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Best's
Methodology and Criteria

Understanding Global BCAR



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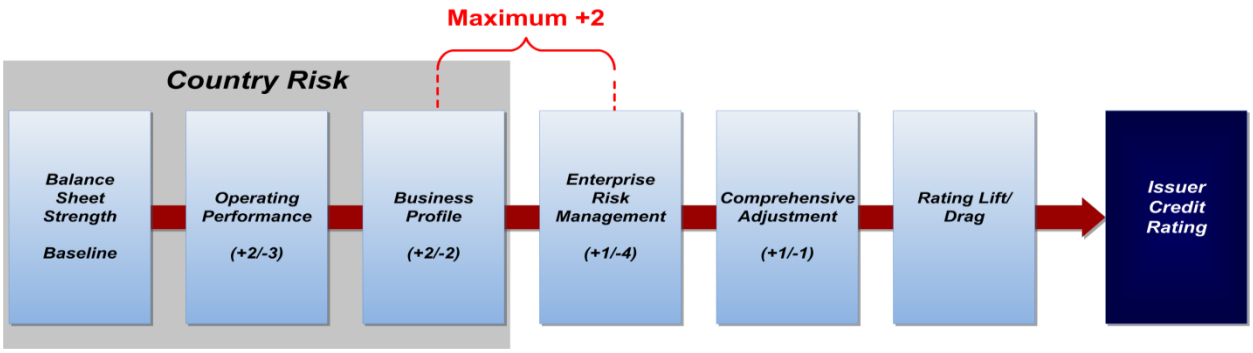
The following criteria procedure should be read in conjunction with *Best's Credit Rating Methodology (BCRM)* and all other related BCRM-associated criteria procedures. The BCRM provides a comprehensive explanation of Best's Credit Rating Process.

A. BCAR and Best's Credit Rating Process

Best's Capital Adequacy Ratio (BCAR) depicts the quantitative relationship between a rating unit's balance sheet strength and key financial risks that could impact such strength. As the foundation of financial security, balance sheet strength is critical to the determination of a rating unit's ability to meet its current and ongoing obligations. By establishing a guideline for the net required capital needed to support balance sheet strength, BCAR can assist analysts in differentiating among the financial strength of insurers and in determining whether a rating unit's capitalization is appropriate for its risk profile. The analysis of BCAR alone does not decide the balance sheet strength assessment. Other factors that can impact the balance sheet strength analysis include: liquidity, quality of capital, dependence on reinsurance, quality and appropriateness of reinsurance, asset/liability matching, reserve adequacy, stress tests, internal capital models, and the actions or financial condition of an affiliate and/or holding company which may include a BCAR calculation at the holding company/consolidated level. Similarly, a rating is more than a balance sheet strength assessment and includes evaluations of a rating unit's operating performance, business profile, and enterprise risk management (**Exhibit A.1**).

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Exhibit A.1: Best's Credit Rating Process



Thus, in many cases, insurers with similar capital positions might be assigned different ratings based on the integration of other key rating factors.

Best's Capital Adequacy Ratio Model – Global

This criteria procedure and its accompanying Global BCAR model are used in the evaluation of balance sheet strength for those companies that do not file U.S. or Canadian statutory statements. It may also be used in the evaluation of balance sheet strength at the insurance holding company level, regardless of domicile or accounting standard. In addition, the model may be used to evaluate the prospective balance sheet strength of start-up insurers based on their proposed business plans.

The Global BCAR model is utilized for a variety of purposes; in the context of this criteria procedure, the concept of the rating unit is used to refer to the entity undergoing the BCAR evaluation. Given the wide scope of use of this model, not all components of the risk categories discussed may be applicable in all jurisdictions. Analysts have the option to modify the factors to reflect actual experience if appropriate data is provided for review.

B. Overview of BCAR

Calculating a rating unit's BCAR requires calculating its net required capital—namely the capital needed to support the financial risks of the rating unit associated with the exposure of its assets and underwriting to adverse economic and market conditions—and determining its capital available to support these risks. **Exhibit B.1** shows the formula used to calculate BCAR.

Exhibit B.1: The BCAR Formula

$$\mathbf{BCAR} = \left(\frac{\mathbf{Available\ Capital} - \mathbf{Net\ Required\ Capital}}{\mathbf{Available\ Capital}}\right) \times \mathbf{100}$$

The BCAR model calculates a rating unit's net required capital at different confidence levels, resulting in a BCAR score for each of these levels. Since the difference between a rating unit's available capital and its net required capital is expressed as a ratio to available capital, a BCAR score expresses the extent of the excess or shortfall as a percentage of available capital. A positive score at a particular

confidence interval indicates the rating unit's available capital is in excess of its net required capital, whereas a negative score indicates the rating unit's available capital has fallen short of its net required capital.

Net Required Capital Components

The Global BCAR model calculates the net required capital to support three broad risk categories: investment risk, credit risk and underwriting risk. These three broad risk categories are further subdivided into eight separately analyzed risk components (outlined in **Exhibit B.2**). A rating unit's gross required capital is the sum of the capital requirements for these eight components.

Exhibit B.2: Required Capital Risk Components

Required Capital
B1 Fixed Income Securities
B2 Equity Securities
B3 Interest Rate
B4 Credit
B5 Reserves
B6 Premiums
B7 Business Risk
B8 Potential Catastrophe Losses

As displayed in **Exhibit B.2**, the BCAR model includes a capital requirement for the potential catastrophe losses (B8). The net required capital formula reduces gross required capital for covariance to account for the assumed statistical independence of several of the individual components (**Exhibit B.3**).

Exhibit B.3: Net Required Capital Formula

$$Net\ Required\ Capital = \sqrt{(B1)^2 + (B2)^2 + (B3)^2 + (0.5 * B4)^2 + [(0.5 * B4) + (B5)]^2 + (B6)^2 + (B8)^2} + (B7)$$

Understanding the Required Capital Risk Components

Total investment risk, which includes three main risk components—B1 fixed income securities, B2 equity securities, and B3 interest rate—applies capital charges to different asset classes based on the risk of default, illiquidity, and/or market value declines in both equity and fixed income securities.

B3 interest rate risk represents the potential loss a rating unit would incur if it were forced to sell its fixed income assets during a period of rising interest rates. For life and annuity business these charges vary by surrender protection and product type, and are assessed for asset liability mismatches.

The B4 credit risk category applies capital charges to different receivable balances to quantify third-party default risk. Capital charges are ascribed to recoverables from all reinsurers, including affiliates,

based on the Best's Issuer Credit Rating (ICR) of the reinsurer and the duration of the recoverable. Required capital for credit risk may be modified by the rating analysts after taking into account any collateral offsets for reinsurance balances and the rating unit's dependence on its reinsurance program. Also included in the credit risk component are charges for outstanding premiums balances and other miscellaneous receivables.

Underwriting risk encompasses B5 reserves, B6 premiums, and B8 potential catastrophe losses. The reserve component requires an amount of capital based on the risk inherent in a rating unit's reserves, adjusted for AM Best's assessment of its reserve equity. The premium component requires capital based on the pricing risk inherent in a rating unit's mix of business. Where a financial statement uses a different term, instead of premiums, for non-investment insurance revenue from writing insurance policies, the amount reported under the term may be used to derive the exposure base for pricing risks, including assessment of growth charges. The amount may similarly be used to serve the same purpose as premiums to derive size and other measures. Required capital for the reserve and premium components may be increased by an additional surcharge for "excessive" growth in exposure. For life insurers' mortality and morbidity risks, required capital arises due to the risks inherent in a rating unit's reserving and pricing. Mortality risk factors are based on excess claims at the respective Value at Risk (VaR) levels compared to mortality risk expectations built into the reserves and premiums for life insurance. Annuity risk factors assess capital required for longevity risk in the rating unit's reserving and pricing in light of its mix of business across annuity products.

B8 potential catastrophe loss is included in the calculation of the rating unit's required capital. This allows the required capital amount to increase at higher confidence levels, whereas the amount of available capital would remain the same for each confidence level.

Collectively, these seven risk components have typically generated most of a rating unit's gross required capital, with the B7 business risk component usually generating only limited capital requirements for off-balance-sheet items and risk related to unit-linked products (or separate accounts). A rating unit's gross required capital is the amount of capital needed to support all risks were they to develop simultaneously.

Covariance

As outlined in **Exhibit B.3**, AM Best utilizes a "square-root rule" covariance calculation that recognizes the assumed statistical independence of many of the risk components. This covariance adjustment essentially says that it is unlikely for these independent risk components to develop simultaneously. B7 business risk is excluded from the covariance adjustment as AM Best expects a rating unit to maintain capital for its business risks without the benefit of diversification.

Available Capital Components

The starting point for available capital is based on the financial statements of the entity or entities being evaluated. A rating unit's available capital is determined by making a series of adjustments to the capital (surplus) reported in its financial statements. These adjustments may increase or decrease reported capital and result in a more economic and consistent view of capital available to a rating unit,

which in turn allows for a more comparable capital adequacy evaluation. These adjustments are contingent on the financial reporting standards of the rating unit. They serve to even the playing field and compensate for certain economic values not included in the filed financials. Adjustments made will depend on accounting standards employed, type of business and regulatory jurisdiction, among other circumstances.

When applying these adjustments, the analyst will take into account their significance to the company's total available capital. In those cases where BCAR is considered excessively reliant on additional adjustments—in addition to any caps to be applied to specific items—the assessment will consider the company's available capital position both prior and post adjustments.

