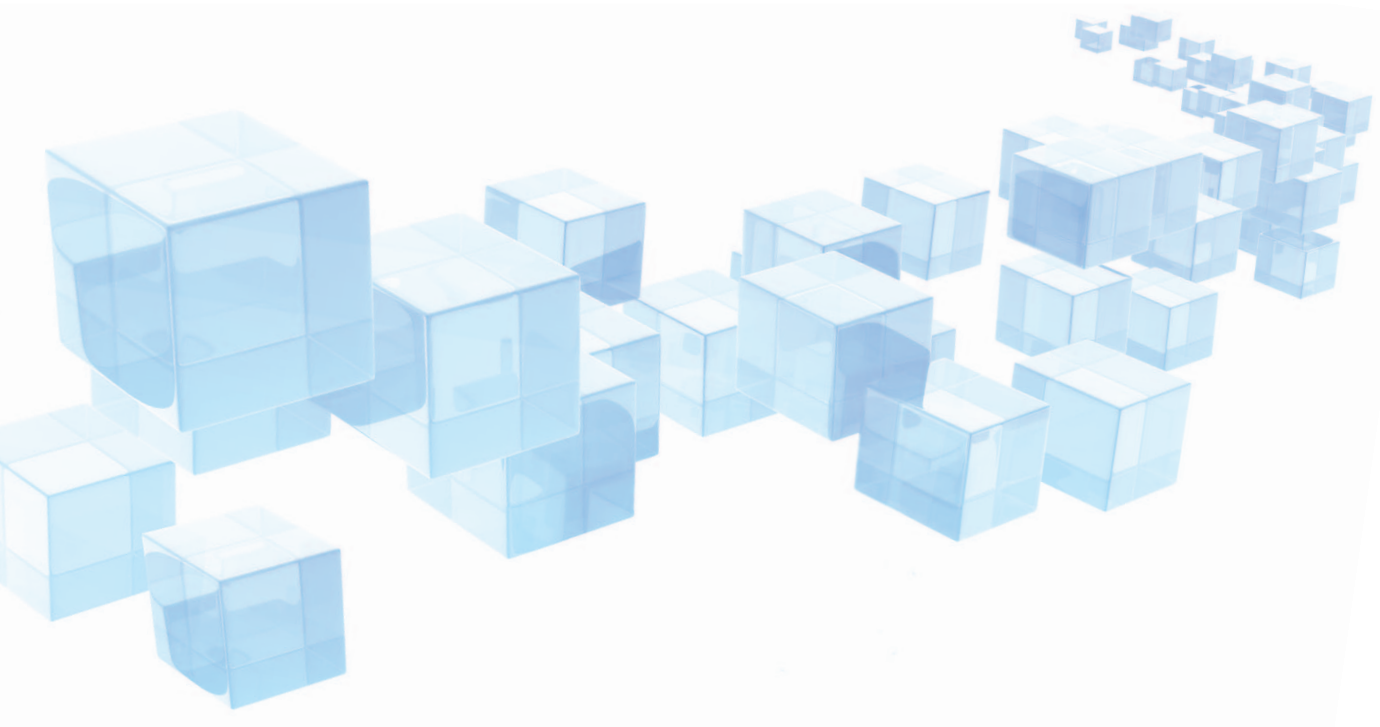


Rating Monoline Financial Guarantors in the Public Finance Sector

October 13, 2017



Rating Monoline Financial Guarantors in the Public Finance Sector

Outline

- A. Market Overview
- B. Balance Sheet Strength
- C. Operating Performance
- D. Business Profile

The following criteria procedure should be read in conjunction with *Best's Credit Rating Methodology (BCRM)* and all other related BCRM-associated criteria procedures. The BCRM provides a comprehensive explanation of AM Best's rating process.

A. Market Overview

Financial guarantors are monoline insurance companies that issue insurance policies designed to provide credit enhancements to debt instruments. Specifically, they unconditionally and irrevocably pledge to make timely payment of principal and interest when due in the event of defaults by insured obligors. This criteria procedure highlights rating considerations unique to the evaluation of financial guarantors that provide credit enhancements primarily to US municipal bonds, such as the calculation of reserve risk, which depends primarily on the credit quality of the insured portfolio.

Municipal Bonds and Financial Guarantors

State and local government entities issue municipal bonds to finance a broad array of long-term public projects, to provide working capital for government projects, and to finance nongovernmental needs that benefit the public, such as multifamily housing, hospitals and nursing homes, airports and seaports, solid waste disposal facilities, student loan programs, industrial development projects, and other endeavors. Municipal bonds generally fall into two major categories: general obligation bonds and revenue bonds. The source of debt service payments differentiates these two types of municipal bonds. The debt service associated with general obligation bonds is satisfied by the full faith, credit, and taxing power of a government entity. By contrast, the repayment source of revenue bonds comes from a specified revenue stream associated with the cash flow from public project operations, discretionary appropriations, grants, or a dedicated specialized tax payment among other channels.

AM Best's Rating Process

AM Best considers key rating factors, also known as "building blocks" namely balance sheet strength, operating performance, business profile, and enterprise risk management (ERM) when assigning a rating to an insurer (**Exhibit A.1**). This criteria procedure focuses on the considerations unique to financial guarantors in the public finance sector within the various building block assessments, specifically balance sheet strength, operating performance, and business profile.



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Exhibit A.1: AM Best’s Rating Process

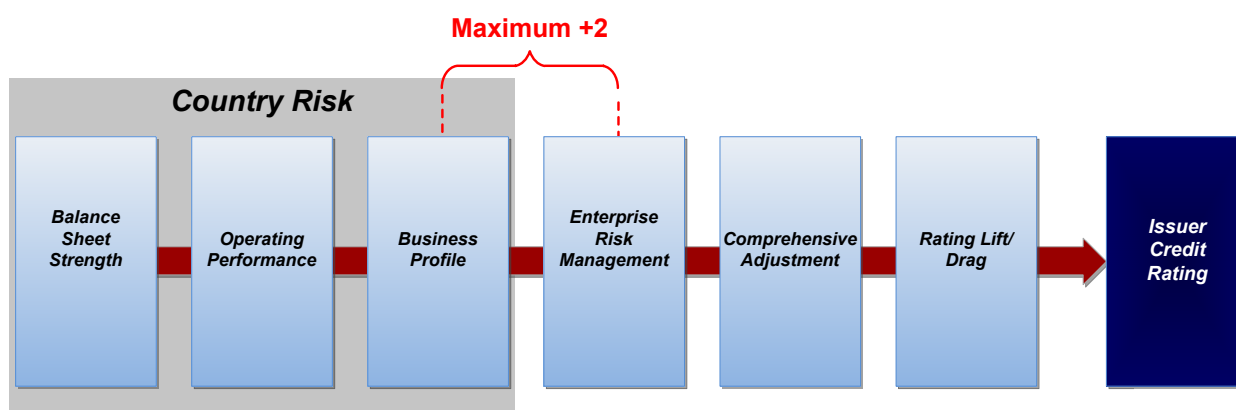


Exhibit A.2 details the possible assessment descriptors for each building block as described within the BCRM.

Exhibit A.2: BCRM Building Block Assessments

Balance Sheet Strength	Operating Performance	Business Profile	Enterprise Risk Management
Strongest	Very Strong	Very Favorable	Very Strong
Very Strong	Strong	Favorable	Appropriate
Strong	Adequate	Neutral	Marginal
Adequate	Marginal	Limited	Weak
Weak	Weak	Very Limited	Very Weak
Very Weak	Very Weak		

B. Balance Sheet Strength

The assessment of a company’s balance sheet strength is the underpinning of any credit rating. As part of the balance sheet assessment, Best’s Capital Adequacy Ratio (BCAR) is used to quantify the relationship between a company’s operating risks and the capital needed to support those risks. Due to their unique nature and the historically lower default rates associated with the municipal space, developing certain capital factors within the BCAR model for financial guarantors presents additional complexities. AM Best’s approach to estimating the required reserve risk capital amount—known as B5 within the BCAR model—is discussed within the following section.

B5 Reserve Risk

Estimating a B5 reserve risk amount requires evaluating the credit risk of the municipal bonds that are being insured by a financial guarantor. The process involves performing Monte Carlo simulations to produce the aggregate default profile of the portfolio of municipal bonds and then translating that profile into projected claim loss assumptions against the financial guarantor. This simulation process

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establishes a view (at each of the confidence levels) of the default risk associated with the insured bond portfolio, the level of projected recoveries assumed following default, potential default correlations, and other factors. Collectively, these views are then used as the B5 reserve charge at the various confidence levels within the BCAR model.

