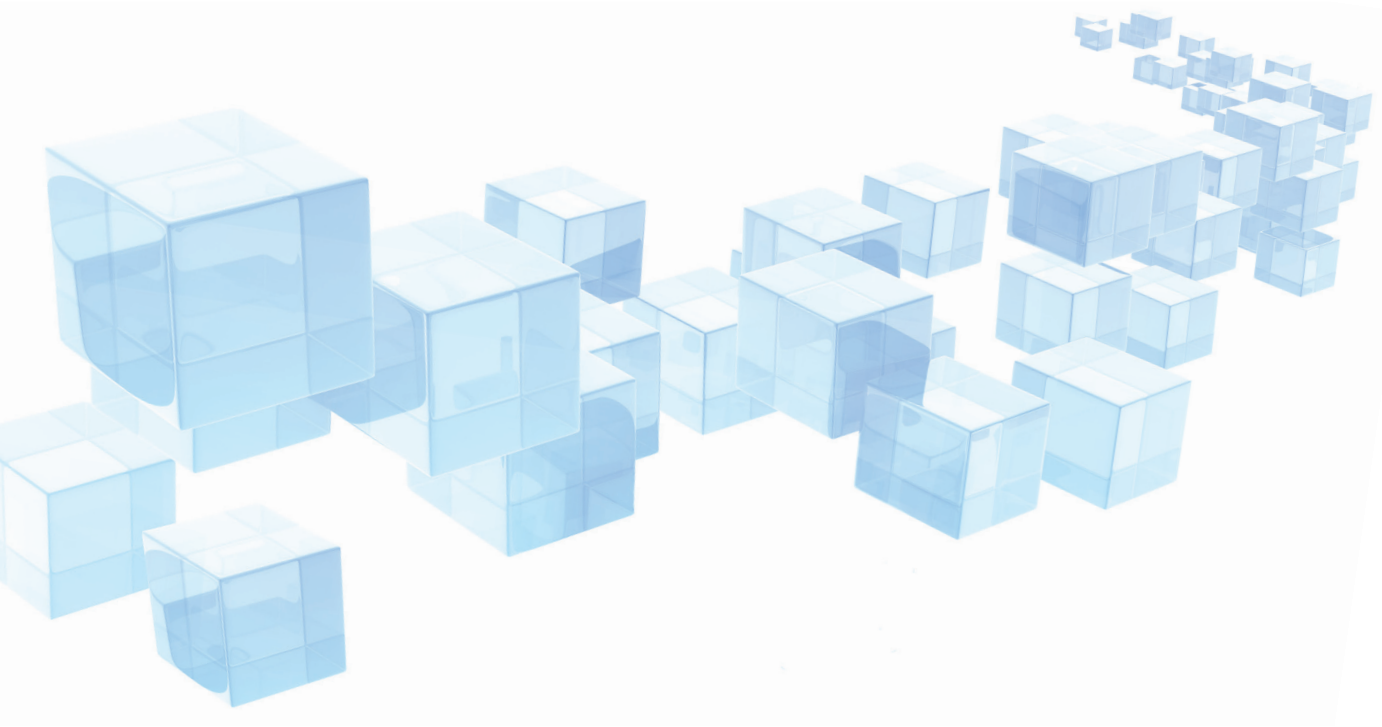
BEST'S METHODOLOGY AND CRITERIA

Evaluating Mortgage Insurance

February 28, 2018



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A M BEST ®

Evaluating Mortgage Insurance

Outline

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 A.M. Best Rating Services' rating process.

A. Market Overview

Mortgage insurers are monoline insurance companies that provide insurance against financial loss to mortgage lenders due to nonpayment or default by homeowners. As part of the credit rating analysis of mortgage insurers, Best's Credit Rating Methodology (BCRM) remains the governing document that provides a comprehensive explanation of A.M. Best's rating process.

This criteria procedure highlights rating considerations unique to the evaluation of mortgage insurers. Such considerations include housing market dynamics, the mortgage underwriting and origination process, the calculation of reserve risk, the quality and characteristics of the underlying mortgage portfolio, and the claims-paying resources used to fund reserves. This criteria procedure also provides a framework for evaluating potential losses that may be associated with mortgage pools, such as those considered by the reinsurance industry for excess of loss coverage pursuant to the risk-sharing initiatives of Government Sponsored Enterprises (GSEs)—Freddie Mac and Fannie Mae—and other non-GSE-related mortgage exposures. This potential loss evaluation is used as a factor in a reinsurer's Best's Capital Adequacy Ratio (BCAR) analysis. Section B of this criteria procedure mainly covers the rating process for primary monoline mortgage insurers. The approach presented in Section B also applies to reinsurance companies assuming mortgage risk from primary mortgage insurers and/or GSEs. Sections C and D describe how capital charges are assigned to GSE and non-GSE mortgage risks assumed by reinsurers.

Mortgage Guaranty Insurance

Mortgage guaranty insurance or mortgage insurance (MI) protects mortgage lenders by ceding the mortgage risk from lenders to insurers, thus providing an added layer of credit protection should homeowners default on their payment obligations. The National Association of Insurance Commissioners (NAIC) Mortgage Guaranty Insurance Model Act defines MI as insurance against financial loss by reason of nonpayment of principal, interest, or other sums agreed to be paid on any authorized real estate security; this includes nonpayment of rent under the terms of a written lease for the possession, use, or occupancy of real estate.

Evaluating Mortgage Insurance

In the United States, private mortgage insurance (PMI) is typically provided on residential loans consisting of one-to-four family residences, including condominiums and townhouses, with most policies written on first-lien mortgages with a loan-to-value ratio (LTV) greater than 80%. PMI makes the loan eligible for acquisition by the GSE, as the PMI reduces the GSE's effective exposures on such mortgages to the 80% threshold.

Market Characteristics

Demand for MI depends on mortgage originations, housing prices, loan amounts and the percentage of loan originations with an LTV in excess of 80%. Despite a limited number of active players, the PMI market is very competitive, given the commoditized nature of this product and the limited opportunity for product differentiation. In addition, private mortgage insurers compete with the Federal Housing Administration (FHA), which provides MI on mortgages originated by the FHA, approved banks and private lending institutions.

Mortgage insurance claims generally are affected by swings in the economy, which impact the unemployment rate and housing prices. This was demonstrated in 2008 during the credit crisis, when housing prices rapidly deteriorated. From 2007 through 2012, the MI industry suffered its worst financial and credit performance in two decades. With the current return to profitability and the Private Mortgage Insurer Eligibility Requirements (PMIERs) established by the Federal Housing Finance Agency (FHFA), private mortgage insurers' participation in the insurance of mortgage loans acquired by the GSEs recently has increased. PMIERs is a risk-based approach that requires approved private mortgage insurers to maintain sufficient assets for claim payments and meet certain requirements to provide MI for loans acquired or enhanced by the GSEs. The GSEs are entering into risk-sharing programs (as discussed later in this criteria procedure) to facilitate the efforts of the FHFA, the conservator of the GSEs, to attract private capital to the housing market and reduce a taxpayer's potential exposure to losses.

A.M. Best's Rating Process

The building blocks of A.M. Best's rating process are outlined in **Exhibit A.1**.

Exhibit A.1: A.M. Best's Rating Process

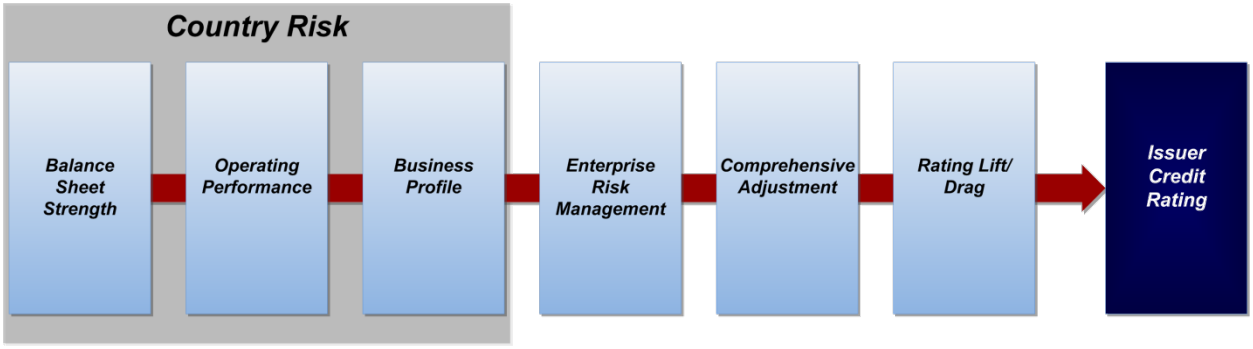


Exhibit A.2 details the possible assessment descriptors for the evaluations of balance sheet strength, operating performance, business profile, and enterprise risk management.

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		

A.M. Best's rating process (**Exhibit A.1**) for MI companies provides an opinion on an insurer's ability to meet its ongoing obligations to policyholders. The valuation of an MI company's financial strength is based on in-depth analysis of its balance sheet strength—including its available resources to satisfy potential claims and its capital adequacy following the application of stress scenarios or assumptions—along with a review of the insurer's operating performance, business profile, and enterprise risk management.

B. Rating Considerations: Mortgage Insurance

Balance Sheet Strength

A.M. Best's rating analysis begins with an evaluation of the rating unit's balance sheet strength. Balance sheet strength measures the exposure of a company's surplus to its operating and financial practices. MI is characterized by its long exposure period, with an average policy period of approximately seven years, and by occasional catastrophic losses due to widespread defaults resulting from sudden, systemic and severe economic downturns. These unique characteristics may lead to losses that far exceed the mortgage insurer's financial resources, causing financial impairment or insolvency. Thus, A.M. Best believes that the mortgage insurer's balance sheet strength and its ability to meet its current and ongoing obligations to policyholders in various stress scenarios are key drivers in the rating assessment. The balance sheet analysis for the primary MI companies begins with a quantitative estimate of the insurer's capital adequacy at different confidence levels. As a result, an analysis of an MI company's underwriting, financial, and asset leverage is important in assessing the overall strength of its balance sheet.

Capital Adequacy and BCAR

A key component of the evaluation of balance sheet strength is a company's BCAR score (**Exhibit B.1**).

Exhibit B.1: The BCAR Formula

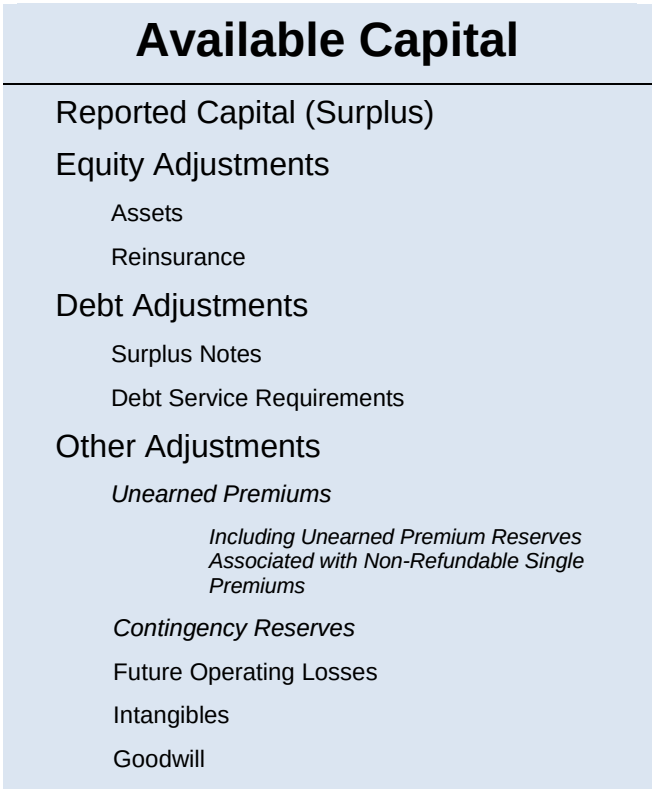
$$\left(\frac{\text{Available Capital} - \text{Net Required Capital}}{\text{Available Capital}}\right) \times 100$$

A.M. Best's BCAR model evaluates and quantifies the adequacy of a company's risk-adjusted capital position. BCAR uses a risk-based capital approach that calculates the Available Capital and Net Required Capital (NRC).

Elements of Available Capital

The starting point for determining Available Capital is the financial statement 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. Available Capital may be further adjusted for other items, such as debt service requirements, goodwill, and other intangible assets. **Exhibit B.2** shows the general components of Available Capital with emphasis on two elements that stand out for mortgage insurers: Contingency Reserves and Unearned Premium Reserves.

Exhibit B.2: Available Capital Components



Contingency Reserves

Mortgage insurers are required by regulators to establish contingency reserves to protect policyholders during extremely adverse economic conditions. These reserves are established as 50% of earned premium and maintained for a period of 10 years. Regulatory approval is also required to release these reserves in any year when incurred losses exceed 35% of the corresponding earned premium. Contingency reserves can substantially contribute to Available Capital especially for mortgage insurers that have been in existence for a decade or more.

Unearned Premium Reserves

Mortgage insurers are required by statute to compute and maintain unearned premium reserves liability based on premium revenue recognition. Apart from recognition of revenue over the policy period and compliance with statutory requirements, unearned premium reserves provide a fund from which refunds can be issued for canceled policies and provide monies for the payment of losses as they arise. Unearned premium reserves associated with non-refundable single premiums can substantially contribute to Available Capital depending on a mortgage insurer's mix of business origination. A.M. Best will apply a 25% discount to the unearned premiums reserves associated with non-refundable single premium to account for the administrative expenses associated with such premiums.

Elements of Net Required Capital

The U.S. Property/Casualty BCAR model computes the amount of capital to support three broad risk categories: investment risk, credit risk, and underwriting risk. These three risk categories are further subdivided into eight separately analyzed risk components. **Exhibit B.3** shows the components of NRC with emphasis on several elements that stand out for mortgage insurers and reinsurers such as Fixed Income Securities Risk (B1), Equity Securities Risk (B2), Net Loss and LAE Reserves Risk (B5) and, Net Premiums Written Risk (B6).

Fixed Income Securities Risk (B1)

The two components of B1 are $B1_a$ and $B1_n$ which represent Affiliated Fixed Income Securities Risk and Non-affiliated Fixed Income Securities Risk, respectively. The correlation between mortgage-related reserves risk and $B1_n$ (Non-affiliated Fixed Income Securities Risk) is assumed to be 50%.

Exhibit B.3: Components of Net Required Capital

Net Required Capital

- (B1) Fixed Income Securities Risk ($B1_a$ + $B1_n$)
  - ($B1_a$) Affiliated Fixed Income Securities Risk
  - ($B1_n$) Non-affiliated Fixed Income Securities Risk
- (B2) Equity Securities Risk ($B2_a$ + $B2_n$)
  - ($B2_a$) Affiliated Equity Securities Risk
  - ($B2_n$) Non-affiliated Equity Securities Risk
- (B3) Interest Rate Risk
- (B4) Credit Risk
- (B5) Net Loss and LAE Reserves Risk (10% Correlation Applied to $B5_m$ and $B5_{nm}$)
  - ($B5_m$) Mortgage-related Net Loss and LAE Reserves Risk ($B5_{cm}$ + $B5_{fm}$)
    - ($B5_{cm}$) Mortgage-related Net Loss and LAE Reserves Risk associated with current total mortgages insured
    - ($B5_{fm}$) Mortgage-related Net Loss and LAE Reserves Risks associated with future total mortgages insured in the coming calendar year, if applicable
  - ($B5_{nm}$) Non-mortgage related Net Loss and LAE Reserves Risks, if applicable
- (B6) Net Premiums Written Risk, if applicable
- (B7) Business Risk
- (B8) Catastrophe Risk

Equity Securities Risk (B2)

The two components of B2 are $B2_a$ and $B2_n$ which represent Affiliated Equity Securities Risk and Non-affiliated Equity Securities Risk, respectively. The correlation between mortgage-related reserves risk and $B2_n$ (Non-affiliated Equity Securities Risk) is assumed to be 50%.

Net Loss and LAE Reserves Risk (B5)

The reserving method of mortgage insurers does not consider losses that may occur from insured loans that are not in default. Therefore, future potential losses that may develop from loans currently not in default are generally excluded from the financial statements. In order to address the potential for this risk being realized, A.M. Best uses a third-party Credit Risk Model which calculates future defaults and ultimate claims on mortgages insured by mortgage insurers, and on insured mortgages

that are also reinsured by reinsurance companies. The calculation of Net Loss and Loss Adjustment Expenses (LAE) Reserves Risk, B5, incorporates mortgage-related reserves risk associated with current total mortgages insured, mortgage-related reserves risk associated with future total mortgages insured in the coming calendar year (if applicable), and reserves risk unrelated to mortgages (if applicable). The specific procedures for calculating B5 risk is as follows:

1. Calculate $B5_{cm}$: The calculated Net Loss and LAE Reserves Risk associated with the current total mortgages insured by the insurer or reinsurer (based on a third-party Credit Risk Model) less the booked Net Loss and LAE Reserves associated with mortgages assuming this reserve is considered adequate
2. Calculate $B5_{fm}$: The Net Loss and LAE Reserves Risk associated with the future mortgage insurance coverage to be written in the coming calendar year by the insurer or reinsurer (from third-party Credit Risk Model), if applicable. The proxy for this risk is calculated based on the mortgage business written during the most recent calendar year. This calculation is applicable to mortgage insurers but may not be applicable to all activities of reinsurers in the mortgage space as described later. In addition, this calculation effectively replaces mortgage-related Net Premiums Written Risk.
3. Calculate $B5_{m}$: The summation of $B5_{cm}$ and $B5_{fm}$ which is equal to mortgage-related Net Loss and LAE Reserves Risk
4. Calculate $B5_{nm}$: The current Net Loss and LAE Reserves Risk not related to mortgages. This is an output from the BCAR model which is fully described in the BCRM and its related criteria procedures. For mortgage insurers, $B5_{nm}$ should be 0 but for reinsurers covering mortgage risk, $B5_{nm}$ should be greater than 0.
5. Calculate B5: This is achieved by correlating $B5_{m}$ and $B5_{nm}$. A.M. Best assumes a 10% correlation between mortgage-related and non-mortgage-related reserves risks so the correlation formula should be as follows:

$$B5 = \sqrt{{B5_m}^2 + {B5_{nm}}^2 + 2 * 10\% * B5_m * B5_{nm}}$$

It is important to emphasize that the components of NRC in **Exhibit B.3** apply to both mortgage insurers and reinsurers covering mortgage risk. For an active mortgage insurer, $B5_{fm}$ is always greater than 0 because A.M. Best assumes that the rating time horizon covers a 1-year period during which additional mortgages will be covered by the insurer and supported by its current Available Capital. However, a reinsurer covering mortgage risk may not always provide additional coverage for insurers over the next calendar year depending on what type of mortgage-related reinsurance it provides. For example, A.M. Best assumes that a reinsurer that participates in the risk sharing initiatives of the GSEs (which will be more fully described later in this criteria procedure), will not engage in the same transaction over the next calendar. Therefore, $B5_{fm}$ for that reinsurer with regards to the GSE-related transactions would be 0. A.M. Best, however, assumes that other mortgage-related reinsurance transactions will be ongoing and therefore a $B5_{fm}$ charge is assessed

based on its reinsurance coverage in the most recent calendar year unless the reinsurer knows with relative certainty about the nature of such mortgage-related reinsurance transactions in the next year. **Exhibit B.4** shows elements of B5 risk and whether they are considered in the evaluation of mortgage insurers and reinsurers covering mortgage risks.

Exhibit B.4: Existence of Elements of B5 Risk for Insurers and Reinsurers

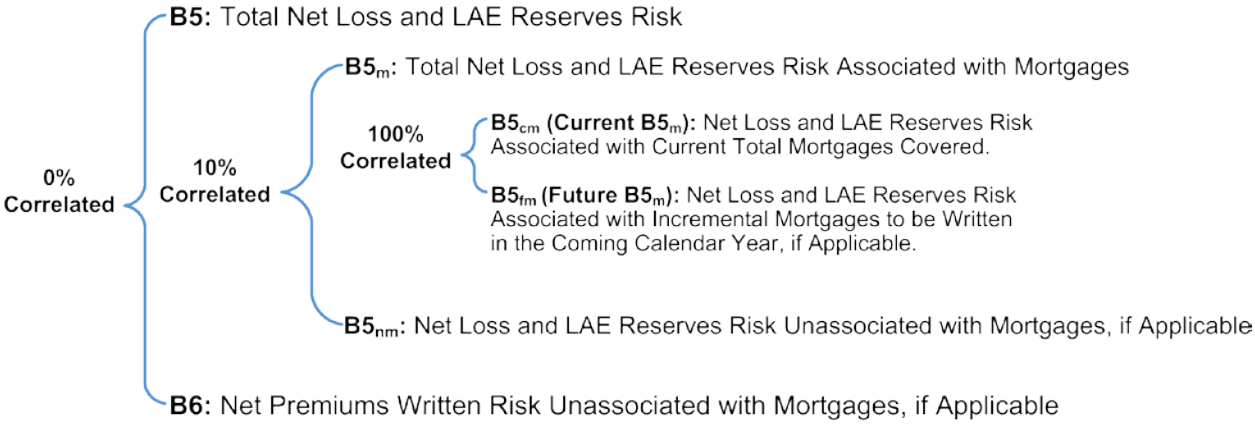
	Mortgage Insurer	Reinsurer (GSE Business Only)	Reinsurer (MI Business)
$B5_{cm}$	✓	✓	✓
$B5_{fm}$	✓	N/A	✓
$B5_{nm}$	N/A	✓	✓

Net Premiums Written Risk (B6)

Net Premiums Written Risk, B6, is the risk of the future underwriting losses over a one-year period of production. For mortgage insurers, this risk is effectively $B5_{fm}$ (Net Loss and LAE Reserves Risk associated with the future mortgage coverage to be written in the coming calendar year), and is already incorporated into $B5_{m}$—mortgage-related Net Loss and LAE Reserves Risk—after assuming a 100% correlation between $B5_{fm}$ and $B5_{cm}$. Therefore, B6 is set to 0 for mortgage insurers in order to avoid double counting such risks. However, for reinsurers that cover both mortgage and non-mortgage-related risks, B6 is associated only with non-mortgage-related Net Premiums Written Risk and is always greater than 0.

Exhibit B.5 shows schematically the interaction of the underwriting risk elements in the analysis of balance sheet strength.

Exhibit B.5: Interaction of the Underwriting Risk Elements



The NRC Formula

The standard NRC used in rating the typical property and casualty insurers has been modified for mortgage insurers and reinsurers covering mortgage risk. B5 in the NRC formula is the result of

correlating $B5_m$ and $B5_{nm}$ as described in the prior section. The modified NRC formula is shown in **Exhibit B.6.**

Exhibit B.6: Mortgage-Related NRC Formula

$$NRC = \sqrt{B1^2 + B2^2 + B3^2 + (B1_n + B2_n) * B5_m + (0.5B4)^2 + (0.5B4 + B5)^2 + B6^2 + B8^2} + B7$$

The risks, B1 through B8, are listed in **Exhibit B.3** and more fully described in the BCRM and its related criteria procedures.

This equation is similar to the standard NRC equation except for the covariance term "$(B1_n + B2_n) * B5_m$". In this equation, $B1_n$ is the Non-affiliated Fixed Income Securities Risk, which represents investment in government bonds, non-affiliated corporate bonds, and other non-affiliated fixed income assets. $B2_n$ is the Non-affiliated Equity Securities Risk, which represents investments in non-affiliated common stocks, non-affiliated preferred stocks, and other non-affiliated equity-like assets. $B5_m$ is the mortgage-related Net Loss and LAE Reserves Risk described earlier in this criteria procedure.

This covariance term is calculated as follows:

$$\text{Covariance Term} = 2 * \text{Correlation}_1 * B1_n * B5_m + 2 * \text{Correlation}_2 * B2_n * B5_m$$

Where Correlation_1 is the correlation between Non-affiliated Fixed Income Securities Risk and mortgage-related reserves risk, and Correlation_2 is the correlation between Non-affiliated Equity Securities Risk and mortgage-related reserves risk.

If the assumption is made that both Correlation_1 and Correlation_2 are equal to 50%, the equation reduces to the following:

$$\text{Covariance Term} = 2 * 50\% * (B1_n + B2_n) * B5_m = (B1_n + B2_n) * B5_m$$

If an entity has no mortgage risks, the covariance term is 0 so the NRC formula reduces back to the standard NRC formula used for rating typical property and casualty insurers shown in **Exhibit B.7**:

Exhibit B.7: Property Casualty NRC Formula

$$NRC = \sqrt{B1^2 + B2^2 + B3^2 + (0.5B4)^2 + (0.5B4 + B5)^2 + B6^2 + B8^2} + B7$$

Exhibit B.8 below shows the correlations among elements that relate to the underwriting risks of mortgage insurers and reinsurance companies engaged in mortgage activities.

Exhibit B.8: Correlations Related to Mortgage Underwriting Risk

	$B5_{cm}$	$B5_{fm}$	$B5_{nm}$	$B1_{n}$	$B2_{n}$
$B5_{cm}$	100%	100%	10%	50%	50%
$B5_{fm}$	100%	100%	10%	50%	50%
$B5_{nm}$	10%	10%	100%	0%	0%
$B1_{n}$	50%	50%	0%	100%	0%
$B2_{n}$	50%	50%	0%	0%	100%

Credit Risk Model

The mortgage-related Net Loss and LAE Reserves Risk ($B5_{m}$), which is comprised of Net Loss and LAE Reserves Risk associated with the current booked mortgages ($B5_{cm}$) and Net Loss and LAE Reserves Risk associated with the upcoming year's mortgage business ($B5_{fm}$), is estimated based on assumed loss output from a third-party mortgage Credit Risk Model (see **Appendix 1** on Andrew Davidson and Co.'s "LoanKinetics" application). To capture the data necessary for the credit analysis, A.M. Best will provide the mortgage insurer with a template in which to enter the data (see **Exhibit B.9** for type of data requested). A.M. Best expects that this data is reliable and credible.

Exhibit B.9: Loan Portfolio Information

Attribute	Description
Origination Date	Mortgage loan date (Year, Month, and Day)
Original Term	Original term in months
Loan Age	Age of the loan in months
Remaining Term	Remaining term in months
Original Rate	Gross mortgage rate at origination in percent
Current Loan Size	Current unpaid principal balance in dollars
Original Loan Size	Original unpaid principal balance in dollars
Original LTV	Original Loan-to-Value (%)
Original Credit Score	Credit score at loan origination
Product Type	Fixed, ARM, Balloon, Interest Only
Product Type Characteristics	Interest Only Period, Balloon Period, ARM Index, ARM Margin, ARM Life Cap, ARM First Reset Age, ARM Reset Period
Current Loan Status	The status of the loan as of the report date: Current, Foreclosure, Real Estate Owned, Terminated, Number of months delinquent
Documentation	Full, Limited, None
MI Cutoff	The LTV after which mortgage insurance is canceled
MI Premium	The premium paid by the borrower for mortgage insurance (%)
MI Percent	Percentage of balance covered by mortgage insurance
Occupancy	Owner Occupied, Second Home, Investment Property
Loan Purpose	Purchase, Rate/Term Refinance, Cash Out Refinance
Property Type	Single Family, Multi Family, Condo, Coop, Planned Unit Development (PUD), Manufactured Housing
State	State location of property
Zip	Zip code location of property
Credit Sector	GSE, Prime, Alt A, Subprime

The Credit Risk Model's loan-level inputs typically include but are not limited to the following:

- Risk-in-force
- Original term
- Loan age
- Loan balance
- Original credit score
- Original loan-to-value
- Loan product type
- Property location

- Current and historical delinquency status
- Insurance coverage amount
- Mortgage insurance premium

One of the key systemic factors that drive the mortgage Credit Risk Model is the Home-Price Model. The Home-Price Model incorporates the idea of housing affordability, Home-Price Appreciation (HPA) equilibrium, mean reversion to HPA equilibrium and oscillation (overshoot when correcting) characteristics. The resulting capital requirement component determined by this mortgage Credit Risk Model reflects the partial countercyclical nature of required capital in that it increases with robust housing price appreciation and decreases as home prices fall. Other risks addressed by this Credit Risk Model include prepayment risk, interest rate volatility, and loan performance under various economic conditions.

The Credit Risk Model produces a monthly time series forecast of prepayment rates, default rates, delinquencies, loss severities, transition probabilities, cumulative prepayments, defaults, losses, and premium income. It uses these forecasts to project the outstanding balances of the underlying loans and the monthly cash flows of the mortgage portfolio from the mortgage insurer's perspective in different economic scenarios. The Credit Risk Model assumes the book of mortgage business is in run-off and no new mortgages are being insured. The monthly cash flows generated by the Credit Risk Model are affected, in every month, by changes in risk-in-force (thus changes in the premium income and potential losses). The mortgage insurance will terminate in the model when the corresponding LTV level falls below the respective threshold set at loan origination which triggers the cancellation of MI coverage upon the occurrence of a default or after a specified cutoff period of insurance coverage.

A.M. Best uses the Scenario Grid (see **Appendix 1: Exhibit 2** for an example of the grid) from the Credit Risk Model, which reflects various economic scenarios grouped into three different buckets: base case (one scenario), bad cases (six scenarios), and extreme cases (six scenarios). Each scenario is assigned a probability using a cumulative distribution function (CDF), which corresponds to a confidence level derived from LoanKinetics. The assigned CDF reflects stresses in the following parameters underlying the model:

Economic stresses:

1. Interest rate changes based on parallel shifts in the interest rate curve up or down by basis points (bps)
2. Changes in home prices, as illustrated by the following percentage shifts:

    - One-year Home-Price Index forecast
    - Two-year Home-Price Index forecast
    - Maximum decline in the Home-Price Index forecast

Model stresses:

1. Changes in the mortgage default rate
2. Changes in loss severity associated with loans
3. Changes in prepayment rates as a result of total terminations due to voluntary prepayments

Determination of $B5_{cm}$ & $B5_{fm}$

Before calculating $B5_{cm}$ and $B5_{fm,}$ it is necessary to calculate the loss (the Net Discounted Loss) associated with a mortgage portfolio based on the Credit Risk Model. The Credit Risk Model produces cash flows of both projected losses and projected premiums associated with periodic premiums over the life of the loans up to a maximum of 30 years. Projected premiums exclude single premiums, which are one-time upfront premiums, and are not considered in the Credit Risk Model. Therefore, single premiums are not included in the calculation of Net Discounted Loss. A.M. Best interpolates these cash flows based on the Scenario Grid results to obtain the Net Discounted Loss at the 95%, 99%, 99.5%, and 99.6% confidence levels.

From the output of the Credit Risk Model, A.M. Best will estimate the Net Discounted Loss as follows:

1. Calculate Cumulative Discounted Losses from the monthly losses (using a discount rate of 4%)
2. Calculate Cumulative Discounted Premiums from the monthly premiums (using a discount rate of 4%)
3. Periodic Premium Credit is the Cumulative Discounted Premiums reduced by 40% to account for expenses (25%) and premium uncertainty (15%). This premium uncertainty reflects the possibility of modeling error associated with premiums not already fully accounted for in the risk analysis of a mortgage pool.
4. Adjusted Discounted Loss is the Cumulative Discounted Losses less Periodic Premium Credit
5. Net Discounted Loss is the Adjusted Discounted Loss after taking into account the impact of reinsurance and/or other risk transfer agreements. Any income from ceding commissions will be included in the analysis, but profit commission will be excluded

Where feasible, A.M. Best will calculate the Net Discounted Loss based on the reinsurance contracts and/or the risk transfer agreements provided by the primary mortgage insurer. In other cases, A.M. Best expects that the insurer will provide its Net Discounted Loss after accounting for reinsurance and other risk transfer agreements underlying the mortgage loan portfolio using the Adjusted Discounted Loss calculated by A.M. Best.

In calculating $B5_{fm}$, the Net Discounted Loss will assume the same reinsurance contracts or risk transfer agreements in the most recent calendar year unless a primary mortgage insurer knows with relative certainty what reinsurance contracts or risk transfer agreements will be in place in the next year.

Determination of $B5_{cm}$

The Net Loss and LAE Reserves Risk ($B5_{cm}$) associated with the current book of business is calculated by reducing the Net Discounted Loss by the booked mortgage Net Loss and LAE Reserves. The procedure for the calculation of the B5 risk at different confidence levels is as follows:

1. Obtain the Net Discounted Loss at the various confidence levels from the Credit Risk Model
2. Obtain the booked mortgage Net Loss and LAE Reserves
3. Calculate the Net Loss and LAE Reserves Risk ($B5_{cm}$) by subtracting the booked mortgage Net Loss and LAE Reserves from the Net Discounted Loss

Determination of $B5_{fm}$

In calculating the Net Loss and LAE Reserves Risk for the upcoming year's insured mortgages ($B5_{fm}$), the most recent calendar year's origination is used as a proxy. The procedure for the calculation of the $B5_{fm}$ risk is as follows:

1. Obtain the Net Discounted Loss associated with the most recent calendar year's originations
2. Obtain the total Non-Refundable Single Premiums associated with the most recent calendar year
3. Calculate the Non-Refundable Single Premiums Credit as 75% of Non-Refundable Single Premiums (to account for 25% of associated expenses)
4. $B5_{fm}$ = 70% * (Net Discounted Loss – Non-Refundable Single Premiums Credit)

Please note that Non-Refundable Single Premium Credit is subtracted from Net Discounted Loss in the $B5_{fm}$ equation because the Net Discounted Loss calculation, as discussed earlier, only relates to periodic premiums. Thus, the calculation of $B5_{fm}$ reflects a reduction of the Non-Refundable Single Premiums by 25% (to account for expenses). The 15% premium uncertainty factor is not part of this calculation since such premiums would be collected up-front even though claims associated with related mortgages will be ongoing. Also note that the formula for $B5_{fm}$ includes a factor of 70% to reflect the fact that in a stress scenario, marginal mortgage exposures will be significantly reduced over the next year, thus affecting Net Loss and LAE Reserves Risk over that same period.

An example illustrating the BCAR assessment of a hypothetical primary mortgage insurer can be found in **Appendix 2**.

Operating Performance

When evaluating operating performance of mortgage insurers, A.M. Best's analysis centers on the stability and sustainability of the mortgage insurer's sources of earnings in relation to the liabilities that the company retains over a long time interval given the long duration contracts associated with mortgage insurance business. A.M. Best reviews the components of a company's statutory earnings over a five-year period or more to evaluate the sources of profits and the degree and trend of various profitability measures. Profitability measures are distorted easily by operational changes; therefore, A.M. Best reviews the mix and trends of premium volume, investment income, net

income, and surplus. The degree of volatility in an MI company's earnings and the impact this could have on its capitalization and balance sheet are of particular interest to A.M. Best. Areas reviewed include underwriting, investments, capital gains/losses, and total operating earnings before and after taxes. Traditional insurance profitability measures, which include the loss ratio, expense ratio, combined ratio, operating ratio, pretax return on revenue, yield on invested assets, and change in policyholders' surplus are viewed on a long-term basis.

Business Profile

As monoline companies, mortgage insurers are faced with an element of inherent systemic risk given the correlation between mortgage risk with the broader economy. This may be compounded if a mortgage insurer has a limited distribution channel and relies on just a few large entities for mortgage loan originations. The distribution (or lack of concentration) of risk-in-force by vintage, mortgage loan characteristics—loan age, original LTV, credit score and delinquency status—and the geographic scope of the underlying insured portfolio impacts the business profile of the mortgage insurer.

Enterprise Risk Management

Mortgage insurers with strong enterprise risk management practices exhibit the following characteristics:

- Written procedures, controls, and safeguards in place to ensure sound underwriting decisions from staff and delegate underwriters
- Detailed and up-to-date exposure information at the loan level, including but not limited to risk-in-force amount, loan balance, loan age, loan origination year, LTV at origination, credit score, loan type, property location, premium amount, insurance coverage, and delinquency status, such that there is an accurate assessment of the potential claims associated with the insurer's loan portfolio and an avoidance of concentration of its risk-in-force
- Standards in place to evaluate and assess the performance of its loan origination process, including the amount of risk presented and types of insured loans from its originators and lenders
- A quality control program that assesses the effectiveness of the overall insurance business process, including risk selection and monitoring, underwriting discipline, rescission rights and responsibilities practices, claims processing, and loss mitigation practices

Surveillance/Monitoring Activities

General Surveillance

Once a rating committee has assigned a rating, A.M. Best monitors and updates the rating by regularly analyzing the mortgage insurer's creditworthiness. As part of the surveillance process, A.M. Best will review changes in the mortgage insurer's risk-in-force by loan product type, original LTV, credit score, and delinquent loan portfolios by age, bucketed by number of missed monthly

payments. In addition, A.M. Best will review changes to underwriting guidelines and quality control mechanisms that may lead to deterioration in underwriting standards. Any suspension or termination of approved insurer status associated with the PMIERs will be monitored as well. Quarterly and annual financial statements for the mortgage insurer also will be reviewed to compare actual results with the forecast operating performance and to assess changes in claims-paying ability.

Monitoring the Effect of Catastrophic Events

Although mortgage insurance policies generally exclude claims due to physical damage of property where the physical damage is the cause of a borrower's default, catastrophic events such as natural disasters or pandemics could make it more difficult for policyholders to make mortgage payments on loans insured by mortgage insurers. A.M. Best anticipates that there will be increased notices of default (NODs) associated with insured loans in affected areas and this may lead to increases in case reserves as well as IBNR, even as foreclosures in these areas are suspended and forbearance is granted to borrowers for an extensive period. However, despite anticipated increases in NODs, it is not always clear whether mortgage insurers will experience a material increase in claims following catastrophic events. The cure rate associated with heightened NODs attributable to catastrophic events will depend on several factors which include:

- The condition of the housing market in the affected region before the catastrophic event occurred—for example, regions with borrowers in or near negative equity are more likely to produce higher claims since these borrowers have a diminished incentive to stay in their homes
- The condition of the regional economy due to the effect of the catastrophic event—for example, areas that surround the affected locations may experience diminished economic activities if individuals and business relocate
- The increased supply/demand dynamics for housing in areas that surround the locations of the catastrophic event—for example, demand could increase as borrowers seek homes in surrounding areas, thus pushing home prices up
- The adequacy of insurance carried on a property and the public/private assistance available to the borrower—for example, borrowers could use their flood insurance and government assistance recovery payments to repay their mortgages or rebuild instead of abandoning their properties

As part of the rating process, A.M. Best expects primary mortgage insurers and reinsurers to provide ongoing commentary and analysis on the impact of catastrophic events on insured loans. The commentary and analysis should include, but are not limited to, the following:

1. The risk-in-force in the affected areas
2. The actual and anticipated defaults and claims experience in the affected areas
3. Any activities of the mortgage insurers to ascertain the true impact of the catastrophic event

Through further dialogue with the mortgage insurer, A.M. Best will determine whether the default uncertainties due to the catastrophic event may result in further unanticipated claims that will impact its capital and surplus position.

C. Rating Considerations: GSE Reinsurance Programs

A.M. Best's rating process includes determining the amount of capital that will be charged in the BCAR model to account for net unexpected losses associated with GSE-sponsored credit risk-sharing reinsurance programs. These capital charges depend on stressed loss projections associated with the reference pool of mortgages as well as on the premiums earned by the insurers for providing protection on the risk-sharing programs. A.M. Best uses factor-based analysis for calculating capital charges for these programs as opposed to the model-based approach used to rate mortgage insurers as described in earlier sections of this criteria procedure. The factor-based analyses conform to the BCAR criteria in that calculations are made based on the standard set of Value-at-Risk Confidence Levels (VaR Levels) of 95%, 99%, 99.5%, and 99.6%.

Regardless of the type of the insurance-based risk transfer program, the general procedure for determining capital charges should adhere to the same basic steps as follows:

- Calculate the losses associated with a mortgage reference pool
- Determine if/how the losses breach each reinsurance layer covered by a reinsurer
- Calculate the premiums that accrue to each reinsurance layer
- Calculate the net capital charge for the reinsurance coverage of the layers as the loss associated with each layer less the corresponding premiums associated with each layer
- Set a capital charge floor of 5% of the total limit associated with each transaction after considering the layers covered by the reinsurer

In this section of the criteria procedure, the methods for calculating the capital charges are detailed and include 1) a description of the tables and data necessary for the calculations and 2) a demonstration of how the tables and data are used in practice. Later in this section of the criteria procedure, there is further description of the effect of the mortgage-related capital charge on the net required capital for a reinsurer and the BCAR, which is used in determining a reinsurer's balance sheet strength.

Tables and Data Provided by A.M. Best for the Capital Charge Analysis

The factor-based approach includes the use of several tables provided by A.M. