Hospital missed a debt service payment on December 15, 2009 and filed for bankruptcy on January 13, 2010, listing assets of $46.1 million and liabilities of $74.4 million. On July 8, 2011, Lower Bucks Hospital, Lower Bucks Health Enterprises, Inc., and Advanced Primary Care Physicians filed a joint Chapter 11 plan of reorganization.
Lower Bucks Hospital emerged from bankruptcy in January 2012, and in early October 2012 was purchased by Prime Healthcare Services, a for-profit hospital company headquartered in California. According to various sources, bondholders agreed to accept $8.15 million—much less than the $24.9 million in parity debt outstanding at the time of bankruptcy -- in exchange for being deemed secured creditors of the restructured enterprise. The bankruptcy court subsequently rejected the portion of the settlement that permitted mutual releases between the hospital and the trustee. No further information on the final settlement amount or the terms of what appears to have been a distressed exchange is available as of the publication date.

58) Nevada Department of Business and Industry-Las Vegas Monorail Project

- CUSIP: 25457VA
- Default Date: January 13, 2010
- Obligor: Las Vegas Monorail Corporation
- Issuer: Nevada Department of Business and Industry
- Defaulted Bonds: Series 2000 Revenue bonds; $439 million of bonds affected.
- Cause of Default: Mechanical problems, shutdown of operations, and below forecasted ridership and revenues.
- Recovery: 2%

The Series 2000 bonds were issued by the Nevada Department of Business and Industry for the construction of a 4.2 mile monorail corridor on the east side of the Las Vegas Strip connecting hotels, tourist attractions, and the convention center. The bonds were secured by net revenues of the monorail system, and were insured by Ambac. The project faltered from the beginning, with passenger service delayed by over a year and a series of severe mechanical and electrical problems causing periodic shutdowns of the system in 2004 and 2005. As important, ridership and revenues significantly underperformed initial projections. The project was further hurt by reduced advertising revenue and competition from existing transportation alternatives. The monorail continued to deplete its reserves until Ambac, the bond insurance provider, fronted $16 million to the Trustee in late 2009 to be applied towards the January 2010 debt service obligations. The project filed for bankruptcy protection in mid-January 2010. The filing was disputed by Ambac, which has filed a motion to dismiss the Chapter 11 filing in the belief that LVMC is a municipal entity that is not eligible to file for bankruptcy protection. Ambac itself filed for bankruptcy shortly after Las Vegas Monorail Project, bringing the insurance policy under bankruptcy protection as well.

The Las Vegas Monorail Corporation emerged from bankruptcy protection November, 2012, with a reported 2% total recovery for bondholders.

59) The Waters at Northern Hills Apartment, TX

- CUSIP: 088379
- Default Date: February 1, 2010.
- Obligor: Waters at Northern Hills Apartment (The)
- Issuer: Bexar County Housing Finance Corporation
- Defaulted Bonds: Multifamily Housing Revenue Bonds Subordinate Series 2001C ($0.21 million); Senior Series 2001A ($11.4 million) have not defaulted so far.

See: “In Re Lower Bucks Hospital – Dist Court, ED Pennsylvania, 2013”
» Cause of Default: Weak occupancy.

» Recovery: 100% of par plus accrued interest the defaulted subordinate bonds.

The bonds were secured by the revenue from the 304-unit Waters at Northern Hills Apartments, a 1982 vintage multi-family rental property located in San Antonio, approximately nine miles north of the central business district with good access to the city’s principal traffic arteries. Despite a satisfactory location, the project suffered poor occupancy levels, as well as operating expenses that were higher than projected in the initial underwriting. Although occupancy rates rose by 4 percentage points to 79% in 2010, in recent years they have remained significantly below the submarket rate of 93.5%.

On February 1, 2010, the Subordinate 2001 C debt service reserve was fully depleted, and no regularly scheduled 2001 Series C debt service payments were made since. There was no default on the Senior Series 2001A, which were insured by National Public Finance Guarantee (formerly MBIA Corp), but the senior debt service reserve fund was almost depleted by 2013. The Waters’ lost its tax exemption status with Bexar County, which involves an accrued tax liability of $1.2 million, with additional amounts likely in the future.

In 2013, the project was sold to a new owner, and the proceeds were sufficient to enable full debt defeasance of senior and subordinate debt. On August 1, 2013, the outstanding subordinate bonds were called in full at 100% of par and accrued interest, thus curing the default.

60) Honey Creek Apartments, TX

» CUSIP: 088379QR6

» Default Date: April 1, 2010.

» Obligor: Honey Creek Apartments

» Issuer: Bexar County Housing Finance Corporation

» Defaulted Bonds: Bexar County Housing Finance Corporation’s (Honey Creek/Austin Point Apartments) Multifamily Housing Revenue Bonds Subordinate Series 2000C; $1.210 million affected. Junior subordinate bonds, not rated, were also in default. Senior Series 2000A ($11.365 million) have not defaulted.

» Cause of Default: Low occupancy.

» Recovery: 100% of par plus accrued interest for the defaulted subordinate Series 2000 C bonds.

Like The Waters at North Hills project, Honey Creek is located approximately 10 miles north of the San Antonio central business district with good vehicular access. Also built in 1982, this garden-style apartment complex was and is composed of 40 two-story buildings. The bonds are limited obligations secured solely by the revenues, receipts and security pledged in the trust indenture.

As of 2010 the occupancy rate was 90-92%, which put the project into financial stress sufficient to affect subordinate bond debt service; Subordinate Series 2000C bond debt service has not been paid since April 1, 2010, although the 2000A senior Series debt service continued to be paid from project revenues, and the senior reserve remained fully funded. The senior bonds were also insured by MBIA Corporation and reinsured by National Public Finance Guarantee Corporation (formerly MBIA Corp).

In 2013, the Honey Creek project was refinanced, enabling the defeasance of all three series on August 27, 2013 at 100% of par plus accrued interest, thus curing the outstanding default on rated Subordinate Series 2000C debt.
61) AOH - Golf Villas, Rivermill, Village Square Apartments, FL

- CUSIP: 14052T
- Default Date: Default June 1, 2010 on Subordinate Series; Monetary default June 1, 2011 on Senior Series following reserve fund draw on December 1, 2010.
- Obligor: American Opportunity for Housing-Golf Villas, Rivermill, Village Square Apartments
- Issuer: Capital Trust Agency
- Cause of Default: Low occupancy rates, rehabilitation work, poor financial performance.
- Recovery: Approximately 75% for senior and 0.4% for subordinate.

The bonds were secured by the revenues and mortgages from three cross-collateralized properties--Golf Villas, Rivermill and Village Square Apartments--as well as funds and investments pledged to the trustee pursuant to the bond indenture. All three housing projects had difficulty maintaining a sustainable occupancy rate; The Golf Villas, Rivermill and Village Square projects reported physical occupancy of 75%, 86% and 91% respectively as of 2010, though these rates appear to have since weakened substantially. Previously, in 2005, revenues at Rivermill had been weak because of rehabilitation work that was performed on the property. With poor occupancy rates across all three projects, net revenues decreased to the point where the American Opportunity for Housing (AOH) failed to make monthly payments for the June 1, 2010 and December 1, 2010 debt service on the Subordinate and Junior Subordinated bonds (not rated), triggering a default on these bonds. AOH provided financial assistance to avert a June 1, 2010 default on the Senior bonds. This financial support then ceased, but the Trustee did have sufficient funds for the December 1, 2010 senior bond debt service payment.

On December 9, 2010, the trustee distributed funds from the debt service reserve fund to partially reimburse the Subordinate and Junior Subordinate bondholders for the June 1 December 1, debt service payments. The project was sold in February 2015, and the proceeds were distributed to bondholders as final payment on the bonds. The recovery was approximately 75% for senior bonds and 0.4% for subordinate bonds.

62) Whispering Palms Apartments, AZ

- CUSIP: 566823M
- Default Date: July 1, 2010.
- Obligor: Whispering Palms Apartments
- Issuer: Maricopa County Industrial Development Authority
- Defaulted Bonds: Multifamily Housing Revenue Bonds (Whispering Palms Apartments Project), Series 1999A; $5 million of debt affected.
- Cause of Default: Weak real estate market and poor operating performance.
- Recovery: 100% plus accrued interest.

Built in 1985, Whispering Palms Apartments is a 200 unit low-income qualified housing complex located approximately four miles west of downtown Phoenix. Serving a predominantly low- to moderate-income clientele, project rents remain below the Phoenix area average and there is fierce competition from nearby properties. The occupancy rate averaged 93% in 2010 but had reached as low as 74% in 2009. Moody's had highlighted significant weakness at the property back in 2004 when the rating was first moved below
investment grade as a result of poor financial performance, weak occupancy and a court-ordered change in management.