Establishing the Default Rate of Municipal Securities

Claims against a financial guarantor are primarily driven by the credit quality of the bonds it insures, so it is important to evaluate historical default rates and determine whether it is appropriate to apply these data to current and future insured municipal bonds. In reviewing the major default studies on municipal bonds both by academics and rating agencies it is clear that historical default rates in certain segments of the municipal bond market are below the default rates observed in the corporate bond market. This is largely true for essential-purpose bonds such as state and local general obligation (GO) bonds. Other segments of the municipal bond market, such as the housing and health care sectors, exhibit default rates that come closer to those of corporate bonds.

AM Best's view of municipal bond default rates is partially based on: 1) the historical municipal bond ratings transition tables found in regulatory filings and default studies performed by Nationally Recognized Statistical Rating Organizations (NRSRO) that have the largest portfolio of municipal bond ratings, 2) supplemental information gathered from Depression-era municipal bond defaults, and 3) relevant statistics associated with more recent municipal bond defaults.

In modeling claims associated with insuring municipal bonds, AM Best applies a fraction of the default rates to *Best's Idealized Issue Default Matrix* (**Exhibit B.1**) based on a bond's risk classification. The matrix shows the idealized cumulative default rates for AM Best's senior unsecured issue credit ratings on the issuer credit rating (ICR) scale. In cases where AM Best does not rate a municipal bond or has not provided a credit assessment, AM Best will translate the rating of other rating agencies to the scale on this matrix and then apply the corresponding cumulative default rates in the modeling process. If the municipal securities being insured are not publicly rated, and if AM Best has not provided any credit assessments, the securities will generally be assigned a "bb+" rating.



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Exhibit B.1: Best's Idealized Issue Default Matrix

Years	aaa	aa+	aa	aa-	a+	a	a-	bbb+	bbb	bbb-	bb+	bb	bb-	b+	b	b-	ccc+	ccc	ccc-	cc	c
1	0.03%	0.08%	0.11%	0.14%	0.16%	0.20%	0.22%	0.28%	0.35%	0.45%	0.84%	1.23%	1.56%	3.28%	3.73%	4.77%	6.74%	10.33%	13.85%	19.53%	23.30%
2	0.07%	0.11%	0.13%	0.21%	0.24%	0.30%	0.42%	0.62%	0.80%	1.00%	1.87%	2.97%	3.83%	6.53%	7.30%	9.03%	12.42%	15.53%	18.59%	24.28%	27.55%
3	0.11%	0.14%	0.17%	0.28%	0.33%	0.41%	0.62%	0.96%	1.26%	1.56%	2.90%	4.68%	6.02%	9.73%	10.80%	13.08%	17.66%	20.41%	23.11%	28.87%	31.74%
4	0.15%	0.18%	0.22%	0.35%	0.42%	0.52%	0.82%	1.30%	1.72%	2.11%	3.92%	6.34%	8.13%	12.91%	14.23%	16.99%	22.60%	25.05%	27.47%	33.32%	35.87%
5	0.19%	0.23%	0.28%	0.43%	0.52%	0.64%	1.04%	1.65%	2.18%	2.67%	4.94%	7.98%	10.18%	16.04%	17.60%	20.77%	27.28%	29.50%	31.69%	37.65%	39.94%
6	0.24%	0.29%	0.34%	0.51%	0.62%	0.76%	1.26%	2.00%	2.64%	3.23%	5.95%	9.57%	12.15%	19.13%	20.90%	24.44%	31.75%	33.79%	35.79%	41.85%	43.93%
7	0.28%	0.35%	0.42%	0.60%	0.73%	0.89%	1.50%	2.36%	3.10%	3.79%	6.97%	11.14%	14.07%	22.19%	24.15%	28.02%	36.03%	37.91%	39.77%	45.93%	47.84%
8	0.33%	0.42%	0.50%	0.69%	0.84%	1.02%	1.74%	2.72%	3.56%	4.35%	7.98%	12.67%	15.93%	25.20%	27.35%	31.50%	40.13%	41.90%	43.65%	49.89%	51.67%
9	0.38%	0.50%	0.59%	0.78%	0.96%	1.16%	1.98%	3.08%	4.03%	4.91%	8.99%	14.18%	17.74%	28.18%	30.49%	34.91%	44.06%	45.75%	47.41%	53.73%	55.40%
10	0.42%	0.58%	0.69%	0.88%	1.09%	1.31%	2.24%	3.45%	4.50%	5.48%	10.00%	15.65%	19.50%	31.11%	33.58%	38.23%	47.84%	49.46%	51.07%	57.44%	59.04%
11	0.47%	0.67%	0.79%	0.98%	1.22%	1.46%	2.50%	3.82%	4.97%	6.05%	11.01%	17.10%	21.22%	34.01%	36.62%	41.47%	51.47%	53.05%	54.62%	61.03%	62.57%
12	0.52%	0.75%	0.90%	1.09%	1.36%	1.62%	2.78%	4.20%	5.44%	6.62%	12.02%	18.52%	22.90%	36.86%	39.60%	44.63%	54.95%	56.52%	58.06%	64.49%	65.99%
13	0.57%	0.85%	1.01%	1.20%	1.51%	1.79%	3.06%	4.58%	5.92%	7.19%	13.03%	19.91%	24.55%	39.67%	42.53%	47.72%	58.29%	59.86%	61.40%	67.81%	69.29%
14	0.62%	0.94%	1.13%	1.31%	1.66%	1.96%	3.34%	4.96%	6.40%	7.76%	14.05%	21.28%	26.18%	42.43%	45.40%	50.73%	61.50%	63.08%	64.63%	71.00%	72.46%
15	0.68%	1.04%	1.25%	1.43%	1.82%	2.14%	3.64%	5.35%	6.88%	8.33%	15.06%	22.63%	27.78%	45.16%	48.23%	53.67%	64.58%	66.18%	67.75%	74.05%	75.50%
aaa	aa+	aa	aa-	a+	a	a-	bbb+	bbb	bbb-	bb+	bb	bb-	b+	b	b-	ccc+	ccc	ccc-	cc	c	

Risk Classification

AM Best groups municipal bonds into four broad risk classifications to reflect municipal bonds with similar expectations of default and recovery. The items taken into consideration in determining these risk classifications include revenue predictability and the competitive environment of the enterprises in question. Generally, insurers of typically lower-risk municipal debt, such as tax-backed general obligation bonds, are expected to receive higher recoveries compared with insurers of higher-risk municipal debt, such as revenue bonds associated with sports stadiums. The four broad risk classifications for municipal bonds reflect risk hierarchies from 1 (lowest risk) to 4 (highest risk) as shown in **Exhibit B.2**.



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Exhibit B.2: Municipal Bonds AM Best Risk Classifications

Risk Classification	Classification Description	Risk Class Relativity	Recovery Rate	Default Period
1	<ul style="list-style-type: none"> •State and Local Government General Obligation •Utilities: Water, Sewer, Solid Waste •State Government Special Tax Obligation: Sales, Income, Gas, Other •Public Colleges and Universities •State Revolving Fund: Environmental Projects •Housing: FHA Insured and State Agency Obligations 	0.25	95%	2 Years
2	<ul style="list-style-type: none"> •State and Local Government: Lease Appropriation and Other General Fund Obligations •Local Government Special Tax Obligation: Sales, Income, Excise, etc. •Public Power: Electric and Gas •Airport and Port General Revenue •Toll Roads, Transit and Bridges: Established •Federal Grants and Leases 	0.50	90%	2 Years
3	<ul style="list-style-type: none"> •Local Government Tax Increment and Assessments •Resource Recovery •Private Colleges and Universities: Broad-Based Tuition & General Obligation •Local Agency Single Family Housing •Health Care Systems: Hospital and Other 	0.75	80%	2 Years
4	<ul style="list-style-type: none"> •Private Colleges and Universities: Auxiliary Facilities •Housing Other: Affordable Housing-Section 8, Military, Mobile Home, and Misc. •Development: Hotel, Convention Center, Stadium •Toll Roads and Bridges: Start-up •Special Facilities: Airport, Port, Single Site Parking •Health Care Single-Site Facilities: Hospitals, Life-Care Centers •Not-for-Profit: Charter Schools, Cultural and Other 	1.0	60%	2 Years

Risk Class Relativity

Each municipal security is mapped to this risk classification table. For modeling purposes, the default rate assigned to a municipal bond is the corresponding default rate in *Best's Idealized Issue Default Matrix* multiplied by the associated “risk class relativity” factor. For example, if a municipal bond is grouped in risk classification 3, the default rate of that bond would be the associated default rate from *Best's Idealized Issue Default Matrix* multiplied by 75%.



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Note: To the extent that a financial guarantor insures commercial mortgage-backed securities (CMBS) or loan pools (such as student loans) outside of municipal bonds, these instruments are evaluated on a case-by-case basis to arrive at the appropriate risk classification.

Recovery Rates

AM Best also assigns recovery rates to each of the risk classifications to recognize the variability in recoveries associated with the different types of municipal bonds. High recovery rates are given to lower-risk municipal issuers, and low recovery rates are assigned to the highest risk class. The listed recovery rates are based on informed judgment and a review of historical recovery rates of municipal bonds. AM Best's review of the available data on municipal bonds shows that although recoveries can be volatile, they are typically high for essential-service bonds. In general, AM Best expects high recoveries for insured municipal bonds due to insurers' control rights, loss-mitigation efforts, and available remedies upon default. AM Best's selected risk classifications, the associated risk class relativities, and recovery rates are reflected in AM Best's Financial Guarantor Model when deriving the loss estimates associated with a financial guarantor's municipal bond book of business. **Exhibit B.2** shows an overview of the selected risk classifications, the associated class relativities, recovery rates, and default period. In addition, to account for the volatility in recovery rates, AM Best incorporates stress losses for municipal bonds.

Default Period

The default period is the period in which a financial guarantor is responsible for making all debt service payments before applying any recoveries. The default period may be seen as the period in which bond debt service payments are suspended until there is resolution of the missed payment. AM Best research shows that these defaults are typically resolved within a two-year period and, therefore, AM Best assumes the default period is two years for all risk classifications shown in **Exhibit B.2**.

Correlations

AM Best assumes that if the debt service of multiple municipal bonds issued by the same municipal obligor is made from the same source of revenue, those bonds are 100% correlated and, therefore, will be consolidated for modeling purposes. For all other municipal bonds issued within a state, AM Best assumes a base default intrastate correlation of 10%. Base interstate default correlations are assumed to be 2%.

Calculating Net Claims

To simulate claims, AM Best begins with a yearly debt service schedule for each municipal bond in the guarantor's portfolio from the current period to the stated maturity. AM Best assigns a default probability to each of the bonds, and then draws random numbers, correlates those random numbers, and determines the timing of each municipal bond default. Once the bond defaults, AM Best assumes that the financial guarantor makes the full debt service payments (instead of the original obligor) until the bond matures. AM Best uses the term "Net Claims" to indicate the amount of debt service the financial guarantor has to pay each period after taking recoveries into consideration.



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Monte Carlo Simulation

AM Best’s Financial Guarantor Simulation calculates the present value of the aggregate Net Claims on a portfolio basis after applying appropriate default, recovery, and correlation assumptions. AM Best then chooses the claims from an array of the 100,000 or more simulated claims such that the probability of exceeding such claims is no more than the exceedance probability shown in **Exhibit B.3**.

Exhibit B.3: Confidence Levels and Exceedance Probabilities

Confidence Level	Exceedance Probability*
95.0%	5.0%
99.0%	1.0%
99.5%	0.5%
99.6%	0.4%

*Probability that an actual observed loss will exceed the loss amount of the confidence level.

The effective confidence level of losses is then approximately one minus the exceedance probability. AM Best expects the loss distributions associated with financial guarantors to be positively skewed with considerable tail risk.

Components of Net Claims

The calculation of Net Claims represents three cash flow components. The hypothetical example in **Exhibit B.4** (which assumes a municipal bond in risk classification 3 that defaults in year 5) illustrates these components.

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Exhibit B.4: Example of Calculating Net Claims

A	B	C	D	E	F	G
Year	Annual Debt Service Scheduled To Be Paid By Obligor	Gross Claims Against FG Assuming Default Occurred In Year 5	Recoveries From Obligor On Claims In Default Period 1st 2 Years of Default (Lagged By 2 Years)	Recoveries From Obligor On Ongoing Claims From Year 7 On	Net Claims Against FG	Present Value Net Claims Against FG
		B From Default Year On	80%*C	80%*C	C + D + E	F Present Value @ 4%
1	\$1,000				\$0	\$0
2	\$990				\$0	\$0
3	\$984				\$0	\$0
4	\$978				\$0	\$0
5	\$973	\$973			\$973	\$800
6	\$968	\$968			\$968	\$765
7	\$956	\$956	(\$778)	(\$765)	(\$587)	(\$446)
8	\$947	\$947	(\$774)	(\$757)	(\$585)	(\$427)
9	\$942	\$942		(\$754)	\$188	\$132
10	\$932	\$932		(\$746)	\$186	\$126
11	\$918	\$918		(\$734)	\$184	\$119
12	\$914	\$914		(\$731)	\$183	\$114
13	\$905	\$905		(\$724)	\$181	\$109
14	\$896	\$896		(\$717)	\$179	\$104
15	\$889	\$889		(\$711)	\$178	\$99
16	\$876	\$876		(\$701)	\$175	\$94
17	\$870	\$870		(\$696)	\$174	\$89
18	\$867	\$867		(\$694)	\$173	\$86
19	\$856	\$856		(\$685)	\$171	\$81
20	\$851	\$851		(\$681)	\$170	\$78
	\$18,513	\$14,560	(\$1,553)	(\$10,096)	\$2,912	\$1,921

Gross Claims Against Financial Guarantor (Column C)

In the modeling process of the insured municipal bond portfolio, AM Best assumes that if a municipal bond defaults, the financial guarantor is responsible for making the Annual Debt Service (shown in **Exhibit B.4**: Column B) from the time of default until maturity. In the example in **Exhibit B.4**, Column C shows the gross claims (or debt service) that the financial guarantor has to pay from the time of default (year 5) until the maturity of the bond in the 20th year.

Recoveries from Obligor on Claims in Default Period (Column D)

AM Best assumes that during the first two years of the municipal bond's default period, the financial guarantor makes the full debt service payment due without the benefit of any recoveries from the obligor. The recoveries from the obligor on these two years of debt service ultimately are achieved with a two-year lag based on an assumed recovery percentage commensurate with the risk classification. **Exhibit B.4** assumes a recovery percentage of 80% based on risk classification 3 and that the recovery begins in the third year (assuming a two-year recovery lag period) after the municipal bond's default. In **Exhibit B.4** (Column D), the recoveries associated with the first two years of defaults begin in the seventh year and end in the ninth year. To be specific, the recovery associated with the default in the fifth year, \$778 (= 80% * \$973), would be realized in the seventh year. The recovery associated with the default in the sixth year, \$774 (= 80% * \$968), would be realized in the eighth year.



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Recoveries from Obligor on Ongoing Claims (Column E)

While the financial guarantor receives a recovery based on the obligor's first two years of defaulted debt service with a two-year lag, it also receives a recovery on the defaulted debt service from the third year of the default until the bond's maturity with no lag. In **Exhibit B.4**, Column E shows the recoveries based on 80% of the gross claims against the financial guarantor (Column C) starting in year 3 of the default. Therefore, in the seventh year (which represents year 3 of the municipal bond's default), the recovery in Column E is \$765 (= 80% * \$956).

The summation of the three items listed above results in Net Claims (Column F) that a financial guarantor will have to pay in the event of a municipal bond default. AM Best discounts the Net Claims to recognize the equity built into such claims. The calculation of the Net Claims per year in the example in **Exhibit B.4** is shown in Column F. Column G is the present value of the Net Claims. The discount rate applied in the present value calculation is consistent with the discount rate used in BCAR.

BCAR

The present value of Net Claims is used in AM Best's BCAR model as the B5 reserve risk capital amount. This amount is calculated for all of the confidence levels in BCAR using the exceedance probabilities outlined in **Exhibit B.3**.

Covariance Adjustment

The capital amounts within BCAR are subject to a covariance adjustment, which signals that it is unlikely that all of the individual risk components will develop simultaneously. However, in certain instances, where correlation is deemed to be present, AM Best modifies elements of the covariance adjustment to reflect some level of correlation among some of the components. With respect to financial guarantors, these entities may buy bonds that are highly correlated to those they insure for their investment portfolios. The aggregate loss experienced by the financial guarantor due to claims on the bonds it has insured may be correlated with the default risk of a portion of assets in its investment portfolio. In such instances, AM Best adds a portion of investment risk (B1) to reserve risk (B5) in the covariance adjustment formula.

Claims-Paying Resources

The components of the financial guarantor's claims-paying resources include policyholders' surplus and contingency reserves; unearned premium reserves; net loss and loss adjustment expense reserves; the present value of future installment premiums; and third-party committed support such as soft capital facilities, liquidity facilities, collateral trust funds, and contingent capital programs. AM Best will assess and review the creditworthiness of any committed third-party support and determine the amount of credit to be allowed as part of the financial guarantee insurer's claims-paying resources.

Stresses and Sensitivities Applied

While AM Best's Financial Guarantor Model calculates probability loss distributions—which reflect a portfolio's credit quality, maturity profile, and risk distribution across the various risk classes, the level

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of losses in stress scenarios critically depends on recoveries, concentration risk, increased credit risk of vulnerable obligors, and risks such as severe economic downturns.

Stress scenarios may be included in the calculation of loss estimates. Typical stress scenarios are as follows but may be subject to change based on analytical judgment:

- **Recoveries:** Recoveries associated with municipal bonds appear to be volatile so AM Best may decrease recoveries such that loss given default is increased by 50% to 200% depending on the risk class (**Exhibit B.2**).
- **Defaults:** Defaults associated with municipal bonds may increase (or become more likely) so AM Best may increase the default rates by 50% to 100%.
- **Concentration and Credit Deterioration:** Single-issuer concentration and rapid credit deterioration can make financial guarantors susceptible to changing economic conditions. To test the resiliency of a financial guarantor's book of business, AM Best may downgrade the top 2% of issuers up to three notches.
- **Below Investment Grade Ratings:** Substantive migration of ratings of municipal bonds to a rating below "bbb-" [from investment grade to non-investment grade] exposes financial guarantors to additional capital requirements and may also reveal weak risk management processes. AM Best may default municipal bonds with below investment grade ratings.

C. Operating Performance

AM Best understands that operating performance metrics are influenced by the type of insurance written and that it is important to select the appropriate benchmark when evaluating companies. Financial guarantee is a long duration business with the majority of premiums earned over a span of years. As such, the underwriting metrics of financial guarantors, such as the combined ratio, may not be reflective of the larger property/casualty industry. Similarly, due to the lengthy period of time that financial guarantors have to generate investment income, greater scrutiny within the operating performance assessment may be placed on operating earnings and profitability metrics over a longer term.

D. Business Profile

Within the business profile evaluation, the sub-assessments of market position, degree of competition, and product risk have considerations that are specific to financial guarantors. Financial guarantors within the public finance sector do have the ability to achieve some level of diversification both geographically and within the public finance sector itself. As such, those financial guarantors with defensible niches may be able to achieve a higher business profile assessment.

Market Position

The market position of a monoline financial guarantor is largely dependent upon the volume of US municipal bonds issued and the market's appetite for bond insurance. The size, stability, and growth



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potential for the bond insurance market varies significantly, largely due to interest rate and credit spread volatility. These factors are considered when reviewing financial guarantor projections.

Degree of Competition

Financial guarantors can offset many of the limitations frequently associated with monoline insurers as there are significant barriers to entry within the financial guarantee segment. The degree of competition among monoline financial guarantors is currently very limited as there are very few active guarantors; several guarantors in the public finance sector are in run-off mode. This factor may change over time if new financial guarantors are created and become active in the market.

Product Risk

For a monoline financial guarantor, the evaluation of product risk focuses on the type of securities that are insured (**Exhibit B.2**). While monoline financial guarantors typically insure municipal bonds, a financial guarantor can also guarantee other security types such as collateralized mortgage backed securities, pools of student loans, or pools of auto loans. These asset-backed or structured finance securities often carry more risk than municipal bonds. The presence of this other type of exposure could result in a negative sub-assessment; however, the distribution of the financial guarantor's insured portfolio would determine the weighting associated with this assessment.

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Best's Financial Strength Rating (FSR): an independent opinion of an insurer's financial strength and ability to meet its ongoing insurance policy and contract obligations. An FSR is not assigned to specific insurance policies or contracts.

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