Exhibit B.4: Typical Components of Available Capital

Available Capital

Reported Capital (Surplus)

Equity Adjustments

- Asset Equity
- Reserve Equity
- Net Economic Value due to Long-term Business
- Unearned Premium Equity
- Reinsurance

Debt Adjustments

- Hybrid Debt

Other Adjustments

- Future Operating Losses
- Intangibles
- Goodwill

Value at Risk (VaR)

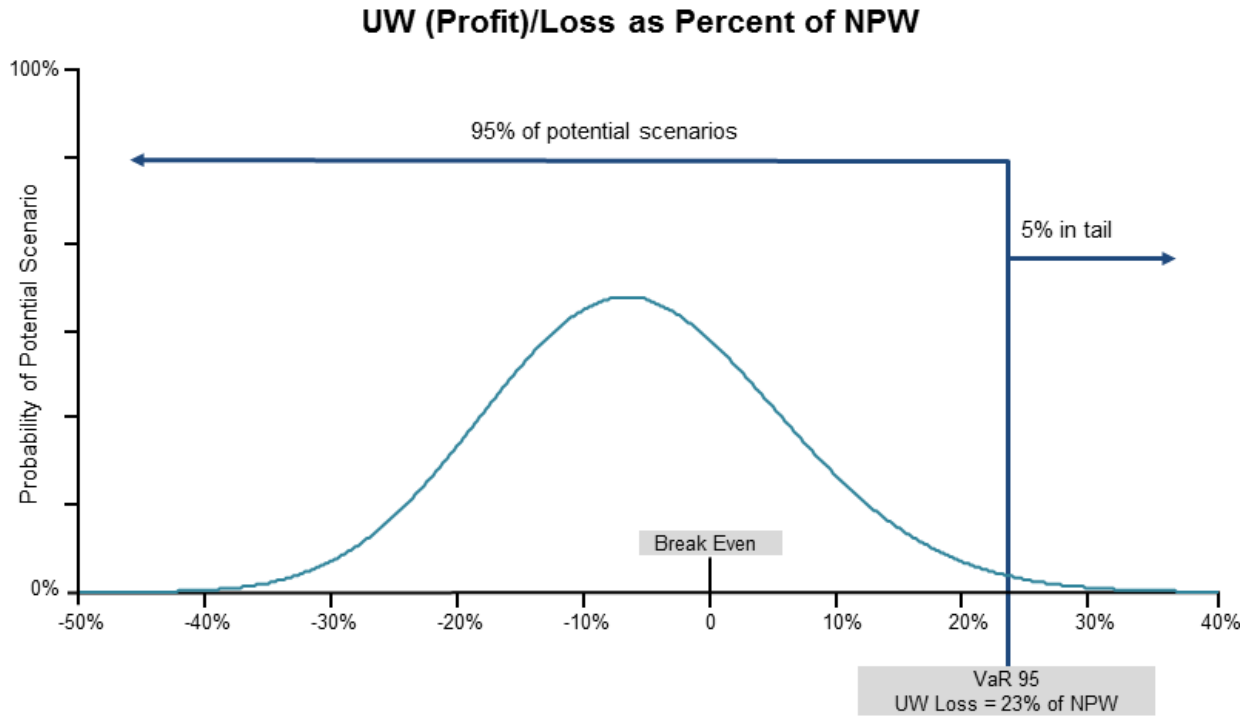
The basis of risk measurement for BCAR models is VaR. It is a statistical technique used to measure the amount of risk within an organization over a selected time horizon. VaR allows for more consistent calibration of the BCAR model's risk factors across its various risk components. Within the model, VaR is applied to the risks that are typically the most material to an insurer.

VaR can be used to evaluate the amount of risk for an individual item, for a portfolio of items, or for the organization as a whole. It requires three pieces of information to evaluate the item at risk: a time horizon, a confidence level, and a probability distribution of possible outcomes that can occur over the selected time period. The key component of VaR is the probability distribution of potential

outcomes; that probability distribution can be based on a collection of observed historical outcomes, a theoretical distribution, professional judgment, or a combination of these.

VaR is used to find the value on the probability distribution such that the chance of observing an outcome less than or equal to that value equals the confidence level. For example, suppose a rating unit has estimated the potential for an underwriting profit or loss on a portfolio of policies as shown in **Exhibit B.5**.

Exhibit B.5: Sample Probability Distribution



If management wants to hold enough capital to be confident that it can cover 95% of all potential outcomes, then it needs to find the value on the probability distribution such that 95% of all potential outcomes are less than or equal to that value. In this example, the size of loss where this occurs is at 23% of Net Premiums Written (NPW).

As shown in **Exhibit B.6**, if the NPW amount is USD 100,000, then the VaR 95% value in dollars is USD 23,000 (23% of USD 100,000).

Exhibit B.6: Value at Risk (VaR) Illustration

Statement Amount	VaR Confidence Level (%)	Capital Factor	Loss Amount at VaR Confidence Level (Statement Amount * Capital Factor)	Exceedance Probability* (100% - VaR Confidence Level)
100,000	95	0.23	23,000	5.0
	99	0.30	30,000	1.0
	99.5	0.34	34,000	0.5
	99.6	0.35	35,000	0.4

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

This means that 95% of all potential outcomes will be less than USD 23,000 and that there is only a 5% chance that an underwriting loss of more than USD 23,000 could occur, and therefore a 5% chance of insolvency (provided that the initial amount of available capital carried was at least USD 23,000).

If management wanted to be more conservative than a 5% chance of insolvency, then a confidence level of 99% could be chosen to set a target capital level. At this point, management would have to find the value on the probability distribution such that 99% of the potential outcomes are less than or equal to that value. **Exhibit B.6** shows the value where this occurs is 30% of NPW. This means that for the same USD 100,000 of NPW, management would need to hold USD 30,000 of capital to be 99% confident that the actual observed underwriting loss would be covered. In this case, there would only be a 1% chance that an underwriting loss of more than the VaR 99 value of USD 30,000 could occur, and therefore only a 1% chance of insolvency.

The drawback to using VaR as a metric for measuring risk is that VaR only looks at a single value on the probability distribution and provides no information about the other potential values that are beyond that single value (i.e., in the tail of the distribution). As such, capital adequacy models based on VaR tend to be centered solely on the probability of ruin, or insolvency. However, for the assessment of relative balance sheet strength, it is important to know what those other possible outcomes could be. AM Best addresses this issue by calculating required capital at different confidence levels using the VaR metric: the 95th percentile, the 99th percentile, the 99.5th percentile, and the 99.6th percentile. By calculating BCAR at multiple confidence levels, AM Best can gain insight into the balance sheet strength of the rating unit and the rating unit's ability to withstand tail events. AM Best also calculates required capital at the 99.8th percentile to facilitate discussion of tail risk during the evaluation of enterprise risk management within Best's Credit Rating Process.

BCAR Interpretation of Capital

Exhibit B.7 provides a reasonable guide to BCAR scores and their associated assessments. As mentioned, the BCAR assessment is one factor considered within a rating unit's overall balance sheet strength assessment.

Exhibit B.7: BCAR Assessments

VaR Confidence Level (%)	BCAR	BCAR Assessment
99.6	> 25 at 99.6	Strongest
99.6	> 10 at 99.6 & ≤ 25 at 99.6	Very Strong
99.5	> 0 at 99.5 & ≤ 10 at 99.6	Strong
99	> 0 at 99 & ≤ 0 at 99.5	Adequate
95	> 0 at 95 & ≤ 0 at 99	Weak
95	≤ 0 at 95	Very Weak

Rating units that are expecting material changes over the next year are evaluated on both an "as is" and an "as will be" basis to better gauge the direction in which capital adequacy is moving.

Sensitivity Calculations

AM Best analysts may supplement their initial rating unit BCAR calculation by performing various sensitivity calculations. These analyses can quantify the capital required to support future business plans, the impact of pro forma transactions, or the current projected year-end capital position. The rating analyst can also use the model to incorporate a number of stress scenarios into the rating analysis. These sensitivity calculations quantify the extent of the impact a scenario could have on a rating unit's capital position after such an event occurs. After calculating both a rating unit's standard and stressed BCAR, AM Best compares the results of the two analyses. If a rating unit's standard BCAR assessment were to deteriorate after a reasonable stress test such that its stressed BCAR assessment fell considerably and the potential for recovery from the capital shortfall was unlikely, it may receive a revised BCAR assessment that differs from its standard BCAR assessment. The extent of sensitivity analysis performed on a rating unit's capitalization varies by rating unit and situation.

Market Adjustments

The BCAR model allows the rating analyst to factor in various market and/or economic conditions. Examples that can impact capitalization include interest rate changes, the stage of the underwriting cycle, changing reinsurance products, and reinsurance dependence. The ability of the model to respond to these issues makes it a robust measure that assists in the evaluation of the company's balance sheet strength.

C. Technical Review of the BCAR Formula

Economic Scenario Generator

An economic scenario generator (ESG) is a computer model that will randomly simulate thousands of possible values for a variety of economic or financial variables over a series of selected future time periods. ESG models are designed to simulate the observed and/or perceived relationships among the different economic or financial variables of the particular economy being modeled. An ESG does

not predict the path an economy will take, but instead produces a collection of possible paths that an economy can take.

As noted in the following sections, AM Best uses the output from a third-party ESG to develop industry level risk factors. The ESG calculated risk factors act as a baseline and can then be adjusted for a company's specific profile. The variables simulated in the ESG used by AM Best include interest rates, stock market returns, bond defaults, and real estate price movements.

Treatment of Net Required Capital Components

B1 Fixed Income Securities and B2 Equity Securities

In order to calculate the risk factors at various confidence levels for the most frequently owned assets of insurers, AM Best uses the output from ten thousand simulations produced by the ESG to develop probability distributions for the potential movements in the market value of specific assets, the potential defaults on specific fixed income assets, and the potential movements in interest rates.

To better quantify investment risk, country specific risk charges—which are based on the origin of the asset—are also incorporated within the Global BCAR model. The variation of these charges by country can have a direct impact on an insurer's net required capital and enable the rating analyst to capture the potential for market illiquidity and volatility to increase the risk within an insurance company's invested assets. Countries are categorized into one of five Best's Country Investment Classes (CIC). Country Investment Class I (CIC I) represents economies with relatively stable and liquid capital markets while CIC V represents markets with the least liquidity and highest volatility.

For insurers with a material amount of investments in a particular investment category, the risk charge for that asset category may be increased by applying a CIC relativity to account for the increase in volatility and/or decrease in liquidity associated with a particular market, financial system, and/or economy.

Non-affiliated Bonds

The BCAR model's baseline bond risk charges are based on ESG-simulated bond defaults. **Appendix 1** contains the baseline charges for bonds based on its ratings at the different confidence intervals.

In generating the bond defaults, the ESG assumed lower-rated bonds have greater default risk than higher-rated bonds and also assumed that—since defaults were simulated at annual intervals into the future—bonds with maturity dates further out into the future have more opportunities to default. Therefore, bonds with longer maturity dates show greater default risk factors than bonds with shorter terms to maturity. The ESG simulated potential defaults each future year for a period of no more than ten years. The simulated defaults were discounted to present value based on the number of years into the future that the simulated defaults occurred, using an annual rate of 4%. They were also reduced to allow for an assumed recovery rate on the value of bonds defaulted. The assumed recovery rate varies based on the credit quality of the bonds that were simulated to default. The recovery rate varies from an assumed 55% recovery for the highest-rated bonds to an assumed 20% recovery on the lowest-rated bonds.

Using information usually provided in the rating unit's Best's Supplemental Rating Questionnaire (SRQ), AM Best applies risk charges for potential bond defaults based on the credit quality and maturity distribution of the rating unit's bond portfolio. For the lower credit ratings, bond risk charges are provided for groups of adjacent credit ratings. AM Best may estimate and apply separate bond risk charges for each separate credit rating within the group of adjacent credit ratings when this is material to the BCAR assessment. The rating unit's portfolio-specific bond default risk charges are calculated at the model's different confidence levels.

Government Bonds

There is no capital charge for "AAA" rated sovereign bonds. All lower rated sovereign bonds are risk charged in line with their respective global credit rating.

Programs backed by sovereign governments typically receive risk charges in accordance with the rating of the corresponding sovereign debt.

Publicly Traded Common Stocks

Insurers who invest in equities are exposed to fluctuations in the market value of those assets (allowing for policyholder participation). As a starting point, AM Best generates baseline risk factors for market volatility; these may be adjusted if further information is provided by the company.

The same risk factors are used for both affiliated and non-affiliated common stocks that are publicly traded. **Exhibit C.1** shows the baseline risk factors for publicly traded common stocks at the different confidence levels, based on the MSCI Global Equity Index.

Exhibit C.1: Publicly Traded Common Stocks

VaR Confidence Level (%)	Baseline Capital Factor (%)
95.0	25
99.0	39
99.5	45
99.6	46

Preferred Stocks

As a starting point based on the credit rating assigned to the stock, AM Best assigns risk factors to publicly traded preferred stocks, which are derived from the bond default risk factors. For those rating units that historically have actively traded their preferred stocks, or are exposed to sudden shock losses that could force a quick sale, preferred stocks may receive risk factors based on the market price volatility of publicly traded common stocks.

Real Estate

Risk factors for real estate are based on simulated movements in an index that measures the total rate of return of a large pool of individual commercial real estate properties acquired for investment purposes. The same risk charges are applied to company-occupied real estate and real estate held for investment purposes.

Mortgage Loans

Risk factors applied to mortgage loans are based on an industry study of commercial mortgages. For those insurers with a material exposure to mortgage loans, a closer review could result in lower risk factors if the portfolio consists of higher-rated commercial mortgages, or it could result in a higher risk factor if the portfolio consists of a large percentage of loans that have been restructured or are in or near default.

Cash & Short-Term Investments

The baseline risk charge applied to cash balances represents the risk that cash deposited in a banking institution might be uncollectible if the bank becomes insolvent. A baseline risk charge is also applied to cash equivalents. Other cash-like assets expected to mature within one year receive a baseline risk charge.

Other Investments

The baseline risk factors for other investments are the industry baseline common stock risk factors but adjusted 10% higher. These factors were selected after a review of the ESG-simulated market volatility of more than 30 hedge fund indices. The risk factors may be reduced if the insurer provides more detail on the types of investments, such as the volatility of the investments, the liquidity of the investments, correlations within the portfolio of investments, correlations to other risk categories such as underwriting risk, and how the rating unit manages the individual and overall risks created by this portfolio of assets. Any investments in affiliates recorded in this asset category are initially assigned a risk charge of 100%.

Investment in Affiliates

Investment in Affiliated Insurers

For those investments in affiliated insurers that are not consolidated into a rating unit, a baseline risk charge of 100% is applied to the investment. For equity investments in affiliated insurers, the baseline risk charge may be adjusted if AM Best determines that there is capital flexibility in the affiliate based on its business plans and operating performance.

If the amount of investments in affiliates represents a material portion of the rating unit's available capital, AM Best may perform a supplemental BCAR analysis that removes the affiliated investments from both available capital and required capital. This supplemental analysis can be performed regardless of whether the affiliate is a property/casualty or life/health insurer.

Investment in Non-Insurance Affiliates

There are a number of elements considered when determining the appropriate risk charge for investments in non-insurance affiliates. If the investment is publicly traded, it might receive a lower risk charge than a privately placed investment because privately placed investments generally are viewed as being less liquid. However, if the insurer owns a large proportion of a publicly traded affiliate, it might require regulatory or shareholder approval to sell it, making the asset less liquid. In another instance, the sale of an affiliated investment in a stress situation could give the buyer leverage during the negotiation of the sale price, resulting in a realized value for the asset that is lower than the

reported value. These issues make these types of assets less liquid than other publicly traded investments with risks that resemble those of a privately held subsidiary.

AM Best charges the full carrying value of the non-insurance affiliate to the parent. Unless the insurer is actively committed to selling a non-insurer with proceeds to be reinvested in the insurance operations, the baseline treatment is a 100% capital charge. In this regard, AM Best presumes that the net asset value of the affiliate is needed to support its own operations and is not available to support the insurance operation.

Special Purpose Investment Subsidiaries

The net required capital to support the underlying assets and liabilities of a special purpose affiliate is charged to the parent company. For example, a downstream holding company that holds special-purpose real estate investments would receive the capital charges from the real estate asset category rather than a baseline charge of 100% used for investment in affiliates.

Intercompany Loans

The baseline treatment for intercompany loans is a 100% capital charge. However, if an intercompany loan that normally is recorded as a liability is given as credit to the borrower's available capital by AM Best, then the amount of credit given to the borrower is directly removed from the available capital and the investments of the lender. The intent is to avoid giving capital credit in more than one rating unit.

Derivative Assets

As the baseline treatment, derivatives shown as an asset receive a 100% risk charge to the asset value reported in the financial statement. However, both the asset value and the risk charge may be modified once information about the derivative itself and the rating unit's derivative program is ascertained. The asset value may be replaced with the notional value of the underlying investments if that is a better proxy for the exposure. In some instances when a derivative is considered to be purely speculative in nature, the required capital calculation may be moved to the business risk page. This results in a direct addition to net required capital rather than enabling the derivative to remain on the investment risk page and benefit from the covariance credit when calculating net required capital. Where possible, if the derivative is hedging a specific quantifiable risk captured in the BCAR model, AM Best may reduce the required capital for that risk. In such cases, AM Best will remove the asset value of the derivative from available capital.

In addition to determining whether a derivative is for hedging or speculative purposes, AM Best's evaluation may include, but is not limited to, a review of the following factors:

- The counterparty credit risk involved;
- The liquidity of the derivative;
- The volatility of the asset value;
- The potential maximum downside loss;

- The correlation of the derivative asset value with the value of the related index or investment;
- The remaining term of the derivative versus the term of the associated investments or liabilities;
- The relationship of the triggering event to the current economic environment; and
- The size, purpose, expertise, and track record of the rating unit's derivative program.

Securities Lending Reinvested Collateral

As a baseline, reinvested collateral is charged a risk factor of 10%. This factor can be adjusted following a review of the types of investments in which the collateral was reinvested.

Catastrophe-Exposed Investments

Investments in non-affiliated sidecars, catastrophe bonds, or other investments that are exposed to a sudden loss of value due to the occurrence of a catastrophe are initially assigned a baseline risk charge of 100% on the investment page. However, these investments may be removed directly from available capital when they are a material portion of surplus or added directly to the net probable maximum loss (PML) on a pre-tax basis, depending on a review of their exposure, attachment points, perils insured, term to maturity, etc.

Asset Concentration Adjustment

For asset classes that do not currently reflect concentration risk in their capital factors, such as bonds, preferred stocks, and mortgage loans, AM Best may double the asset risk charge for single, large investment holdings that are greater than 10% of surplus. This additional capital requirement applies to amounts in excess of the single investment limit, with the baseline charge for that investment type applying to the amount less than 10% of surplus. If a rating unit has significantly concentrated investments in any particular asset class, AM Best may adjust the respective asset class charge to account for this concentration.

Spread of Risk Factor Adjustment

The BCAR model generates additional required capital to support investment risk when diversification of the portfolio is lower, using a size factor corresponding to the spread of risk among all major asset classifications. Generally, no additional required capital is generated from this adjustment for rating units with more than USD 500 million in invested assets; rating units with less than USD 10 million in invested assets could receive as much as a 50% surcharge that is added to their baseline capital requirement for investments.

Unit-Linked Contracts (Separate Accounts)

Unit-linked assets are not normally included in the baseline invested assets and attract no required capital charge under investment risk. They are therefore also excluded from the assets used to determine spread-of-risk (SOR) factors. Most unit-linked policies (such as in Europe) would not normally provide guarantees to policyholders so the associated capital charges under the B3 component, which are a feature of North American type separate account liabilities, do not normally apply. However, where guarantees are present, risk charges similar to those applied to assets backing general account guarantees are used. The risk charges assumes the company bears risk through crediting rates through these guarantees. The SOR factor is not applied to the risk charges.

B3 Interest Rate Risk

Interest rate risk represents the potential loss a rating unit would incur if it were forced to sell its fixed income assets during a period of rising interest rates. As interest rates rise, the market value of the fixed income assets will decline and, if the rating unit needs to sell the fixed income assets, it would be at a price lower than what is currently considered in the calculation of available capital. Since the BCAR model makes an adjustment to surplus for fixed income equity, the model is effectively putting the fixed income assets on the balance sheet at market value after the increase in interest rates. Rating units that maintain a high level of exposure to short-term cash needs—such as those with a high gross catastrophe PML—are the most exposed to interest rate risk because they could be forced to sell fixed income assets on short notice in order to pay claims.

Property/Casualty Business

AM Best uses increases in interest rates that reflect the confidence level being used to generate the required capital for interest rate risk. AM Best selected the following changes in interest rates: 170 basis points at the 95th percentile, 240 basis points at the 99th percentile, 270 basis points at the 99.5th percentile, and 280 basis points at the 99.6th percentile. These changes in interest rates are used to estimate the interest rate risk on the market value of bonds, preferred stocks, and mortgage loans that are supporting property/casualty business.

Rating Units with Natural Catastrophe Exposure

Using the base assumption that the rating unit's gross PML for catastrophes is the maximum exposure an insurer has to interest rate risk, the interest rate risk calculation uses the ratio of the rating unit's pre-tax gross 1-in-100 year catastrophe PML from the all-perils combined per occurrence exceedance probability curve to its liquid assets. This factor is applied to the decline in the market value of the total fixed income portfolio following the rise in interest rates. By relating the rating unit's PML to all liquid assets first, AM Best assumes a rating unit is no more likely to liquidate a fixed income asset than it is to liquidate any other liquid asset. AM Best applies an exposure percentage (minimum 10%) against a rating unit's decline in market value after the rise in interest rates, recognizing that there are other reasons for a rating unit to have a short-term need for cash. Interest rate risk is evaluated at the different confidence levels—the 95th percentile, the 99th percentile, the 99.5th percentile, and the 99.6th percentile.

A key assumption in the calculation comes from AM Best's approach of marking bonds to market using a fixed income equity adjustment to available capital (adjusted for taxes), when needed, based on jurisdiction and accounting treatment. Because AM Best adjusts fixed income securities to market value each year through its re-evaluation of capitalization, only the incremental risk that a capital loss will be realized over the next year needs to be considered. Any risk of lost future income will be reflected at subsequent evaluations. Therefore, only a rating unit's short-term cash needs—such as the occurrence of its PML—would trigger a decline in capitalization over the next year.

Life/Annuity Business

Fixed annuity risk charges were developed primarily using data from third party software. Capital factors were developed for products with and without market value adjustment protection and for various periods of surrender charge protection (at issue, partial, and no surrender charge protection). Interest rate risk charges for annuity writers vary based on the type of products offered and the source of that business. Interest rate risk on annuities, pensions, endowments and protection products reflects the potential impact of mismatches between the duration of liabilities and that of the portfolio of assets held to meet those liabilities. Adjustments may be made to risk charges to reflect known characteristics of a life insurer's management of interest rate risk.

B4 Credit Risk

Reinsurance Recoverable

The BCAR model includes a charge for the credit risk associated with the potential inability of the insurer to collect from its reinsurers. The BCAR model uses factor tables based on stochastic simulations of reinsurer impairments to calculate the credit risk of the recoverables at the various confidence levels—the 95th percentile, the 99th percentile, the 99.5th percentile, and the 99.6th percentile. These credit risk factors reflect the credit quality of the reinsurers, the type of recoverable, the future time periods the recoverables are assumed to be collected, a 50% recovery rate applied to the loss, and an annual discount rate of 4% to present value the amount of recoverables uncollected due to the reinsurer impairment. Since impairments can occur at any point during a future year, discounting is done from the mid-point of the future year. As an example, an impairment that occurs in the fourth future year would be discounted 3.5 years.

The process of calculating credit risk begins with estimating the percentage of existing recoverables on reserves that will be collected in each future year. The BCAR model assumes that recoverables on reserves are collected within 30 years and estimates when those recoverables will be collected based on a combination of industry collection patterns that vary by line of business and the rating unit's own mix of ceded reserves by line of business. This collection pattern is applied to the ceded reserves for all reinsurers and any recoverables on unearned premium are added to the ceded reserve amounts that are collected within one year.

The BCAR model then uses the Best's ICR of each reinsurer and aggregates the recoverables by rating and year. A set of risk factors by rating and year at the corresponding VaR are multiplied against the rating unit's aggregated recoverables by rating and year to get the rating unit's required capital for

credit risk at that VaR level. **Appendix 2** shows the credit risk factors for reinsurance recoverables at each VaR level. These tables were developed using a portfolio of 20 reinsurers and the assumption that each reinsurer is responsible for 5% of the recoverables. For insurers with a concentration of recoverables ceded to a small number of reinsurers, a qualitative assessment of the concentration risk will be done elsewhere in the balance sheet strength evaluation.

Reinsurers that do not have a published Best's ICR, or have a published Best's ICR of ccc+ or lower, initially receive a 100% impairment rate for all future time periods. This impairment rate is offset with the 50% recovery rate, resulting in an undiscounted risk charge of 50% for all future time periods. This 50% undiscounted risk charge is then discounted 6 months, using an annual rate of 4%, to reflect the assumption that any recoveries from these reinsurers will be collected within the next year. The same discounted risk factor is shown for years one through ten in **Appendix 2** since these recoveries are assumed to be collected in year one. The initial discounted risk charges for unrated reinsurers may be reduced if adequate additional information about the unrated reinsurer is provided to AM Best. Such information may include the published ratings of other agencies.

Other Forms of Collateral

100% credit for funds held is given individually by reinsurer using the same collection pattern as the corresponding recoverables but capped at the amount of recoverables. AM Best will consider other forms of collateral, such as trust funds and letters of credit (LOCs), as an offset to reinsurance recoverable balances. At most, the amount of credit given for trusts and LOCs will be 90% of the risk factors used on the corresponding recoverables. However, the amount of credit given will vary based on a number of factors including, but not limited to the following: the quality and liquidity of assets in the trust, access to the funds in trust, type of LOC and whether the LOC is irrevocable and evergreen. Offsets that require certain conditions before the collateral is posted might not receive an offset credit until the collateral option is exercised, since there is no access to the collateral until the threshold has been triggered.

Reinsurance Dependence

AM Best includes an additional capital requirement, or surcharge, for rating units that analysts believe are excessively dependent on unaffiliated reinsurance, given their lines of business and financial resources. For these rating units, AM Best increases the overall credit risk charge for their recoverable balances, regardless of underlying credit quality. This additional charge reflects the increased exposure to reinsurance disputes and cash-flow problems the rating unit might face as a result of the higher dependence on reinsurance.

This increased exposure to dispute risk can have a severe impact on surplus. A rating unit with recoverables equal to five times its capital could lose 50% of its capital if 10% of its recoverables are successfully disputed by the reinsurer. In an effort to recognize this exposure to dispute risk, AM Best employs two reinsurance dependence tests. The first test compares the rating unit's unaffiliated recoverables-to-capital ratio to an industry composite benchmark recoverables-to-capital ratio, which is displayed in the BCAR model. The second test examines the rating unit's total ceded leverage to thresholds of five, seven, and ten times capital, resulting in respective risk charges of 15%, 20%, and

25% of recoverables from unaffiliated reinsurers. The rating unit's total ceded leverage is defined as its recoverables plus written premium ceded to unaffiliated reinsurers as a ratio to reported capital. This total ceded leverage test is forward looking, since it includes not only the existing recoverables but also the potential exposure to be added in the upcoming year.

Generally, affiliates demonstrate a history of substantial support with minimal disputes on ceded balances; therefore, the BCAR model does not generate a reinsurance dependence factor for affiliated reinsurance. However, if the affiliated support is not sufficiently present or the quick transfer of funds from the affiliates to the ceding insurer is hindered and the amount of recoverables from the affiliates is material, a reinsurance dependence factor may be applied to the affiliated recoverables.

Credit Enhancements to Reinsurance Recoverables

If a ceding insurer's recoverables are insured by an unaffiliated third party, AM Best may reduce the risk charges to reflect the reduced credit risk. However, the reinsurance dependence factor might not change if the contract does not cover uncollectibility resulting from a dispute.

Pools and Associations

As a baseline, pools and associations are treated as "Not Rated" reinsurers. However, in those instances when additional information is provided, this baseline risk factor may be adjusted based on AM Best's opinion of the pool or association's creditworthiness.

Risk-Free Servicing Carrier Business

For ceded reinsurance associated with risk-free servicing carrier business, AM Best does not intend to charge for credit risk. However, the insurer is expected to provide information related to risk-free servicing carrier business in order for the model to be adjusted properly.

Agents' Balances and Other Receivables

AM Best applies a baseline 5% capital charge for agents' balances in the course of collection and deferred agents' balances, as well as a 10% charge for accrued retrospective balances. These balances can be reduced by valid collateral and contractual offsets. Any other uncollected premium balances that are concentrated within a single entity or are approaching the 90-day overdue threshold may be assigned a higher capital charge. Other receivable balances generally are assessed a 5% charge and represent a minor overall capital requirement.

B5 Reserves Risk

Non-Life Reserves Risk Components

To a large extent, AM Best's reserves risk component emphasizes adjusted reserve leverage and stability in loss development as gauges of a rating unit's exposure to reserving errors in its book of business. Consequently, all other factors being equal, the BCAR model generates a greater reserve capital requirement for a rating unit that is more leveraged or more volatile, after adjusting for its reserve adequacy, than its peer companies and vice versa.

Required capital for reserve risk at each of the confidence levels is generated by applying the corresponding capital factors to a rating unit's reserves for each line of business. To ensure equitable

capital treatment among rating units, the BCAR model places considerable weight on a rating unit's adjusted reserves, which emphasizes reserve adequacy and the time value of money embedded in those reserves. A rating unit that historically has under-reserved will be penalized for maintaining lower reported reserves.

Non-Life Reserves Adjustments

A rating unit's reported reserves are adjusted to an economic basis that accounts for AM Best's view of a rating unit's ultimate reserves, which are discounted to their present value recognizing the time value of money. Reported reserves are adjusted to an economic basis through two modification factors: the reserve deficiency factor and the discount factor.

The reserve deficiency factor reflects AM Best's view of a rating unit's reserve deficiency expressed as a fraction of its original reserve plus 1.0. For example, a rating unit with a 10% reserve deficiency would show a 1.10 reserve deficiency factor in the model, whereas a rating unit with a 20% reserve deficiency would show a 1.20 reserve deficiency factor in the model. A qualitative assessment of the rating unit's operating environment and historical reserve development are used to arrive at AM Best's view of reserve deficiency. Generally, unseasoned rating units with less than five years of loss experience are assigned a minimum deficiency of 10%, while the reserves of seasoned rating units are determined relative to their own historical experience.

A number of issues can affect AM Best's view of a rating unit's reserve position, including the number of reserve adjustments, the size of the adjustments, the lines of business involved, the accident years generating the adverse development, and whether the adjustment was anticipated or unexpected. For companies of concern, the minimum reserve deficiency applied to the reserves will typically be 10% but may be higher.

In addition to assessing the rating unit's core reserves for non-life business, AM Best may perform a separate analysis of its asbestos and environmental reserves liabilities. Any deficiency in mass-tort reserves is added to the core deficiency.

Discount factors, typically based on industry payout patterns by line of business and a 4% annual discount rate, are applied to the estimated ultimate loss and LAE reserves. The resulting deficiency and discount factors are applied to the rating unit's reported by-line loss reserves to derive the rating unit's adjusted reserves. To maintain a consistent treatment of the time value of money, discounting booked by the rating unit is typically treated as reserve deficiency, and credit for time value of money is given through the discount factor in the model. Discount factors may incorporate a rating unit's payout pattern when AM Best assesses it to be materially different from the industry payout pattern. Other annual discount rates may be used when AM Best's long term view of the risk free medium term rate for the jurisdictions the rating unit operates in differ materially from the 4% annual discount rate. Consideration may be given to demonstrated reserve margins included in reported reserves when selecting a deficiency factor.

Non-Life Reserves Capital Factors

To determine a rating unit's reserve capital requirement, by-line reserve capital factors are provided at the various confidence levels and are derived from industry risk factors that are adjusted for a rating unit's volatility in its historical reserve runoff.

Four industry baseline probability distributions of potential reserve deviations were created for both property/casualty and health based on the size of the reported reserve. The points on the probability distribution that represent the 95th, the 99th, the 99.5th, and the 99.6th percentiles are used as the baseline industry reserve capital factors in the BCAR model. The rating unit's amount of reserve for a line of business determines the industry baseline risk factors that are then adjusted based on the rating unit's historical reserve runoff for non-life lines of business. AM Best views the size and variation in a rating unit's reserve runoff pattern as a strong indicator of the risk inherent in its reserves and of the rating unit's ability to make accurate projections of ultimate losses.

Stability factors are used to differentiate the volatility in a specific rating unit's reserves. The stability factors are calibrated around 1.00—ranging from 0.70 to 1.30—and are based on the stability of the rating unit's historical reserve runoff. These stability factors are applied to the baseline industry risk factors and will decrease or increase the industry volatility to reflect the rating unit's stability.

These adjusted capital factors are applied to the rating unit's adjusted reserves to produce required capital charges for reserve risk by line of business at each confidence level.

Growth Charge

The reserve growth charge reflects the additional risk that typically comes from growth and is based on the growth in a rating unit's exposures. The growth charge applied to the reserve aggregate required capital reflects the substantial risk a rating unit faces in the claims and reserving areas during a time of significant growth.

A growth charge is applied when a rating unit's growth in exposure is in excess of industry thresholds. Comparisons to the industry thresholds are made on a one-year basis and a three-year annualized basis. The growth charge is based on the comparison that generates the greatest amount in excess of the industry thresholds. Growth in exposures can be adjusted based on company-supplied exposure information.

The model initially calculates the rating unit's growth charge based on the growth in net premiums written. The initial calculation compares the rating unit's most recent year premium growth rate to an industry one-year premium growth threshold and then compares the rating unit's three-year annualized premium growth rate to the industry three-year annualized premium growth threshold. The comparison that generates the greatest amount of premium growth in excess of the corresponding industry threshold generates the growth charge that is used in the analysis. These thresholds are chosen based on rate changes in the industry during those time periods, plus an allowance for moderate growth in exposure.

Exhibit C.2 shows the impact that rate changes can have on calculating the growth factor. In this example, the rating unit's premiums grew at a substantial 25% during the most recent year, generating

an initial growth charge of 1.14. However, a subsequent examination of policy counts shows that the exposure really only grew at a rate of 10%, which only generates a growth charge of 1.05. Since policy counts are believed to be a better proxy for exposure growth for this rating unit, the 1.05 growth factor is the growth charge to be used in the model for this example.

When rates are declining, the growth factor based on declining premium would be lower than the growth factor based upon exposures. In this situation, the growth factor based upon exposures would once again replace the indicated growth factor based on premiums.

Exhibit C.2: High Premium Growth Example

Calendar Year (CY)	Net Premiums Written (000)	Count
Third Prior	100,000	1,000
Second Prior	100,000	1,000
First Prior	100,000	1,000
Most Recent	125,000	1,100
One Year Growth Rate:	25.0%	10.0%
Three Year Average Growth Rate:	7.7%	3.2%
Industry Growth Thresholds		
One Year Growth Rate:	11.0%	5.0%
Three Year Average Growth Rate:	14.0%	6.0%
Indicated Growth Factors		
One Year Growth Rate:	1.14	1.05
Three Year Average Growth Rate:	1.00	1.00

Adjustments for Property/Casualty Business

Loss Sensitive Business

A rating unit's reserve-risk factor may be adjusted within the casualty lines for loss sensitive business (i.e., retrospectively rated).

Retroactive Reinsurance

Any time-value-of-money gain on retroactive reinsurance is removed from available capital, since the model has already credited the gain to available capital through the reserve-equity adjustment. The reserve equity adjustment represents the embedded value in reserves due to the discounting of those reserves for the time value of money. Failure to remove the gain booked by the insurer would result in a double counting of the embedded equity.

Because the BCAR model already gives credit for loss-reserve equity, retroactive reinsurance provides little benefit unless it also includes adverse-development protection. There is no true economic gain other than the risk protection awarded for stop-loss protection above the expected ultimate, and that benefit is reflected with a risk factor adjustment. In fact, in some cases where investment yields above

those earned by the insurer are guaranteed to the reinsurer, these contracts can be punitive in AM Best's view of capitalization.

Long Duration Contracts

Long duration contracts are defined as contracts having terms in force for more than 13 months and for which the insurer cannot cancel or increase the premium during the life of the contract (generally excluding surety, mortgage guaranty, financial guaranty and title). Long duration contracts create larger unearned premium reserves than contracts with one-year terms. This creates a larger pricing risk in the unearned premium reserve than anticipated for contracts having terms of one year or less. In order to capture this increased risk, the long duration unearned premiums are included on the loss reserve page. The risk on these long duration contract unearned premiums is captured within the loss reserve page instead of the pricing risk page in an effort to reflect diversification from business being written in the future versus business written in the past. The unearned premium used for long duration contracts for reserving risk (and the written premiums for long duration contracts used for premium risk) should be net of agent/dealer commissions. Baseline factors are applied at each confidence level to the net unearned premiums and may be adjusted based on the profitability of the book.

In the case of a contractual liability policy (CLIP), where the insurer guarantees the liabilities of another entity for a fee, the underlying unearned premium that is being guaranteed is added to the loss reserve page instead of the unearned CLIP premium.

Other adjustments to credit risk, unearned premium equity, and written premiums are made in an effort to capture all of the risks associated with writing long-duration contracts. These adjustments vary based on the terms of the contracts and the structure of the business.

Life Reserve Risk Components

Mortality Risk Charges

Mortality risks are assessed based on volume of insurance in force, net of reserves and reinsurance, with risk charges graded lower for higher volumes. These charges reflect the surplus needed for excess claims and pricing or reserve inaccuracies. The baseline mortality risk factors are based on amounts at risk after reinsurance. These are adjusted for company-specific factors, such as the size of the inforce block and the specific business line.

Longevity

Longevity risks are present in annuities and certain types of pension plans. The risk measured is that participants live longer than assumed in the reserve held. The reserves for longevity risk can be particularly sensitive to mortality improvements. Risk factors incorporate an additional reserve required based on incremental improvements in mortality up to 2% at VaR 99.6.

Diversification Credit

The diversification factor reflects the reduction in overall reserve risk within a well-diversified portfolio. This diversification factor is calculated using a correlation matrix. The reserve correlation matrix determines the level and direction of reserve deviation in one line of business relative to reserve deviation in another line of business. For life and non-life, AM Best created separate industry-level

reserve correlation matrix using industry-aggregated reserve development data, under the assumption that life and non-life were not correlated.

B6 Premiums Risk

Required capital for premiums risk within the BCAR model is calculated at each confidence level by applying premium capital factors to a rating unit's premiums for distinct lines of business.

Non-Life Premiums Capital Factors

Property/Casualty Business

Premiums risk capital factors are obtained from industry probability distributions of potential underwriting profit and losses that may be adjusted for a rating unit's profitability. The determination of premium capital factors for a rating unit begins with the selection of an industry baseline capital factor for each line of business based on the size of the net premiums written by the rating unit in that particular line of business. Four industry baseline probability distributions of potential underwriting profit/loss were created for each line of business based on the size of the net premiums written. The points on these probability distributions that represent the 95th, 99th, 99.5th, and the 99.6th percentiles are used as the baseline industry premium capital factors in the model. In developing the industry baseline probability distributions for the property lines, AM Best limited the volatility of the historical data in an effort to remove volatility due to catastrophe losses, since catastrophe risk is captured in a separate risk component of the rating unit's required capital B8. AM Best believes the profitability of a rating unit's business and the overall industry pricing levels are good indicators of the level of risk margin expected within a rating unit's future business. Those rating units with better historical profitability are expected to maintain a greater risk margin in the pricing and underwriting of future business and, therefore, require a lower premium capital factor.

The rating unit's premium adequacy is reflected by applying a profitability adjustment factor that ranges from 0.80 to 1.20, based on the rating unit's historical overall operating ratio. An extremely unprofitable book of business would receive an adjustment factor of 1.20 applied to each industry risk factor, thereby increasing capital requirements for an unprofitable rating unit. In contrast, an extremely profitable book of business would receive an adjustment factor of 0.80 applied to each industry risk factor, thereby reducing capital requirements for a profitable rating unit. The measurement initially used to judge the rating unit's profitability is its historical operating ratio.

To account for any changes in current market pricing, the model uses an underwriting cycle adjustment that reflects the impact current pricing has on underwriting risk. The underwriting cycle factor is applied when calculating the premium adequacy adjustment, which can increase or decrease premium capital factors to reflect the current market conditions. This adjustment is necessary because the profitability adjustment is initially based on past results, whereas the premium risk is looking forward one year.

Similar to the loss reserve component, AM Best may adjust a rating unit's premium risk factor within the BCAR model to reflect reduced charges for loss-sensitive business, retroactive reinsurance, aggregate stop loss reinsurance, or finite quota-share reinsurance.

A rating unit's final premium capital factors for each line of business reflect the industry baseline with the aforementioned adjustment factors applied. Two final adjustments are made to the aggregation of the by-line required premium capital charge. These adjustments include a charge to reflect the additional risk that typically comes from excessive growth and the benefit typically derived from a more diversified book of business.

Health Business

The risk profiles of certain individual and group health lines are substantially different, with the individual lines generally bearing higher risk. For short-tailed health lines, AM Best capital charges for morbidity risks are modeled using profit/loss analysis.

Industry loss probability distributions were created for each of the lines of business, reflecting volatility that varies with size. The size thresholds were selected after segmenting the data for the particular line of business segments to reflect decreasing volatility with increasing size. From these distributions, industry factors are selected to correspond with the various VaR levels. These industry factors may be adjusted based on a rating unit's profitability or volatility in order to arrive at its specific risk factors.

For net premiums written, the risk facing the rating unit is the potential to incur an underwriting loss on the book of business written in the next year. The rating unit's current year written premium is used in the model as a proxy for the premium to be written next year. To create an industry database of ultimate discounted profit and losses for each line of business, the analysis used individual insurer's calculated underwriting profit or loss based on the actual reported results. The industry database was then split based on the size of the net premiums written for that line of business, and the curve fitting software was applied to generate industry baseline lognormal probability distributions of underwriting profit and loss ratios by line and by size. The points on these probability curves representing the 95th, 99th, 99.5th, and the 99.6th percentiles were used as the baseline industry premium capital factors in the model.

Long-Term Care and Long-Term Disability

The stochastic-based risk factors for long-term care (LTC) and long-term disability (DI) were modeled using industry data on profitability for LTC and industry data on premium adequacy for DI.

Growth Charge

This charge reflects the sizable risk a rating unit faces when bringing in substantial new business based on weaker underwriting and pricing standards or lack of market knowledge. The calculation of the premium growth charge is identical to the calculation of reserve growth charge and is applied directly to the aggregate required capital for premium risk.

In the cases of both the premium and reserve growth charges, adjustments may be made to mitigate higher growth charges based on a rating unit's substantial, historical control of the book of business, as well as the historical profitability and stability of the book of business.

Life/Annuity Premiums Capital Factors

The charges represent the numerous general business risks of life insurance business, including risks posed by the legal, regulatory and competitive environments. The charges recognize the other general

business risks by charges assessed on life and annuity premiums including pension plans, net of variable annuity premiums.

Diversification Credit

The diversification factor reflects the reduction in overall pricing risk within a well-diversified book of business. This diversification factor is calculated using a correlation matrix. The premium correlation matrix determines the level and direction of underwriting profits and losses in one line of business relative to underwriting profits and losses in another line of business.

Rating units with larger books of business covering multiple lines of business tend to show correlations similar to the industry-level correlations in underwriting profits and losses; those with smaller books tend to show lower line-by-line correlations than the industry due to their higher volatility in the individual lines. As such, AM Best adjusts the industry-premium correlation matrix based on the size of the rating unit's total reported net premiums written. Rating units with smaller net premiums written receive more diversification benefit as a larger reduction to the industry-premium correlation matrix is applied than that given to rating units with larger books of business.

B7 Business Risk

AM Best applies a nominal 1% capital charge to several off-balance-sheet items, including balances associated with non-controlled assets, guarantees for affiliates, contingent liabilities, long-term lease obligations, and interest-rate swaps. This charge represents a starting point for business risk capital charges assessed based on qualitative assessments of off-balance-sheet liabilities that might encumber a rating unit's surplus growth or preservation.

After gaining an understanding of the inherent risk relating to off-balance-sheet items, the analyst can modify the capital charge to reflect the appropriate level of risk. For example, to capture the risk associated with credit default swaps, the analyst can assess the credit quality of the underlying portfolio of counterparties using additional information to determine the appropriate capital charge. In such a case, the capital charge may be increased to as high as 100% if recovery is unlikely from the various counterparties.

Pension plans and other post-employment/retirement obligations are charged for the unfunded portion of these obligations in the calculation of required capital for business risk. The charge may be reduced to reflect the rating unit's planned annual reduction of the remaining unfunded obligations. For those insurers whose unfunded obligations reside at an affiliated company, the rating unit's share of the unfunded obligation is not factored directly into the rating unit's BCAR analysis but is factored into the balance sheet evaluation.

Derivatives with a liability value on the balance sheet are initially placed on the business risk page with a 100% risk factor. However, the rating unit's entire derivative program is evaluated in the manner discussed earlier within the treatment of derivative assets.

The risk charge applicable to unit-linked (separate accounts) assets has a small baseline capital charge, which can be adjusted following a review of the portfolio. Charges for unit-linked funds represent a

wind-down provision related to the costs of managing the business. Factors for business with a passively managed content, or indexed funds will normally attract a lower charge.

Although many of these items are classified appropriately in the business risk component, adjustments for these items may alternatively be included in the available capital component.

B8 Catastrophe Risk

Occurrence of a Catastrophe

A standardized incorporation of a rating unit's PMLs in the model highlights AM Best's concern that catastrophes are a severe threat to solvency in the industry because of the significant, rapid, and unexpected impact that can occur. While many other exposures can affect solvency, no single exposure can affect policyholder security more instantaneously than catastrophes. To reflect this concern, AM Best adds the rating unit's modeled catastrophe losses to required capital at each confidence level.

The net PML used for each confidence level is taken from the per-occurrence all-perils combined information provided to AM Best. The pre-tax net PMLs, which are based on worldwide exposures, are net of reinsurance and include reinstatement premiums. The determination of these losses should be provided through the SRQ or through discussions with management. The information filed by rating units within the SRQ can be a key component within the assessment of their capital strength. However, like any other component within BCAR, the PML responses can be adjusted to reflect additional information provided by management. The PML response also can be adjusted if AM Best determines additional conservatism should be taken into consideration based on a review of the catastrophe study.

Discussion regarding output from third party models may be used to assist management and AM Best analysts in assessing a rating unit's catastrophe exposure at the various confidence levels. This assessment should not be limited to the output of a catastrophe model or the average of several models, and it should reflect the full consideration of the rating unit's potential losses.

For those rating units that do not provide modeled PMLs, AM Best may use other information to estimate potential large losses, such as total policy limits; total insured value by state, region, or county; actual historical catastrophe losses; etc.

PMLs are quite often stated on a "return period" basis, such as a 1-in-100-year loss or a 1-in-200-year loss. The BCAR model uses the PML for a particular return period at its corresponding confidence level. **Exhibit C.3** shows the return periods and corresponding confidence levels for each of the PMLs used in the BCAR model.

Exhibit C.3: Return Periods vs. Confidence Levels

Return Period (Years)	Annual Probability (%)	Confidence Level (%)
20	5.0	95.0
100	1.0	99.0
200	0.5	99.5
250	0.4	99.6

Casualty Catastrophes

For casualty writers, an estimate of a catastrophic casualty loss may be used in the analysis of balance sheet strength.

Terrorism

Information on terrorism risk can be provided to AM Best by the rating unit through the SRQ or through discussions with management when the risk is material. This information is provided both gross and net of reinsurance and (if applicable) any publicly financed backstop. From this information, AM Best can calculate a charge to required capital that may be included in the standard BCAR analysis if the terrorism charge is greater than the natural catastrophe PML. The terrorism charge may consider the probability of a large-scale attack, the location of the attack, the number of exposure concentrations, the size of the exposures relative to surplus, data quality, and any available loss mitigation.

D. Available Capital

AM Best may make adjustments to a rating unit's reported capital within the BCAR model to provide a more economic and comparable basis for evaluating capital adequacy. These adjustments even the playing field and compensate for certain economic values not reflected in the financial statements. Depending on the rating unit, reported capital may be modified for items such as: subordinated debt, equity adjustments related to assets not reported at market value or unearned premiums, undiscounted technical reserves, loss reserves, liquidity reserves and/or equalization reserves, Value of in Force Business (VIF), and the Contractual Service Margin (CSM) and Risk-Adjustment (RA) for life liabilities, amongst others. The BCAR emphasizes permanent capital and consequently can reduce reported surplus for encumbered capital that includes future debt servicing requirements. Goodwill and other intangible assets may be eliminated. Some of these capital components are adjusted for tax as required. The tax rate used is based on a three-year average effective tax rate that can be modified to reflect the rating unit's projected medium-term (three to five year) tax rate and, as necessary, the visibility of profit that would enable recovery of tax losses.

The following sections highlight possible adjustments made to available capital.

Hybrid Instruments

In general, AM Best grants equity credit for hybrid securities with the characteristics of common equity by an amount of up to 20% of a firm's total adjusted (available) capital in BCAR. For the BCAR

calculation, AM Best looks to measure what sources (including the equity credit associated with various capital instruments) are available to pay policyholder claims under normal business conditions and in the event of stress, for which off balance sheet sources and other funds may be available.

Assets Not Reported at Market Value

AM Best can adjust available capital to reflect the difference between market and book value for certain assets, depending on the valuation basis used under particular accounting standards. This may be the case for real estate, where regular, verifiably independent valuations are available, as well as financial assets whose values are based on acquisition costs.

Stress Test Adjustments

AM Best stresses a rating unit's available capital further as part of its sensitivity analysis. This analysis measures a rating unit's prospective capital needs stemming from a number of off-balance-sheet items, including commitments or guarantees to affiliates, outstanding litigation, excessive catastrophe losses not contained within a rating unit's reinsurance program, and continued operating losses. The stress tests show what the rating unit's BCAR looks like after a stress test scenario occurs. Although these stress-tested BCAR results are not published, they do impact AM Best's view of capitalization.

Rating Units with Natural Catastrophe Exposure

Rating units with a natural catastrophe exposure may be subjected to additional stress tests related to the occurrence of such an event. The following calculations are completed for the natural catastrophe stress test:

1. The reported surplus is reduced by the 1-in-100-year net post-tax PML (including reinstatement premium) from the per-occurrence all-perils combined information.
2. Reinsurance recoverables are increased a minimum of 40% of the difference in the 1-in-100 gross and net pre-tax per-occurrence all-perils combined PMLs (excluding reinstatement premiums). This adjustment can also increase the reinsurance dependence factor. In determining the appropriate risk charge for these recoverables, AM Best assumes the ratings on the reinsurers will remain unchanged as a result of the event.
3. An amount equal to 40% of the 1-in-100-year per-occurrence all-perils combined net pre-tax PML (excluding reinstatement premiums) is added to the loss reserves. This amount may be adjusted based upon the reinsurance structure (i.e., caps, co-participation, etc.).
4. If necessary, the net pre-tax PMLs (including reinstatement premiums) used at each confidence level for the B8 catastrophe risk may be adjusted to reflect any changes in the net PML owing to changes in the reinsurance structure in place after the first event occurs.

Note: The reduction to surplus in Step 1 is on a post-tax basis only if the analyst believes that the company will be able to use the tax benefit. Otherwise, the calculation is on a pre-tax basis.

Rating Units with Terrorism Exposure

Rating units with a material exposure to terrorism also may be subjected to a stress test that looks at the sensitivity of the rating unit's capitalization to the occurrence of a terrorism event.

Other Stress Tests

Other stress tests performed may include the following:

1. **Reinsurance Counterparty Downgrade**: The analyst can adjust the reinsurance counterparty rating to reflect a multi-level downgrade and then measure the impact on required capital.
2. **Mortality Scenario**: The analyst may modify the base mortality risk factors by applying a multiple, thus testing the impact of a high mortality event on the rating unit's balance sheet strength.
3. **CIC Change**: The analyst can model the impact of a CIC change on the rating unit's investment risk-related required capital.
4. **Sovereign Default**: To account for additional asset risk within a particular country, the analyst can assess the impact of a sovereign default on potentially affected assets.

E. Conclusion

BCAR is important to AM Best's evaluation of both absolute and relative balance sheet strength. Although BCAR is an important measure in the rating process, it is not the sole basis of a rating assignment. BCAR, like other quantitative measures, has limitations and does not necessarily work for all rating units. Consequently, capital adequacy should be viewed within the overall context of the operating and strategic issues surrounding a rating unit. In addition, holding company considerations will play a key role in evaluating the balance sheet strength of a rating unit. Business profile, operating performance and enterprise risk management are important rating considerations in evaluating a rating unit's long-term financial strength and viability, as well as the quality of the capital that supports the BCAR result.

AM Best believes that well-managed and highly rated insurers will continue to focus on the fundamentals of building future economic value and financial stability, rather than on managing one, albeit important, component of AM Best's rating evaluation.

Appendix 1: Baseline Bond Risk Charges

VaR 95										
Rating	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**	**6 Year**	**7 Year**	**8 Year**	**9 Year**	**10 Year**
aaa	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.03%	0.04%	0.05%	0.05%
aa+	0.00%	0.05%	0.09%	0.14%	0.18%	0.21%	0.24%	0.26%	0.28%	0.30%
aa	0.00%	0.10%	0.18%	0.27%	0.34%	0.41%	0.45%	0.48%	0.52%	0.54%
aa-	0.08%	0.24%	0.37%	0.52%	0.62%	0.71%	0.78%	0.82%	0.86%	0.91%
a+	0.25%	0.53%	0.78%	1.01%	1.19%	1.33%	1.43%	1.48%	1.55%	1.62%
a	0.33%	0.67%	0.99%	1.25%	1.47%	1.63%	1.74%	1.81%	1.89%	1.96%
a-	0.42%	0.86%	1.24%	1.56%	1.82%	2.02%	2.13%	2.21%	2.30%	2.38%
bbb+	0.75%	1.52%	2.16%	2.70%	3.13%	3.46%	3.69%	3.83%	3.99%	4.13%
bbb	0.88%	1.75%	2.47%	3.09%	3.56%	3.93%	4.18%	4.33%	4.48%	4.65%
bbb-	1.16%	2.29%	3.20%	3.95%	4.53%	4.97%	5.25%	5.41%	5.58%	5.78%
bb+	1.89%	3.65%	5.15%	6.43%	7.48%	8.35%	9.03%	9.49%	9.93%	10.34%
bb	2.21%	4.24%	5.94%	7.36%	8.54%	9.49%	10.22%	10.71%	11.18%	11.61%
bb-	4.35%	8.14%	11.12%	13.47%	15.24%	16.55%	17.46%	18.00%	18.46%	18.82%
b+ to b-	6.52%	11.91%	16.32%	19.90%	22.67%	24.85%	26.48%	27.66%	28.45%	28.92%
ccc+ to ccc-	24.38%	37.13%	43.41%	46.09%	46.77%	46.77%	46.77%	46.77%	46.77%	46.77%
cc to c	28.45%	43.32%	50.64%	53.77%	54.56%	54.56%	54.56%	54.56%	54.56%	54.56%
d	32.51%	49.51%	57.87%	61.45%	62.36%	62.36%	62.36%	62.36%	62.36%	62.36%

VaR 99										
Rating	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**	**6 Year**	**7 Year**	**8 Year**	**9 Year**	**10 Year**
aaa	0.00%	0.00%	0.04%	0.08%	0.11%	0.14%	0.16%	0.19%	0.21%	0.23%
aa+	0.05%	0.14%	0.24%	0.33%	0.40%	0.47%	0.52%	0.55%	0.59%	0.62%
aa	0.11%	0.27%	0.44%	0.60%	0.71%	0.81%	0.88%	0.92%	0.98%	1.02%
aa-	0.20%	0.45%	0.69%	0.90%	1.05%	1.19%	1.27%	1.33%	1.40%	1.45%
a+	0.39%	0.81%	1.19%	1.50%	1.75%	1.91%	2.05%	2.12%	2.21%	2.29%
a	0.48%	0.99%	1.43%	1.80%	2.08%	2.28%	2.43%	2.51%	2.60%	2.69%
a-	0.60%	1.20%	1.73%	2.16%	2.49%	2.72%	2.88%	2.96%	3.06%	3.17%
bbb+	1.01%	2.02%	2.87%	3.56%	4.09%	4.51%	4.79%	4.93%	5.12%	5.29%
bbb	1.15%	2.29%	3.24%	4.01%	4.57%	5.04%	5.34%	5.49%	5.70%	5.87%
bbb-	1.45%	2.85%	4.01%	4.91%	5.62%	6.10%	6.46%	6.64%	6.83%	7.01%
bb+	2.26%	4.33%	6.15%	7.66%	8.86%	9.81%	10.58%	11.12%	11.54%	11.99%
bb	2.59%	4.95%	6.99%	8.67%	9.98%	11.00%	11.80%	12.36%	12.82%	13.30%
bb-	4.83%	8.99%	12.28%	14.89%	16.73%	18.06%	18.98%	19.47%	19.91%	20.26%
b+ to b-	7.07%	12.91%	17.65%	21.42%	24.28%	26.49%	28.09%	29.28%	29.93%	30.37%
ccc+ to ccc-	25.06%	37.91%	44.06%	46.60%	47.13%	47.13%	47.13%	47.13%	47.13%	47.13%
cc to c	29.24%	44.23%	51.40%	54.36%	54.99%	54.99%	54.99%	54.99%	54.99%	54.99%
d	33.41%	50.55%	58.74%	62.13%	62.84%	62.84%	62.84%	62.84%	62.84%	62.84%

Appendix 1 Continued

VaR 99.5										
Rating	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**	**6 Year**	**7 Year**	**8 Year**	**9 Year**	**10 Year**
aaa	0.00%	0.03%	0.09%	0.13%	0.17%	0.21%	0.24%	0.27%	0.30%	0.33%
aa+	0.08%	0.20%	0.32%	0.42%	0.51%	0.57%	0.64%	0.67%	0.72%	0.77%
aa	0.16%	0.37%	0.57%	0.72%	0.85%	0.97%	1.06%	1.09%	1.15%	1.23%
aa-	0.26%	0.57%	0.84%	1.05%	1.22%	1.37%	1.48%	1.52%	1.59%	1.67%
a+	0.46%	0.95%	1.36%	1.68%	1.94%	2.16%	2.31%	2.35%	2.43%	2.55%
a	0.56%	1.14%	1.63%	2.00%	2.30%	2.56%	2.71%	2.76%	2.85%	2.97%
a-	0.68%	1.37%	1.95%	2.38%	2.74%	3.01%	3.19%	3.25%	3.33%	3.47%
bbb+	1.12%	2.25%	3.16%	3.91%	4.47%	4.91%	5.16%	5.32%	5.49%	5.70%
bbb	1.27%	2.53%	3.55%	4.40%	5.00%	5.44%	5.73%	5.92%	6.08%	6.28%
bbb-	1.59%	3.11%	4.33%	5.33%	6.01%	6.56%	6.86%	7.03%	7.20%	7.42%
bb+	2.41%	4.67%	6.53%	8.14%	9.31%	10.37%	11.11%	11.63%	12.12%	12.52%
bb	2.74%	5.30%	7.38%	9.11%	10.46%	11.56%	12.33%	12.88%	13.40%	13.82%
bb-	5.05%	9.36%	12.72%	15.32%	17.28%	18.63%	19.47%	19.99%	20.43%	20.72%
b+ to b-	7.34%	13.33%	18.13%	22.00%	24.90%	27.08%	28.67%	29.77%	30.48%	30.82%
ccc+ to ccc-	25.35%	38.23%	44.37%	46.81%	47.26%	47.26%	47.26%	47.26%	47.26%	47.26%
cc to c	29.57%	44.60%	51.77%	54.61%	55.14%	55.14%	55.14%	55.14%	55.14%	55.14%
d	33.79%	50.97%	59.16%	62.41%	63.02%	63.02%	63.02%	63.02%	63.02%	63.02%

VaR 99.6										
Rating	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**	**6 Year**	**7 Year**	**8 Year**	**9 Year**	**10 Year**
aaa	0.00%	0.05%	0.10%	0.14%	0.19%	0.23%	0.27%	0.30%	0.32%	0.38%
aa+	0.09%	0.21%	0.35%	0.45%	0.54%	0.61%	0.68%	0.71%	0.77%	0.82%
aa	0.18%	0.40%	0.61%	0.77%	0.90%	1.00%	1.10%	1.15%	1.21%	1.27%
aa-	0.28%	0.59%	0.87%	1.11%	1.29%	1.40%	1.53%	1.58%	1.64%	1.72%
a+	0.48%	0.99%	1.42%	1.77%	2.02%	2.21%	2.37%	2.42%	2.50%	2.61%
a	0.58%	1.18%	1.70%	2.09%	2.39%	2.60%	2.78%	2.83%	2.93%	3.03%
a-	0.71%	1.42%	2.01%	2.48%	2.85%	3.07%	3.25%	3.32%	3.41%	3.52%
bbb+	1.17%	2.31%	3.26%	4.00%	4.57%	5.00%	5.31%	5.42%	5.60%	5.79%
bbb	1.32%	2.61%	3.64%	4.48%	5.10%	5.58%	5.91%	6.02%	6.19%	6.39%
bbb-	1.62%	3.19%	4.42%	5.40%	6.13%	6.67%	7.02%	7.17%	7.33%	7.54%
bb+	2.47%	4.76%	6.67%	8.26%	9.51%	10.53%	11.23%	11.78%	12.24%	12.67%
bb	2.82%	5.40%	7.52%	9.28%	10.65%	11.73%	12.50%	13.02%	13.51%	13.96%
bb-	5.10%	9.48%	12.89%	15.50%	17.51%	18.82%	19.66%	20.16%	20.56%	20.89%
b+ to b-	7.43%	13.44%	18.29%	22.13%	25.09%	27.25%	28.79%	29.93%	30.61%	30.95%
ccc+ to ccc-	25.46%	38.31%	44.42%	46.84%	47.30%	47.30%	47.30%	47.30%	47.30%	47.30%
cc to c	29.70%	44.69%	51.82%	54.64%	55.18%	55.18%	55.18%	55.18%	55.18%	55.18%
d	33.94%	51.08%	59.23%	62.45%	63.06%	63.06%	63.06%	63.06%	63.06%	63.06%

Appendix 2: Credit Risk Factors

Reinsurance Recoverables Credit Risk Factors - VaR 95											
Best's ICR of Reinsurer	**FSR**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
aaa	A++	0.3%	0.4%	0.5%	0.6%	0.6%	0.7%	0.8%	0.9%	1.0%	1.0%
aa+	A++	0.5%	0.6%	0.7%	0.8%	0.8%	1.0%	1.1%	1.2%	1.3%	1.4%
aa	A+	0.7%	0.8%	0.9%	1.0%	1.1%	1.2%	1.4%	1.5%	1.6%	1.7%
aa-	A+	1.0%	1.1%	1.3%	1.4%	1.5%	1.6%	1.7%	1.9%	2.0%	2.1%
a+	A	1.2%	1.5%	1.7%	1.9%	2.1%	2.3%	2.4%	2.5%	2.7%	2.8%
a	A	1.5%	1.8%	2.0%	2.3%	2.5%	2.7%	2.9%	3.1%	3.3%	3.4%
a-	A-	2.0%	2.4%	2.7%	3.1%	3.4%	3.7%	4.0%	4.3%	4.6%	4.8%
bbb+	B++	2.5%	3.2%	3.9%	4.5%	5.0%	5.6%	6.2%	6.7%	7.2%	7.6%
bbb	B++	2.9%	4.0%	5.0%	5.9%	6.7%	7.6%	8.4%	9.1%	9.7%	10.3%
bbb-	B+	3.9%	5.4%	6.8%	8.1%	9.2%	10.2%	11.0%	11.8%	12.5%	13.1%
bb+	B	5.9%	7.5%	9.1%	10.5%	11.7%	12.9%	14.0%	14.9%	15.8%	16.5%
bb	B	8.8%	10.6%	12.2%	13.7%	15.1%	16.3%	17.4%	18.3%	19.2%	20.0%
bb-	B-	11.8%	13.7%	15.4%	17.0%	18.4%	19.3%	20.2%	20.9%	21.5%	22.1%
b+	C++	14.7%	16.3%	17.7%	19.0%	20.1%	21.0%	21.7%	22.4%	22.9%	23.4%
b	C++	17.7%	18.9%	20.0%	20.9%	21.8%	22.6%	23.3%	23.9%	24.4%	24.8%
b-	C+	19.6%	20.7%	21.8%	22.7%	23.5%	24.2%	24.8%	25.3%	25.8%	26.2%
ccc+ and Lower		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%
Not Rated by A.M. Best		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%

*Includes reinsurance recoverables on paid loss & LAE, known case loss & LAE reserves, IBNR loss & LAE reserves, and unearned premium.

Reinsurance Recoverables Credit Risk Factors - VaR 99											
Best's ICR of Reinsurer	**FSR**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
aaa	A++	1.2%	1.4%	1.5%	1.6%	1.7%	1.8%	1.9%	1.9%	2.0%	2.1%
aa+	A++	1.5%	1.7%	1.8%	2.0%	2.1%	2.3%	2.4%	2.5%	2.7%	2.8%
aa	A+	1.7%	1.9%	2.2%	2.3%	2.5%	2.7%	2.9%	3.1%	3.3%	3.4%
aa-	A+	2.0%	2.2%	2.5%	2.7%	2.9%	3.2%	3.5%	3.7%	3.9%	4.1%
a+	A	2.2%	2.5%	2.8%	3.1%	3.4%	3.7%	4.0%	4.3%	4.6%	4.8%
a	A	2.5%	3.0%	3.4%	3.8%	4.2%	4.5%	4.8%	5.1%	5.3%	5.5%
a-	A-	2.9%	3.5%	4.1%	4.6%	5.0%	5.5%	5.9%	6.3%	6.6%	6.9%
bbb+	B++	3.9%	4.7%	5.4%	6.1%	6.7%	7.4%	8.1%	8.6%	9.2%	9.7%
bbb	B++	4.9%	5.9%	6.8%	7.6%	8.4%	9.4%	10.2%	11.0%	11.8%	12.4%
bbb-	B+	5.9%	7.3%	8.6%	9.8%	10.9%	11.9%	12.9%	13.7%	14.5%	15.2%
bb+	B	8.8%	10.4%	11.8%	13.1%	14.3%	15.3%	16.3%	17.1%	17.9%	18.6%
bb	B	11.8%	13.4%	15.0%	16.3%	17.6%	18.7%	19.7%	20.6%	21.4%	22.1%
bb-	B-	14.7%	16.5%	18.1%	19.6%	21.0%	21.8%	22.5%	23.1%	23.6%	24.1%
b+	C++	17.7%	19.1%	20.4%	21.6%	22.6%	23.4%	24.0%	24.6%	25.1%	25.5%
b	C++	20.6%	21.7%	22.7%	23.5%	24.3%	25.0%	25.6%	26.1%	26.5%	26.9%
b-	C+	22.6%	23.6%	24.5%	25.3%	26.0%	26.6%	27.1%	27.6%	27.9%	28.3%
ccc+ and Lower		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%
Not Rated by A.M. Best		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%

*Includes reinsurance recoverables on paid loss & LAE, known case loss & LAE reserves, IBNR loss & LAE reserves, and unearned premium.

Appendix 2 Continued

Reinsurance Recoverables Credit Risk Factors - VaR 99.5											
Best's ICR of Reinsurer	**FSR**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
aaa	A++	1.7%	1.9%	2.0%	2.2%	2.3%	2.4%	2.5%	2.6%	2.7%	2.8%
aa+	A++	2.0%	2.2%	2.4%	2.6%	2.7%	2.9%	3.1%	3.2%	3.3%	3.4%
aa	A+	2.2%	2.5%	2.7%	3.0%	3.1%	3.4%	3.6%	3.8%	4.0%	4.1%
aa-	A+	2.5%	2.8%	3.2%	3.5%	3.8%	4.0%	4.3%	4.5%	4.7%	4.8%
a+	A	2.9%	3.4%	3.9%	4.3%	4.6%	4.9%	5.2%	5.4%	5.7%	5.9%
a	A	3.4%	4.0%	4.5%	5.0%	5.5%	5.8%	6.1%	6.4%	6.7%	6.9%
a-	A-	3.9%	4.7%	5.4%	6.1%	6.7%	7.1%	7.4%	7.8%	8.0%	8.3%
bbb+	B++	4.9%	5.9%	6.8%	7.6%	8.4%	9.0%	9.6%	10.1%	10.6%	11.0%
bbb	B++	5.9%	7.1%	8.2%	9.2%	10.1%	11.0%	11.8%	12.5%	13.2%	13.8%
bbb-	B+	7.8%	9.2%	10.4%	11.6%	12.6%	13.5%	14.4%	15.2%	15.9%	16.5%
bb+	B	10.8%	12.3%	13.6%	14.8%	15.9%	16.9%	17.8%	18.6%	19.4%	20.0%
bb	B	13.7%	15.3%	16.8%	18.1%	19.3%	20.3%	21.2%	22.1%	22.8%	23.4%
bb-	B-	16.7%	18.4%	20.0%	21.4%	22.6%	23.4%	24.0%	24.6%	25.1%	25.5%
b+	C++	19.6%	21.0%	22.2%	23.3%	24.3%	25.0%	25.6%	26.1%	26.5%	26.9%
b	C++	22.6%	23.6%	24.5%	25.3%	26.0%	26.6%	27.1%	27.6%	27.9%	28.3%
b-	C+	24.5%	25.5%	26.3%	27.0%	27.7%	28.2%	28.7%	29.1%	29.4%	29.6%
ccc+ and Lower		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%
Not Rated by A.M. Best		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%

*Includes reinsurance recoverables on paid loss & LAE, known case loss & LAE reserves, IBNR loss & LAE reserves, and unearned premium.

Reinsurance Recoverables Credit Risk Factors - VaR 99.6											
Best's ICR of Reinsurer	**FSR**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
aaa	A++	1.8%	2.0%	2.2%	2.3%	2.5%	2.6%	2.7%	2.8%	2.9%	2.9%
aa+	A++	2.1%	2.3%	2.5%	2.7%	2.9%	3.1%	3.2%	3.4%	3.5%	3.6%
aa	A+	2.4%	2.7%	2.9%	3.1%	3.3%	3.6%	3.8%	4.0%	4.2%	4.3%
aa-	A+	2.7%	3.1%	3.4%	3.7%	4.0%	4.2%	4.5%	4.7%	4.8%	5.0%
a+	A	3.2%	3.7%	4.1%	4.5%	4.8%	5.1%	5.4%	5.7%	5.9%	6.1%
a	A	3.7%	4.3%	4.8%	5.3%	5.8%	6.1%	6.5%	6.7%	7.0%	7.2%
a-	A-	4.3%	5.1%	5.8%	6.5%	7.1%	7.5%	7.8%	8.1%	8.4%	8.6%
bbb+	B++	5.3%	6.3%	7.2%	8.0%	8.8%	9.4%	10.0%	10.5%	11.0%	11.4%
bbb	B++	6.4%	7.5%	8.6%	9.6%	10.5%	11.4%	12.2%	12.9%	13.5%	14.1%
bbb-	B+	8.3%	9.7%	10.9%	12.0%	13.0%	13.9%	14.8%	15.6%	16.3%	16.9%
bb+	B	11.3%	12.7%	14.1%	15.3%	16.3%	17.3%	18.2%	19.0%	19.7%	20.3%
bb	B	14.2%	15.8%	17.2%	18.5%	19.7%	20.7%	21.6%	22.4%	23.1%	23.8%
bb-	B-	17.2%	18.9%	20.4%	21.8%	23.1%	23.8%	24.4%	25.0%	25.4%	25.8%
b+	C++	20.1%	21.5%	22.7%	23.8%	24.7%	25.4%	26.0%	26.5%	26.9%	27.2%
b	C++	23.0%	24.0%	24.9%	25.7%	26.4%	27.0%	27.5%	27.9%	28.3%	28.6%
b-	C+	25.0%	25.9%	26.7%	27.5%	28.1%	28.6%	29.1%	29.4%	29.7%	30.0%
ccc+ and Lower		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%
Not Rated by A.M. Best		49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%

*Includes reinsurance recoverables on paid loss & LAE, known case loss & LAE reserves, IBNR loss & LAE reserves, and unearned premium.

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