Beginning on January 1, 2010, the project began tapping the debt service reserve fund in order to make full debt service payments and the rating was downgraded to Caa1 from B1. The debt service reserve fund was fully depleted by July 1, 2011, when the trustee began making claims under the insurance policy from National Public Finance Guarantee (formerly MBIA Corp.) to make full payment. To date, no monies have been added to replenish the debt service reserve fund and a total of $153,707.61 or 33.87% of 2011 annual debt service has been paid by National Public Finance Guarantee continued to pay debt service through August 17, 2012, when National mandatorily tendered the bonds and paid holders 100% of par plus accrued interest.

63) Pegasus Landing & Pegasus Pointe at University of Central Florida (now Knight's Crossing and The Pointe at Central, following project name changes), FL

- CUSIP: 140427A
- Default Date: October 1, 2010.
- Obligor: Knights Crossing and The Pointe at University of Central Florida
- Issuer: Capital Projects Finance Authority
- Defaulted Bonds: Student Housing Revenue Bonds, Senior Series 2000 F-1 and F-2 (Capital Projects Loan Program); $137 million of debt affected.
- Cause of Default: Low occupancy rates resulting from water damage and mold.
- Recovery: Full recovery expected following physical remediation, strong occupancy of the projects, and resumption of debt service payments.

This financing is an interesting example of an otherwise sound project that defaulted because of a construction-related defect, which was then cured with additional investment by the bond insurer. The bonds are limited obligations of Capital Projects Finance Authority, secured solely by rental revenue from two privatized student housing projects—now called Knights Crossing and The Pointe at Central—and various funds pledged under the indenture. The Subordinate Series 2000G were not rated or insured, while the senior bonds are insured by MBIA Corporation and reinsured by National Public Finance Guarantee Corporation (formerly MBIA Corp).

The default was triggered in 2010 when the University of Central Florida began diverting students away from the projects following water damage and the discovery of mold in the buildings. The occupancy rate for the projects dropped to 66% and given reduced rental revenue and tenant relocation, the project began tapping the debt service reserves to help pay debt service for both series beginning in October 2010. Reserves were depleted by October 2011, and a monetary default occurred on the senior bonds, though bond insurance covered the debt service payments. Debt service payments on October 2011, April 2012, and October 2012 were made by the Trustee by drawing on the bond insurance policy.

However, unlike other distressed housing projects with weak submarkets, these projects still have a strong occupancy potential given the proximity of the University. Accordingly, MBIA in the Spring of 2011 committed to lend the projects funds, now totaling more than $32 million, to cure the mold and water damage problem and restore the buildings to student tenancy. The projects have also undergone a name change to Knight’s Crossing and The Pointe at Central, as noted above, to facilitate remarketing of the properties. The projects were 94% occupied in Fall 2013. Debt service payments in April 2013 and October 2013 were made from pledged revenues and not from draws on the insurance policies as in previous periods.
Although recent operating performance has been sufficient to meet current debt service payments, the project incurred approximately $52,800,000 in additional indebtedness between the loan for repair of the project and the bond insurer’s outstanding claim from the remediation period. These obligations are subordinate to the debt service on the senior bonds, but have priority over replenishment of the depleted debt service reserve fund which has not yet been restored. Full recovery would entail repayment of the debt service covered by the insurer.

64) Rutland Place Apartments, TX

» CUSIP: 052425CR4
» Default Date: November 1, 2010
» Obligor: Rutland Place Apartments
» Issuer: Austin Housing Finance Corporation
» Cause of Default: Low occupancy.
» Recovery: Following sale of the property, bondholders recovered 73.6% of outstanding principal.

The Rutland Place Apartments project is a 294-unit multifamily housing development located in the North Central Austin submarket, and is comprised of 16 garden-style apartment buildings (known as Rutland Place I) and 15 other apartment buildings (known as Rutland Place II). Phase I of the project was built in 1979 and Phase II was built in 1985. The property is subject to income restrictions, which limit the owner’s ability to maximize rental income. The bonds are limited obligations secured solely by the revenues, receipts and security from the project.

The property has struggled with low occupancy, which was most recently at 72%. Occupancy was weakened by a fire in 2008 which affected a significant number of units, and the project is further exposed to competition from a large inventory of housing units in the local market. The property has not been able to fully cover debt service for the past six years and the reserve funds have gradually been depleted, leading to full monetary default in 2010.

Rutland Place Apartments has failed to pay principal on Series 1998A bonds since November 1, 2010, and principal and interest since May 1, 2011.

In early 2012, bondholders directed the trustee to sell the property. A total of $8,224,688 was distributed to bondholders on March 30, 2012, for a total final recovery of 73.6% against principal.

65) Boston Industrial Development Fin. Auth., MA

» CUSIP: 10088MAU9
» Default Date: Forbearance agreement, effective as of May 24, 2011
» Obligor: Boston Industrial Development Finance Authority
» Bonds: Series 2002 Senior Revenue Bonds; $41 million of debt affected.
» Cause of Default: Forbearance Agreement signed to modify the terms from the original promise.
» Recovery: Pending.
The Series 2002 Bonds financed development of the Crosstown Center, a 175-room Hampton Inn and Suites hotel and a 650-space parking garage located adjacent to the Boston Medical Center in downtown Boston. The Project is approximately one mile from the City’s convention center and close to Logan Airport. The bonds are secured by a pledge of net revenues generated primarily from the operation of the hotel and parking garage, as well as debt service and other reserves. Moody’s rated the $35.67 million Senior Revenue Bonds but not the $7.75 million Subordinate bonds.

The project opened for business in July 2004, and despite its promising location room, rentals and revenues have been consistently significantly lower than original forecast. Hotel room demand never reached original expectations due to the continued expansion of the Boston hotel supply and the broader economic slowdown. One particularly problematic aspect of this financing was its ascending debt service structure, which reflected overly optimistic revenue growth projections.

The Crosstown Center Project defaulted effective May 24, 2011, when a forbearance agreement was signed that effectively suspended debt service payments aimed at allowing the hotel to build its operations and revenues, although regularly scheduled payment of Senior and Subordinate interest on September 1, 2011 was paid from deposits to the reserve fund. The original forbearance agreement was to run until January 1, 2013, when past-due principal and accrued interest would be paid, but the agreement had to be renegotiated in the absence of sufficient recovery. In November 2013, a new agreement was signed extending the forbearance period until January 31, 2015.

The hotel’s operations are relatively stable but as yet remain insufficient to fund debt service as originally scheduled.

66) Santa Rosa Bay Bridge Authority, FL

- CUSIP: 802576
- Default Date: July 1, 2011
- Obligor: Santa Rosa Bay Bridge Authority
- Issuer: Santa Rosa Bay Bridge Authority
- Defaulted Bonds: Series 1996 Revenue Bonds; $115.9 million of debt affected.
- Cause of Default: Insufficient toll traffic revenue, well below projections; competition.
- Recovery: 5.08% to date but still pending.

The Santa Rosa Bay Bridge Authority default is another example of a transportation infrastructure financing that could not live up to utilization forecasts and revenue projections. The Authority, established in 1984, financed and oversaw construction of the 3.5-mile Garcon Point Bridge, which spans the eastern end of Pensacola Bay, connecting Garcon Point in the north to Redfish Point in the south. The bonds are secured by gross toll revenues, along with a debt service reserve fund.

The Bridge provides access to Gulf Breeze and other areas on the peninsula from areas north and east of Pensacola Bay, though the existing toll-free Pensacola Bay Bridge to the west already linked Pensacola directly with Gulf Breeze. The Bridge opened on May 14, 1999, but from the beginning traffic forecasts proved to be overly optimistic; toll revenues were significantly less than projected, which put a strain on the authority’s finances starting in the first year of operation. In addition to the Pensacola Bay Bridge, the Garcon Point Bridge faces competition from two other toll-free alternatives-SR 8 and I-10. Local population and tourism growth is now expected to be moderate at best given regional economic and housing conditions.
The Bridge’s continued poor performance caused a full depletion of the reserve and interest accounts, which were still insufficient to cover the scheduled debt service payment of $5 million on July 1, 2011. While some of the bonds issued are insured by MBIA Corporation and reinsured by National Public Finance Guarantee Corporation, the July 1 defaulted bond was not insured.

Bridge traffic is reportedly up 1.55% year-on-year through January 2013, but total revenues are largely flat, such that no recovery appears imminent.

G7) Charitable Leadership Foundation, NY

- CUSIP: 012440FZ1, 012440GA5, 012440GB3
- Default Date: July 1, 2011
- Obligor: Charitable Leadership Foundation
- Issuer: Albany Industrial Development Agency
- Defaulted Bonds: 2002A Civic Facility Revenue Bonds (Center for Medical Science Center); $48.2 million of debt outstanding.
- Cause of Default: Bankruptcy of primary tenant.
- Recovery: Pending; uncertain, dependent upon sale of property

Charitable Leadership Foundation (“the Foundation”) is a private foundation devoted to various charitable, scientific, religious, or literary purposes including the fields of medicine and education. In 2002, the Foundation issued bonds to finance the creation of a biomedical research facility, called Center for Medical Science, in Albany, NY. The research facility was occupied by three tenants, one of which, Ordway Research Institute (ORI), comprised 43% of the space. Ordway stopped making rental payments in July 2010 and filed for bankruptcy in April 2011.

All three tenants at the time of the default were not-for-profit research or state-related entities. Health Research Inc., a not-for-profit corporation, leased approximately 45% of the space, and the New York State Department of Health Division of Lab Quality and Control leased another 11% of space. These renters reportedly still occupy their share of the building. The bonds are secured by a mortgage lien on the leasehold interest in the research facility, a security interest in the equipment, and a debt service reserve fund via a Citigroup guaranteed investment contract.

Following the loss of a large portion of rental income with the ORI bankruptcy, the Foundation tapped the debt reserve fund to make the January 2011 debt service payment but defaulted on July 1, 2011, when it failed to pay the scheduled principal payment due in the amount of $1.875 million. Bondholders foreclosed and formed a new for-profit entity, Albany Medical Science Research Institute LLC. In January 2013, the Albany Industrial Development Agency agreed to payments in lieu of taxes from the new private entity. The property is currently listed for sale or lease with Pyramid Brokerage Company-Albany Office. Recovery remains uncertain.

G8) Southern California Logistics Airport Authority/ Victorville Economic Development Authority- Southern California Logistics Airport Project

- CUSIP: 842472D, 842472C
- Default Date: Failure to pay $535,000 in subordinate bond principal December 1, 2011; reserve fund only available for interest payments, which were made ($1.3 million); subsequent defaults occurred in 2012-2015.
Obligor: Victor Valley Economic Development Authority

Issuer: Southern California Logistics Airport Authority


Cause of Default: Loss of pledged tax increment revenues because of collapsing real estate values, despite a very large project area base.

Recovery: Pending. The December 2011 default in of the rated subordinate bonds was cured with tax receipts in March 2012 but reportedly without accrued interest; defaults since then have not been cured. Unrated Taxable Subordinate Series 2006 that effectively occupy a ‘mezzanine’ level ahead of the rated Series 2007 and Series 2008 A debt in terms of pledge also defaulted in December 2013 and 2014. The Series 2006 defaults were each cured in the year following the default.

On December 1, 2011, the Southern California Logistics Airport Authority (SCLAA) first missed a payment on its subordinate non-housing tax allocation bonds. Although the tax base area is very large, comprising some 85,000 acres, 12 sub areas, and several towns and cities, the region was hit hard by losses in housing valuation during the downturn. As a result, tax increment revenues fell sharply, bringing debt service coverage on the rated subordinate non-housing bonds—of which about $51 million remain outstanding—to under 1.0x. The issuer was able to cure the December 2011 default with tax collections received during the following March distribution, however defaults since then have not been cured as no excess funds were available in the subsequent debt service payment cycles. Since the distinction between housing and non-housing tax increment was removed in conjunction with the dissolution of the redevelopment agencies, in SCLAA’s case, funds available for subordinate debt service have actually increased. In 2014, available revenues provided 0.82x coverage of all housing and non-housing debt.

A June 2015 continuing disclosure notice by SCLAA has created uncertainty over whether prior debt service defaults will be permitted to be cured with subsequent, excess tax increment revenues, when available. The disclosure indicated that the state’s Department of Finance (DOF) had disallowed the use of excess tax increment revenues in a subsequent period for the payment of previously defaulted debt service. The DOF’s determination, relating to the July through December 2015 semiannual period, was inconsistent with prior decisions. Ultimate bondholder recovery rates and the rating will both be informed by not only AV growth rates but by DOF’s stance in future Recognized Obligation Payment Schedules (ROPS) periods on the permitted use of excess tax increment revenues.

The State of California dissolved all redevelopment agencies in 2012. The successor agencies to these redevelopment agencies are subject to a semiannual, state approval process to use their tax increment revenues for preexisting obligations.

SCLAA is a joint powers authority between the City of Victorville and the obligor the Victor Valley Economic Development Authority (VVEDA). SCLAA is effectively controlled by the City of Victorville. SCLAA was formed in 1997 to pursue redevelopment of 2,500-acre George Air Force Base, which was deactivated in 1991. To this end it issued approximately $347 million of tax increment debt by 2008, of which $321.54 million was outstanding as of FY 2014. While aspects of the redevelopment effort have proceeded well with diverse warehousing, manufacturing, and aviation tenants, other project components including a BNSF rail spur, a power plant, and a ‘visa investor center’ faltered after considerable expenditure of bond funds.

69) KidsPeace, Inc., PA

CUSIP: 524805F37, 524805F45, 524805F52, 524805F60

Default Date: January 15, 2012

Obligor: KidsPeace, Inc., PA

Issuer: Lehigh County General Purpose Authority, PA
Defaulted Bonds: Series 1998 and 1999 Revenue bonds; $51.3 million of debt outstanding.

Cause of Default: Weak operating performance.

Recovery: 9.3% for principal and accrued interest; excludes any value for new bonds.

KidsPeace is a private institution providing youth behavioral and mental health treatment and foster care with facilities in ten states and the District of Columbia. Despite its scale and 130 year history, the debt supported by the institution was never rated above speculative grade by Moody’s since its initial sale in 2000.

Operating and financial performance weakened significantly in subsequent years, reflecting declining or less-than-expected average daily census at residential facilities, cutbacks in governmental funding for programs, and a series of professional liability issues. By fiscal year 2011, KidsPeace’s liabilities exceeded assets by over 50%, and it was cutting salaries across the board and seeking to terminate its pensions. Given the resulting cash pressures, KidsPeace requested a two-year debt service payment suspension from bondholders and pension relief from the Pension Benefit Guaranty Corporation (PBGC). Both petitions are currently pending. In March 2012 the PBGC placed an approximate $3 million lien on KidsPeace, becoming a secured creditor. In January 2013, KidsPeace agreed to a forbearance agreement with bondholders through June 1, 2013 that included a $15 million mortgage on property in favor of the trustee; a related step was PBGC’s agreement to subordinate status. KidsPeace missed its May 1, 2013 interest payment and filed for Chapter 11 bankruptcy shortly thereafter on May 21.

On December 18, 2013, KidsPeace and its affiliates filed a plan of reorganization in federal bankruptcy court. In 2014, bondholders were subject to a distressed exchange, comprising an upfront cash payment equivalent to 9.3% of outstanding par and accrued interest, and $25.11 million in new 30 year Series A and accreting Series B bonds. (There are no-interest Series C bonds that function only to provide a claim against a second bankruptcy). Bondholders who purchased secondary insurance from ACA are also offered a cash payout of 36% in exchange for release from the insurance claim. There is no current estimate of the value of the replacement bonds.

70) City of Wenatchee, WA

CUSIP: 950494
Default Date: June 1, 2012
Obigor: City of Wenatchee, WA
Issuer: Greater Wenatchee Regional Events Center Public Facilities District (unrated)
Defaulted Bonds: Contingent loan agreement on parity with general obligation debt; $9.3 million rated debt outstanding.
Cause of Default: Unwillingness to pay; failure to understand enterprise risk; poor management.
Recovery: 100% following long-term take-out of the BANs three months following default.

The City of Wenatchee, located in north central Washington, had pledged its full faith and credit to backstop interest payments on unrated BANs issued by the Greater Wenatchee Regional Events Center Public Facilities District (PFD), a municipal corporation established to build and operate a 4,300-seat sports and entertainment arena. The Town Toyota Center arena enterprise had performed weakly for years and ultimately forced Wenatchee to honor its guarantee, which in turn exposed the City’s General Fund and general taxing authority to liabilities far in excess of statutory and constitutional limits. In May 2012, Wenatchee announced it had insufficient funds to advance loans for future interest payments, and did not
advance funds for a note interest payment due June 1, 2012. This occurred despite PFD voter approval earlier in April for a 0.1% sales and use tax increase intended to help pay off the arena’s $42 million debt.

Wenatchee’s missed interest payment constitutes a default because the City made a clear pledge to support the contingent loan agreement, backed by its General Obligation Limited Tax authority.

On September 28, 2012 the PFD refinanced the BANs with $48.2 million long-term debt secured by several sources, including the 0.1% district-wide sales tax, an existing 0.033% district-wide sales tax, and a 0.2% Wenatchee-only sales tax. The City and PFD also settled favorably with most of the city’s major potential legal counterparties.

71) City of Stockton, CA

» CUSIP: 861361, 861394
» Default Date: June 28, 2012
» Obligor: City of Stockton, CA
» Issuer: City of Stockton, CA
» Defaulted Bonds:

<table>
<thead>
<tr>
<th>Series</th>
<th>Debt Affected ($ mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 Taxable Pension Obligation bonds</td>
<td>$124.28</td>
</tr>
<tr>
<td>2004 Public Financing Authority Lease Revenue Bonds (Parking)</td>
<td>$31.64</td>
</tr>
<tr>
<td>2007 A&amp;B Public Financing Authority Variable Rate Demand Lease Revenue Bonds</td>
<td>$40.36</td>
</tr>
<tr>
<td>2009 A Public Financing Authority Lease Revenue Bonds</td>
<td>$35.08</td>
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<tr>
<td>2004 Redevelopment Agency (Stockton Events Center)</td>
<td>$45.59</td>
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<tr>
<td>2006 A Public Financing Authority Lease Revenue Bonds</td>
<td>$12.09</td>
</tr>
<tr>
<td>2003 A&amp;B Certificates of Participation (Redevelopment Housing)</td>
<td>$12.97</td>
</tr>
</tbody>
</table>

Note: Default as defined by Moody’s, reflecting bankruptcy filing; city has suspended support for five of seven above series

» Cause of Default: Substantial losses in housing values and employment; inability to manage costs within confines of statutory property tax revenue limits; lack of sufficient financial controls.

» Recovery: Average recovery of about 50% across all seven outstanding bonds.

A historic inland port city and the seat of San Joaquin County, Stockton was caught in the boom-bust economic cycle of the 2000s and suffered substantial losses in tax base and employment. The city also had major problems with controlling spending; although a series of earlier self-declared “fiscal emergencies” were seen as aids to renegotiating labor contracts, Stockton also had serious unreported issues with financial management in general. In 2012, when it first proposed a suspension of general fund support for lease obligations, the city simultaneously announced a major, negative restatements of prior years’ audits.

Stockton’s June 2012 bankruptcy filing was at the time the largest of any city in the US by population. It was also the first California city to use the state’s new AB 506 mediation process, but Stockton was destined to establish any number of precedents in the area of municipal bankruptcy: it was the first city where leased assets in a rated transaction were repossessed by the bond trustee, and its bankruptcy filing was vigorously opposed by insurers and bondholders. Although the Stockton bankruptcy has since been eclipsed by Detroit’s filing in scale, the Stockton case will reverberate and redefine how we think about municipal loss given default. Most significantly, it – along with San Bernardino— tested the status of pension obligations in relation to bonded debt. The court’s February 2015 written opinion confirming Stockton’s plan of
adjustment was a mixed bag for bondholders. Favorably, it made clear that pensions are not exempt from impairment under Chapter 9, despite substantial pressure from the state’s pension fund to find otherwise. Negatively for bondholders, the court found that the ability to cut pensions was limited to cases where the court applied a complicated balancing test and ultimately decided cuts to pensioners would be allowed. Further, the Stockton decision potentially established a roadmap for future bankrupt local governments to impose more severe cuts on bondholders than retirees. It does this by conflating the legally separate claims of pensions and retiree health benefits (also known as Other Post-Employment Benefits, or OPEBs) in determining whether to confirm the city’s plan of adjustment. The judge allowed Stockton retirees to recover all of their future pensions, including the unfunded portion, while reducing OPEB liabilities to almost nothing. In its plan Stockton treats both claims, which are arguably unsecured, as separate classes. The court makes the point that the plan was fair to investors because the outcome for retirees must consider their overall recovery on pensions and OPEBs combined. By combining these two distinct classes of claims to arrive at a calculation of losses for retirees, the court provides a justification for eliminating OPEBs while keeping pensions, possibly opening the door for other bankrupt local governments to consider using the same approach in the future.

72) American Opportunities for Housing—Colinas, LLC, TX

- CUSIP: 088379SD5
- Default Date: July 1, 2012
- Obligor: American Opportunity for Housing - Colinas, LLC, TX
- Issuer: Bexar County Housing Finance Corporation, TX
- Defaulted Bonds: Subordinate Series 2001 C; $27.26 million total debt outstanding.
- Cause of Default: Weak real estate market and poor operating performance.
- Recovery: 100% following sale of property in February 2013 and March 2013 defeasance.

The Colinas Project comprises 776 rental units in three properties—Las Colinas Apartments, Huebner Oaks Apartments, and Perrin Crest Apartments—all built between 1978 and 1984 and located around San Antonio, Texas. The project subsequently experienced weak operating performance and then sustained fire damage, which left 16 units uninhabitable along with water damage. The bonds were first downgraded to below investment-grade in December 2006, in part because occupancy had fallen below 90%. To reduce vacancies, the project began to offer rental concessions that further weakened its financial position. The subordinate bonds first defaulted on July 1, 2012 after tapping both the surplus and debt service reserve funds. The borrower sold the project on February 14, 2013 and generated proceeds sufficient to pay all delinquent and outstanding principal and interest on the defaulted $3,370,000 of subordinate bonds and redeem in full the $23,890,000 of senior bonds.

73) City of Oakdale Sewer Enterprise, CA

- CUSIP: 672010
- Default Date: August 31, 2012
- Obligor: City of Oakdale Sewer Enterprise, CA
- Issuer: City of Oakdale Sewer Enterprise, CA
- Defaulted Bonds: Loan on parity with revenue debt; $1.6 million rated debt outstanding.
- Cause of Default: Weak management practices.
- Recovery: 93.5%, reflecting principal and accrued interest
In August 2009, Oakdale Sewer Enterprise entered into a loan with the California State Water Resource Control Board (CSWRCB), which provided $13 million in capital financing for the rehabilitation and upgrade of the wastewater treatment plant. In August 2012, Oakdale failed to make a payment on this loan which was secured on a parity basis with Oakdale’s rated 2002 revenue bonds. The default was a result of weak management practices, with the city staff reportedly unclear as to when the first payment was due. Apparently, however, miscommunication was not uncommon; the finance department also failed to set aside $844,000 in reserves, as was required by the loan agreement, and had generally failed to track rate increases and projected revenues against expenditures.

Despite a reported doubling of residents’ sewer rates since the borrowing, net revenue had remained insufficient to cover total debt service for the sewer system. Weeks prior to the missed payment, the city council decided to make a partial, interest-only payment on the CSWRCB loan (equivalent to about 39% of debt service due). Debt service on the 2002 parity bonds, however, which was significantly less than that on the loan, remained current at all times.

The city was reluctant to impose further sharp rate increases on residents and began negotiating with the Water Resource Control Board to restructure the entire loan obligation, which occurred in June, 2013. Under the terms of the restructuring, the final maturity date and the total principal for the CSWRCB loan remain unchanged, although the amortization schedule has been modified and backloaded to produce lower annual principal payments (and debt service) over the next seven years. The system made the required interest-only payment of $329,200 on August 31, 2013 and will resume principal payments in August 2014. The loan modification plan also required the system to raise rates sufficient to stabilize the system. In November of 2013, the system adopted a series of rate increases extending out to 2017.

While the new amortization schedule calls for full repayment of the CSWRCB loan principal within the original final maturity date, Moody’s calculates a present value loss of approximately 6.5% for the CSWRCB as creditor.

**74) Jefferson County Public Building Authority (Jefferson County Lease)**

» CUSIP: 4726PA
» Default Date: January 1, 2013
» Obligor: Jefferson County, AL
» Issuer: Jefferson County Public Building Authority, AL
» Defaulted Bonds: Lease Revenue Warrants Series 2006; $78.4 million outstanding.
» Cause of Default: Distressed exchange and workout related to county bankruptcy.
» Recovery: 100%+23, reflecting principal, accrued interest, and additional payments over time

The Jefferson County Public Building Authority was created as a facilities financing vehicle for Jefferson County and its agencies. In 2006, the Authority undertook the construction of a new courthouse and the renovation of the existing jail and courthouse with the sale of $86.7 million of lease revenue warrants. The Bessemer Court House and Jail project warrants were secured by rental payments from Jefferson County, subject to the annual renewal of the lease. Following its bankruptcy filing in November 2011, however, Jefferson County skipped its 2012 lease payments to preserve its already-narrow cash position. The County petitioned the court for relief from its automatic bankruptcy stay to allow the trustee to draw on the debt service reserve fund to make the April 2012 payment. The court allowed it, and full payment was made to bondholders. A similar motion was filed and granted for the October 2012 payment. Jefferson County

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23 Jefferson County’s Lower GO Leverage Fuels Higher Recovery than Sewer, March 2014 (165540)
examined a number of options in regards to the lease, including rejecting the lease and relocating the jail and courthouse services elsewhere. Ultimately, however, and in conjunction with its plan of recovery, the County restructured its obligations with the Authority in November 2012 in a workout arrangement that included Ambac, the insurer for the 2006 Warrants. This allowed the county to keep the warrants’ original 20 year maturity schedule by relying in part upon Ambac insurance and with a new lease that eases and extends the county’s repayment obligations over 30 years. The workout, which became effective January 1, 2013, essentially comprises a distressed exchange wherein original warrant holders remain unimpaired; they receive principal and interest as originally scheduled with the help of Ambac, who will cover scheduled debt service payments from 2016-2021 and in 2026. In return for Ambac’s contributions, the county will reimburse Ambac with semi-annual payments of $2.3 million from October 1, 2026 through April 1, 2036, a period that extend well beyond the warrant maturity. The final recovery calculation for the lease revenue debt provides Ambac as ultimate creditor with a recovery of 117% (using a 5% discount rate); the greater than 100% recovery reflects Ambac’s return for covering some of the payments on the warrants.

75) West Penn Allegheny Health System, PA

- CUSIP: 01728AG
- Default Date: April 30, 2013
- Obligor: West Penn Allegheny Health System
- Issuer: Allegheny County Hospital Development Authority
- Defaulted Debt: Health System Revenue Bonds, Series 2007A through distressed exchange; approximately $710 million of debt affected.
- Cause of Default: Declining patient volumes and large operating losses.
- Recovery: About 85% of outstanding bonds were tendered in the distressed exchange and reportedly received 87.5% of par. There was no monetary default on either principal or interest up until the distressed exchange. Status and recovery for the remaining outstanding bonds is pending. (Source: Moody’s files)

West Penn Allegheny Health System (WPAHS) formed at the merger of The Western Pennsylvania Hospital and Allegheny Health and Research Foundation’s (AHERF’s) Pittsburgh operations, following AHERF’s bankruptcy filing and restructuring of its Philadelphia operations in 1998 (See: #16 and #17). In the succession, WPAHS inherited a weakened balance sheet and other credit challenges.

WPAHS’s 2013 restructuring was the result of years of financial troubles for the entity, which included drops in patient volume, management and governance missteps, continuous large operating losses, a concentrated and exclusive insurance market which provided insurance companies unusually high negotiating leverage, and a significant degree of market competition from neighboring University of Pittsburgh Medical Center (UPMC). In recent years, UPMC has grown to become the largest health system in the region, and WPAHS’s ability to compete was constrained by a lack of capital resources to invest in facilities and other strategies.

WPAHS underwent a restructuring of its Pittsburgh operations in 2013, which included a distressed exchange with bondholders. As part of the restructuring, Highmark Health Services, a not-for-profit health insurance company in western Pennsylvania, became affiliated with WPAHS, and in doing so took over management of operations and in an associated move attempted to acquire all outstanding debt at a discount. The distressed exchange that resulted affected 85% of outstanding bonds whose holders accepted the tender offer of 87.5% of par. The status and recovery of the remaining outstanding debt is pending. In late 2013, Highmark reportedly acquired another $50 mm, or roughly half of the non-tendered bonds up to that point. At no time did any of bonds suffer monetary default on either principal or interest.
76) Pontiac City School District, MI

- CUSIP: 732538G
- Default Date: May 1, 2013
- Obligor: Pontiac City School District, MI
- Issuer: Pontiac City School District, MI
- Cause of Default: Extreme operating and financial stress stemming from sharp enrollment declines and loss of state aid.
- Recovery: 100% repaid to insurer.

The Pontiac City School District default was the first by any Moody’s rated school district, and was followed by the default of a second albeit unrated Michigan school district, Buena Vista, which was then dissolved. A third Michigan district, Inkster, was also dissolved, and two more, Muskegon Heights and Highland Park, were effectively dissolved by their emergency managers and converted to charter academies. These broadly reflect large scale changes in Michigan public education, which promotes school choice and competition through mobility of per student state aid, on top of recent and severe economic and demographic declines in the southeastern part of the state. School districts’ very limited revenue raising flexibility and stagnant state funding have also contributed to financial distress among districts.

The steady erosion of Pontiac School District’s credit quality reflected a variety of problems stemming from a weakened economic base, with school enrollments declining 50% from a decade ago, and rapid turnover of management. The district had been operating with very limited liquidity for several years, with increasing reliance on cash flow borrowing via tax anticipation notes (TANs) and state aid anticipation notes (SANs) to fill shortfalls. Leading up to the default, the district’s General Fund deficit had risen to 50%, and it had a large backlog of unpaid bills. The default was triggered by a series of state actions related to the district’s deficit operations. First, the Michigan Department of Treasury withheld permission for the district to issue TANs for fiscal 2013, citing insufficiency of financial information and its concerns about the district’s ability to ultimately repay the notes. Then, Michigan Department of Education (MDE) separately withheld Pontiac’s aid payments in March and April because the district did not comply with its deficit elimination plan. All this while, the state was considering putting the district under increased financial oversight. The MDE eventually released state aid to Pontiac, but not in time to avert the default.

Defaulted bondholders were paid promptly by the insurer, Syncora Guaranty, once the claim was made, but this was delayed because the paying agent did not notify Syncora of the default until May 21, 2013. While the missed debt service payment was relatively minor in comparison with district operations—approximately 2% of general fund revenues—repayment had to compete against a growing backlog of unpaid bills. The district was then granted permission by the state to issue a TAN, improving cash flow, and also agreed a quarterly repayment schedule with Syncora for principal and accrued interest. The final payment to the insurer was made in June 2014, resulting in recovery of over 100%. More aggressive state oversight has allowed for improved financial management and operations, but the district’s challenges remain significant.

77) City of Detroit, MI Certificates of Participation

- CUSIP: 251228A; 25113PA
- Default Date: June 14, 2013
- Obligor: City of Detroit, MI
Issuer: Detroit Retirement Systems Funding Trust

Defaulted Debt: Series 2005 and 2006 Taxable Certificates of Participation; approximately $1.45 billion of debt affected.

Cause of Default: Extreme operating and financial distress following years of economic contraction and outmigration.

Recovery: 12%

The city of Detroit’s decades-long descent into financial distress has been well-documented, and its unraveling, though unique in its severity and duration, may have implications for the treatment of bondholders in other distressed municipalities going forward. Some of its actions have been predictable, but others have been less expected; the treatment of its COPs debt falls into the latter category.

On January 31, 2014, the city filed a motion with the bankruptcy court to invalidate its $1.45 billion of COPs debt. Detroit alleged that its COPs were issued illegally, in that they violated the city’s statutory debt limit. If such a repudiation was successful, holders of the COPs could have received 0% recovery. If the city successfully repudiated the debt, it may have been required to return the proceeds of the sale, which funded the city’s pension systems. Notably, repudiating the COPs could have increased recovery for other creditors, as more of the city’s limited funds would have been available to pay off other liabilities. 24

Because the COPs were issued as variable rate instruments, the city had entered into a series of swap agreements that later comprised another set of liabilities in the bankruptcy. The city reached a settlement with the counterparties to the swap agreements, whom the city considered to have secured status, resulting in a payment of $85.0 million. The contrast between the proposed treatment of swap counterparties compared to COP holders who faced repudiation highlights the uncertainty of creditor treatment in times of distress.

Ultimately, the city’s filing was rescinded as part of the final settlement with creditors; the bankruptcy settlement provided an approximate recovery for COP bondholders of 12%, which is significantly lower than that provided to GOLT and GOULT bondholders (see Case Study 78 and 79).

This up-front recovery does not capture additional considerations in the form of property transfers, lease agreements, or various other economic benefits reflecting separate settlements reached between the city and the bond insurers.

78, 79) City of Detroit, MI Limited Tax and Unlimited Tax General Obligation


Default Date: July 18, 2013

Obligor: City of Detroit, MI

Issuer: City of Detroit, MI


Cause of Default: Extreme operating and financial distress following years of economic contraction and outmigration.

Recovery: 69% for GO ULT bonds; 41% for GO LT bonds.

24 See: “Detroit: DIPing its Toe into a Corporate Bankruptcy Tool,” November 2013 [160112]
Another surprising turn of events relating to Detroit was its initial treatment of Limited and Unlimited Tax General Obligation bondholders as “unsecured” creditors, which put them on par with other unsecured creditors such as pensioners and vendors. Bondholders contested the treatment of GO debt as “unsecured” in bankruptcy court, claiming that the debt was secured because voters approved a dedicated property tax levy to pay debt service on the GO bonds; under state law, proceeds from this levy were to be put aside and used solely for payment of principal and interest. The city argued that federal bankruptcy protection dissolves any rights the bondholders have to either access those funds or to sue in court to have property taxes increased to pay debt service.

Eventually, the city announced a settlement with most of the insurers of GO ULT debt that reclassified this lien as “secured”. Ultimately, because the city and bondholders settled, there was no court decision as to whether or not the bonds would have been designated secured or unsecured. The final bankruptcy settlement ultimately impaired both types of GO bondholders, with GO ULT and GO LT debt recovering 69% and 41%, respectively.

Regardless of what transpired in Detroit, treatment of GO debt in municipal default remains far from certain. GO pledges vary across the country, depending on many factors, which include: the nature of the pledge (limited or unlimited, full faith and credit, etc.), if the property tax levy is held in a separate fund or by a third party and used only to benefit bondholders, whether that levy is dedicated and pledged, if there exists a statutory lien under state law, and whether the municipality exists in a state which allows for bankruptcy protection. For more information on Detroit’s treatment of GO debt and its implications for the broader market, please see our March 2014 publication, All GO Pledges Are Not Created Equal: Detroit Case Unlikely to Set National Precedent.

80) Detroit Academy of Arts & Sciences, MI

» CUSIP: 5955RQ
» Default Date: October 1, 2013
» Obligor: Detroit Academy of Arts & Sciences, MI
» Issuer: Michigan Municipal Bond Authority
» Defaulted Debt: Public Schools Academy Facilities Program Revenue Bonds (Detroit Academy of Arts and Sciences Project), Series 2001
» Recovery: 49% reflecting principal and accrued interest and a distressed exchange into new bonds

The Detroit Academy of Arts and Sciences is a not-for-profit charter school that received its charter in 1997 and began operations in August of that year. It originally served public school children in grades K-5, but eventually expanded to include K-12. The 2001 bonds were secured by monthly installment payments of state aid revenue transferred to the trustee, who is directed to retain no more than 20% for debt service. Pledged revenues in 2011 were a very narrow 1.06 times debt service. The 2011 closure of the Academy’s high school dealt a devastating blow to the already-weak financial position of the Academy, as state aid revenues are distributed on a per-pupil basis. Additionally, the Academy operates in a highly competitive public education market in the state of Michigan, which has resulted in large drops in enrollment for K-8 students (which were down 38% from 2004 to 2013) and may continue to impose volatility on enrollment and revenue trends going forward.

Since February 2102, the Academy had been operating under a forbearance agreement with bondholders; the original agreement had been extended three times, most recently through March 2014.
The Academy defaulted on debt service in October 2013. Relatively quickly thereafter in December 2013 the Academy sold $14.9 million of bonds in a distressed exchange of the remaining $25.5 million principal on the original Series 2001 bonds. In addition to the 42% reduction in principal, the new bonds extend the final maturity from 2013 for the exchanged Series 2001 bonds to 2043 for the new debt. The new 2013 debt is similarly secured by state aid payments to the Academy. The resizing of debt and annual debt service payments is expected to more closely match annual pledged revenues of the Academy following the steady decline in enrollment, but because of the longer amortization, the 58% recovery of principal translates into an all-in recovery rate is 49%.
Appendix B: Details on Near Misses and Unrated Defaults

Weak operating and financial performance does not always lead to a default. Governments can step in to support struggling entities or to help provide temporary relief. Mergers and acquisitions in the enterprise sectors can also come at the right time to stave off a default. Because of the high degree of uncertainty and the ability of governments to withdraw their support—even when there is an explicit guarantee as in the case of Wenatchee, WA or an appropriation pledge in the case of Menasha, WI—Moody’s ratings generally don’t consider the possibility of such interventions. In the recent past, there have been several notable examples of ‘near misses’—instances when defaults were averted by fortuitous circumstances.

There have also been several interesting recent default cases which, while not rated, have helped inform our knowledge of the universe of municipal defaults. Below we profile a few notable examples. While these cases are not included in our data statistics, they tend to reflect similar credit trends observed in the rated portfolio—weakening economic profiles, reduced financial flexibility and lacking governance practices.

1) Rhode Island Economic Development Corporation—38 Studios (near miss)

In 2010, Rhode Island Economic Development Corporation issued bonds on behalf of start-up company 38 Studios, which was a video-gaming venture. The bonds were secured by loan payments made by 38 Studios and featured a moral obligation from the State of Rhode Island to appropriate funds to cover deficiencies in the capital reserve fund and debt service on the bonds. The company struggled financially, failed to make a required annual payment of $1.125 million due in May 2012 and although payment was eventually received within the 30-day cure period specified in the loan contracts, 38 Studios eventually declared bankruptcy. Politically, the once-positive sentiment over job creation in connection with the venture was replaced with frustration over the agreement terms and Rhode Island’s exposure to the outstanding debt. The state has so far appropriated funds to meet its moral obligation pledge.

2) Camden County Pollution Control Finance Authority, NJ (near miss)

Before paying off debt in 2010, the solid waste system in Camden did not generate sufficient revenues to pay its debt service. The Authority had relied on state aid since 1999, receiving more than $150 million. Although the State of New Jersey provided ongoing support, it had no legal or moral obligation to do so. In fact, the State’s assistance did wane in recent years, coming in at $6 million despite increased requests from the Authority. Concerns began to emerge whether Camden County Pollution Control Finance Authority would meet its ballooning principal payment of $24.3 million due December 2010. A last-minute deal with the State Department of Environmental Protection helped the Authority narrowly avoid a default.

3) Westerly Hospital, RI (near miss)

Despite its favorable market position as the dominant player on the southwest coast of Rhode Island, Westerly Hospital has experienced a precipitous decline in financial performance since fiscal year 2000. On December 7, 2011, the hospital filed for receivership to address its operating performance and expense pressures related to salaries and unfunded pensions. Throughout the period of receivership, Westerly Hospital continued to make all debt service payments on time and in full, although it did so by using funds from the debt service reserve fund and skipping the mandatory redemptions. In June 2013, Lawrence and Memorial Hospital based in New London, Connecticut, purchased Westerly Hospital, assuming its debt and ending a 17 month receivership.
4) City of Moberly, Missouri (unrated default)

- Default Date: August 2011 (default on bonds); March 2012 (Moberly’s renege of appropriation pledge) approximately $35 million of debt outstanding.
- Cause of default: Fraud, city’s failure to appropriate.

Located in Randolph County, Missouri, the City of Moberly has a population of 14,000 and an annual budget of about $7 million. In 2010, the City issued $39 million of bonds through its economic development authority on behalf of Mamtek—a corporation building an artificial sweetener facility in the city. Pursuant to the bond issue, Moberly pledged to appropriate funds to the economic development authority for payment on the bonds. Construction of the facility was never completed and the plant closed due to financial troubles. Mamtek defaulted on $3.2 million in August 2011 and the City reneged on its appropriation pledge when allegations of fraud emerged. Mamtek CEO Bruce Cole pled guilty to two counts of securities fraud and one criminal count of theft under a plea deal for missing bond proceeds for personal gain and is currently serving seven years in prison. In October 2012, the manufacturing plant was sold at an auction for $1.8 million. Bondholders filed a federal class action lawsuit against Armstrong Teasdale, general counsel for the issuance, Morgan Keegan, the underwriter for the transaction, and Raymond James, who had since acquired Morgan Keegan, alleging that they were misled about the viability of the plant and the city pledge. A settlement was announced in 2015, in which investors recouped about 86% of their losses.

5) Town of Mammoth Lakes, CA (unrated bankruptcy)

- Default Date: July 2, 2012 (filing for bankruptcy protection).
- Cause of Default: Unfavorable court ruling equaling three times the city’s annual operating budget.

Mammoth Lakes, a ski resort town near Yosemite National Park, filed for Chapter 9 bankruptcy protection after the state appellate court upheld a judgment against the Town. In 1997, Mammoth Lakes entered into an agreement in which developers, Mammoth Lakes Land Acquisition, improved airport operations in exchange for rights to develop retail and housing properties, and an option to buy the land. When the Town announced the project would interfere with Federal Aviation Administration policy governing the use of airport property for aeronautical purposes, developers filed a lawsuit citing breach of contract. The Town appealed the 2008 decision to award $30 million against it. In 2012, the ruling was upheld and the judgment was increased to $43 million, commensurate with interest and legal fees. When mediation between the Town and developers failed, Mammoth Lakes filed for bankruptcy protection. A month after the filing, the Town announced a settlement, and asked the court to dismiss the bankruptcy filing, which was signed by the Judge in November 2012.

6) City of Vadnais Heights, Minnesota (unrated default)

- Default Date: August 27, 2012 (Vadnais Heights decision to renege on appropriation pledge); lease termination December 2012; approximately $1.8 million of lease debt and $10.6 million of general obligation debt outstanding.
- Cause of default: City’s failure to appropriate.

The City of Vadnais Height’s action to renege on an appropriation pledge is an example of how the failure to support the operations or debt service of struggling enterprises can have serious ramifications for a local government’s general obligation rating. Some will experience severe deterioration in credit quality.

For example, the City of Vadnais Heights, Minnesota made an appropriation pledge to support a lease revenue transaction (unrated) used to finance a sports complex. City management expected net revenues of the facility to fully fund debt service, but when net revenues were insufficient, the city faced an unexpected call on its appropriation pledge. City officials chose to terminate the lease payments, a decision that led to our September 2012 downgrade of the city’s general obligation rating to Ba1 from Aa2. A key factor in our rating action was the city’s unwillingness to honor its pledge on publicly-issued debt. The city’s rating has
since been upgraded to Baa2, reflecting the elimination of the contingent liability with the sale of the project assets as well as the moderate risk associated with a pending lawsuit brought by the complex’s operator.

In counterpoint to this is the City of Monticello, Minnesota, which discontinued its support of an underperforming telecommunications enterprise. However, when the bonds for this enterprise [unrated] were originally sold, the security was expressly limited to net revenues generated from the utility. The city made no pledge to support the debt from any other source and did not provide funding to avert a default on the bonds. The city did, however, provide some General Fund support for the utility’s operations, which weakened the city’s the financial position, triggering our September 2012 downgrade of the city’s general obligation rating to A2 from Aa3. Despite the downgrade, we viewed the city’s general obligation credit profile as remaining solidly in the investment-grade range. Unlike the Vadnais Heights transaction, Monticello made no assurances to consider appropriating for debt service; the risks on the utility revenue bonds were transparent to investors.

7) Harrisburg University of Science and Technology, Pennsylvania (unrated default)

- Default Date: March 1, 2014
- Cause of Default: Higher than projected expenses and low enrollment

Harrisburg University of Science and Technology was created in 2001 and opened its doors in 2005 as a private not-for-profit university in the capital city. The University was partially supported by public funds, including a $1.5 million a year pledge from Dauphin County to support debt service through 2019. Located downtown and meant to spur development, the University issued approximately $88 million in bonds in 2007 to support a science and technology project.

The University, which aimed to provide science, mathematics and technology education through undergraduate, graduate and professional programs, was never able to meet its enrollment projections. Enrollment for Fall 2013 semester stood at about 420 students, with the University needing between 520 and 550 to break even.

The University experienced both payment and non-payment defaults, the latter in the form of failing to submit funds to the trustee in advance of the bond payment date as required. The trustee has been able to draw on Dauphin County’s guaranty to provide payment to bondholders, but it is insufficient to cover total annual debt service.

Dauphin County has signaled its intent to continue to provide $1.5 million each year towards debt service. The city of Harrisburg itself exited state receivership in February 2014. School officials report that, despite being put on a federal watchlist by the U.S. Department of Education requiring increased financial oversight, the school has been improving, with April 2015 headcount standing at around 1,500.25

8) Munster School District (IN) (unrated default)

The school district, which defaulted in January 2015, serves a wealthy population about 30 miles outside Chicago. It faced severe cash flow constraints following major cuts to state funding coupled with lower-than-expected tax collections in December 2014. The district was a participant in a post-default state intercept program; the state did not step in to pay bondholders. In the days following the default, the district received loans which allowed it to pay bondholders without state assistance. The district is currently planning cuts in spending, including significant layoffs, to allow it to make its next debt service payment.26

Appendix C: Details on Individual Short-Term Municipal Default Events

Although the focus of this study is on long-term defaults, short-term risks are inevitably incorporated in the performance data. Liquidity, market access and solvency are key considerations for both short-term and long-term ratings. Furthermore, short-term pressures reflect an issuer’s credit profile, and Moody’s adjusts its long- and short-term ratings accordingly when such information is discovered. There were four notable short-term defaults during the study period; these exclude the slight interest payment delays on Orange County notes which resulted from procedural issues, as noted in the Orange County default case study (14) in Appendix A above.

1) New York State Urban Development Corporation

UDC was the first major municipal issuer to default on its obligations since the Great Depression. Established in 1968, the Urban Development Corporation (UDC) was created to provide low- and moderate-income housing around the New York State. The Corporation relied heavily on moral obligations from New York State to help fund its construction projects, having issued $1.1 billion in long-term debt by 1974. However, at the time, UDC’s programs had not yet developed sufficient cash flow to cover debt service, and the concept of what debt service it should be covering was itself hazy since borrowings were frequent, new programs continuously starting, and accounting techniques for capitalized interest still evolving.

By the end of 1974, UDC had substantial future borrowing requirements to complete projects under construction and to repay $100 million in maturing BANs and $30 million in a private bridge loan, both due February 1975. Security for the BANs included UDC’s full faith and credit and commitment to issue bonds in order to pay them off. In January and February, UDC tried to issue new debt to continue its operations but was unable to do so. Governor Carey stepped in and asked banks to lend to the Corporation, but an agreement could not be reached. On February 25, UDC missed a $104.5 million payment due on its BANs, $100 million principal and $4.5 million interest; the default was cured within eight days.

After the default New York State Legislature and Governor Carey created New York State Project Finance Agency (PFA) to provide long-term financing not otherwise available to UDC. The Agency received $190 million state appropriations and $280 million credit line from commercial banks and state agencies. PFA purchased mortgages from UDC, thus, enabling UDC to pay principal and interest on defaulted notes, to make contributions for completing projects under construction and to provide one year’s debt service on existing bonds. UDC’s financing needs continued to be met through bond issuances by PFA until the 1980s, and the Corporation remained reliant on state support for years afterwards given high mortgage delinquencies in its housing program.

Leading up to the default, Moody’s had a MIG 2 rating on the notes and a long-term rating of Baa, which was based in part on the evolving support from the State. Moody’s suspended its rating on the BANs on January 29, 1975.

2) New York City

New York City’s three year moratorium on note repayment occurred in the context of an epic fiscal crisis that came to a head in 1975, nearly resulted in a monetary default, caused the city to flirt with bankruptcy, and was ultimately resolved only with the assistance of the federal and state governments. The problem lay in chronic overspending and budget deficits that reached back as far as 1961, an accumulation of short-term cash of borrowing to meet operating needs, and opaque and improper accounting and budgeting practices that camouflaged the imbalances. By early 1975 the market was beginning to reject New York City paper; a
February TAN sale had to be cancelled, and subsequent proposed issues could not get clean legal opinions. The Urban Development Corporation then defaulted on a BAN issue, which was unrelated to the City but which heightening the overall market concern. By April, the city was resorting to bank and pension fund loans for short-term operating funds.

In November 1975, New York State enacted the Moratorium Act, which suspended for three years the right to sue the city of New York to force payment of its short-term obligations. Using the terms of this law, New York City deferred payment and thus defaulted on its notes as they came due. The financial emergency that existed in New York City in the early to mid-1970s was a result of spending that exceeded operating revenue for several years. The overspending created accumulated fund deficits and cash flow problems that could be resolved only by short-term borrowing to meet expenditures.

When banks refused to roll over its short-term debt, the city did not have the funds necessary to pay its obligations. To provide cash to the city while implementing a plan to return it to balanced budgets under the supervision of a state control board, the state advanced the city money, the Municipal Assistance Corporation for the City of New York (MAC) was established to issue debt on behalf of the city, the city’s pension funds provided loans, and the federal government provided loans and guaranteed the city’s other loans. The majority of the short-term debt was converted to long-term debt through the MAC. This allowed the city to eliminate its fund deficits by reducing debt service payments by lengthening the repayment time. These actions allowed the city to emerge from its fiscal crisis.

In the mid-1970s, the MAC scaled back the interest rate payable and extended the maturity of its debt through bondholder approved amendments. This restructuring was part of a series of actions taken to secure fiscal support from the US Government. At the time, Moody’s did not classify this restructuring as a bond distressed exchange default by MAC because:

» The restructuring was not undertaken to avoid default on the MAC bonds since the MAC bonds were legally separate and distinct from the City of New York and therefore not at risk to a potential bankruptcy;

» The restructuring was approved by MAC bondholders as part of a larger agreement designed to bolster and secure the finances of New York City; and

» Financial and political issues broader than payment on the MAC bonds motivated approval by the bondholders.

Under our current definition of a distressed exchange, however, the restructuring of some investors’ bonds as a pre-condition for federal support would support the conclusion that the debt exchange was “distressed.” We have not incorporated this default into our default statistics, however, since the definition of default, to which the ratings were then calibrated, was different at the time.

3) Cleveland, Ohio

The City of Cleveland (OH) defaulted in December 1978 on $14 million short-term notes held by six local banks. The default was not cured until November 1980, following a voter-approved tax levy in 1979 and the January 1980 passage of a ‘Local Fiscal Emergencies’ statute that enabled state intervention including loans and financial oversight. Broadly similar to New York City’s fiscal emergency, the source of the Cleveland default lay in its chronic inability to balance its operations and resulting questionable financial practices. Throughout the mid-1970s, Cleveland’s general fund expenses greatly exceeded its revenues which ultimately led the city to adopt a practice of “borrowing” restricted bond fund monies from the Water Department to meet ongoing general operating costs. While the incoming Kucinich administration (1977-79) inherited this problem, it also did not act quickly to remedy the situation. Concerns over this practice
and the structural budget imbalances brought the Moody’s rating from A to Baa and then Ba by mid-1978; Cleveland was unable to issue bonds nor refinance or renew outstanding notes. The rating had fallen to B by November, shortly before the default itself.

While the Cleveland default was rooted in its very poor financial management, the triggering event was bound up in a curious political flight over the fate of the city’s electric system, Municipal Light, which had been in a long-running feud with its wholesale supplier, Cleveland Electric Illuminating (CEI) that ultimately resulted in antitrust allegations against the latter. The former administration had planned to sell Municipal Light to CEI to resolve the suit and generate cash for Cleveland, but the Kucinich administration opposed the sale. In the context of the city’s worsening financial situation and absence of market access, the banks holding the city’s notes, headed by Cleveland Trust, refused to renew the notes unless the utility sale went ahead. It was subsequently reported that Cleveland Trust and CEI had interlocking directors and, with another bank, had ownership interests in CEI.

In a February 1979 special election, Cleveland voters approved a new half-cent income tax that began to produce new revenues, and further rejected the plan to sell Municipal Light, which it still operates. The Voinovich administration came into office in November 1979 and developed a three-year refinancing plan that included $15 million in state loans under the Fiscal Emergencies statute. Cleveland was upgraded to Ba1 in August 1981, and reached Baa in early 1985.

4) City of Menasha, Wisconsin

The City of Menasha (WI) defaulted on its appropriation-backed Steam Utility Revenue BANs with the failure of a steam enterprise project that seriously compromised the city’s overall debt capacity and creditworthiness. The Steam Utility had begun as a local economic development effort when Menasha Utilities’ gas-fired electric generating units were idled by the dispatching utility in 2004. The plan was to divert the redundant units to industrial steam production for four surrounding paper mills; by converting the units to coal—at the time cheaper than gas—the hope was that cheaper energy would help revive the mills’ fortunes and sustain their employment. The project rapidly suffered cost overruns more than triple the initial $12.6 million BANs (2005, due 9/1/2009), along with a variety of technical and environmental problems and shortfalls in actual steam sales. To keep up with project costs, Menasha issued another $11.5 million in Steam BANs, $2.675 Steam Note Anticipation Notes (NANs), and $13 million privately placed Steam BANs in 2006, and $13.93 million GO Promissory Notes in 2007. By 2007, the reserve funds were tapped to make BAN interest payments. By April, the city’s advisors recommended closure of the plant to avoid further financial damage to the city, but by this time the Steam notes were rated speculative-grade, and the city’s GO and GO-note ratings had also suffered. In April 2011, Menasha sold the assets to WPPI Energy (formerly known as Wisconsin Public Power Inc.) with the proceeds used to partially repay noteholders of the defaulted securities, representing a recovery rate of approximately 75%.
Appendix D: 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 to not-for-profit healthcare, higher education, housing, infrastructure or other not-for-profit institutions in the municipal bond market.27

For non-GO debts we examine the ratings assigned to each distinct security class of debt and seniority issued across all distinct financing purposes for each obligor. Multiple rating histories may exist for a given obligor because municipalities and other obligors often issue multiple security classes of debt and seniority for multiple financing purposes, and each of them can have a distinct default probability and expected loss severity rate in the event of default 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. As these projects may experience different subsequent financial performance, the bonds backed by that performance may have different degrees of credit risk and hence different ratings.29

In this study we consider only one rating history for GO ULT and GO LT debt of any given municipality. This debt is backed by the full revenue-producing power of the municipality independent of the financing purpose, implying no differences in default probabilities across GO ULT and GO LT debt for a given municipality.30

For non-GO rating histories, in instances where more than one debt with the same financing purpose and security class exist at a given point in time for a given obligor, we choose the worst rating to represent that obligor’s rating for the specific financing purpose and security class. The same applies to GO ULT and LT rating histories, i.e. if more than one GO ULT or GO LT debt exists for a given obligor, the worst rating represents that obligor’s GO ULT or GO LT rating.

Our unit of analysis this way defined, for GO and non-GO debts, is referred to as “issuer” throughout this study.

Similar to our 2012 municipal default study, this study captures the recalibration of municipal ratings to the global rating scale, which took place between April and May 2010. Moody’s recalibrated its long-term US municipal ratings to its global rating scale.31 Prior to the recalibration, Moody’s municipal ratings emphasized the ordinal ranking of credit risk within the municipal sector only and were not intended to be comparable to corporate ratings for example. A municipality rated “Aa1” was not expected to have the same credit risk profile as a corporate rated “Aa1,” despite the identical symbology. The recalibration was intended to achieve such comparability, so that now a given rating symbol for different sectors and regions should have similar average credit risk relative to global peers measured over long periods of time.

When calibrated to the global rating scale, most state and local government long-term municipal ratings were increased by up to three notches.32 These new rating assignments did not reflect an improvement in credit risk, but simply a rescaling of that risk, analogous to changing a temperature report from Fahrenheit to Celsius. Consequently, for the purposes of this study the recalibration is not reflected as an “upgrade” in any of the credit metrics presented. Instead, historical ratings were adjusted to the new scale to “smooth over” the recalibration (the next appendix provides additional details on the re-calibration process).

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27 Refunding is a procedure whereby an issuer refinances outstanding bonds by issuing new bonds. The proceeds of the new bonds are either deposited in escrow to pay the debt service on the outstanding bonds when due or used to promptly retire the outstanding bonds. The new bonds are referred to as the “refunding bonds” or “un-refunded bonds” and the outstanding bonds being refinanced are called the “refunded bonds”.

28 We exclude debt that is insured or enhanced by letters of credit if there is no underlying rating.

29 See “Glossary of Moody’s Rating Performance Metrics” for a detailed discussion of how default and transition rates are calculated from rating histories.

30 Last year’s study had different rating histories for GO bonds depending on their financing purpose.

31 For more information on the recalibration process, see “Recalibration of Moody’s US Municipal Ratings to its Global Rating Scale”.

32 A notch is defined as a step on Moody’s alphanumeric rating scale (e.g., from A2 to A1).
Appendix E: Recalibration to the Global Rating Scale

The table below provides examples of how the rating histories were adjusted to reflect the recalibration of municipal ratings to the global rating scale that occurred in 2010. The table shows both the rating before and after the recalibration process for a couple of municipal issuers, San Diego County and the City of New York. The columns to the far right illustrate that in any instance the calibration process resulted in an upgrade or downgrade of the issuer: the ratings before and after the calibration resulted in the same notch differential between two given rating actions.

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| New York (City of) | 4/11/1968   | Baa1                         | A3                           |
|                   | 12/18/1972  | A2                           | A1                           |
|                   | 10/2/1975   | Ba2                          | Ba1                          |
|                   | 10/29/1975  | Caa2                         | Caa1                         |
|                   | 5/24/1977   | B2                           | B1                           |
|                   | 11/19/1981  | Ba1                          | Baa3                         |
|                   | 11/10/1983  | Baa2                         | Baa1                         |
|                   | 12/17/1985  | Baa1                         | A3                           |
|                   | 5/31/1988   | A2                           | A1                           |
|                   | 2/11/1991   | Baa1                         | A3                           |
|                   | 5/1/1999    | A3                           | A2                           |
|                   | 4/4/2005    | A2                           | A1                           |
|                   | 7/18/2007   | Aa3                          | Aa2                          |
|                   | 10/23/2008  | Aa3                          | Aa2                          |
Appendix F: Moody’s Definition of Default

Moody’s definition of default includes the following events: 33

» A missed or delayed disbursement of a contractually-obligated interest or principal payment (excluding missed payments cured within a contractually allowed grace period), as defined in credit agreements and indentures;

» A bankruptcy filing or legal receivership by the debt issuer or obligor that will likely cause a miss or delay in future contractually-obligated debt service payments;

» 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; or

A change in the payment terms of a credit agreement or indenture imposed by the sovereign that results in a diminished financial obligation, such as a forced currency re-denomination (imposed

33 For more information see "Ratings Symbols and Definitions".

"Ratings Symbols and Definitions".
Appendix G: US Municipals and Corporate Cumulative Default Rates, post-recalibration Period

This appendix shows a comparison of US municipal cumulative default rates for the post-recalibration period until the most recent month available.

### US Municipals

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### US Municipals - GO

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Analyst Contacts:

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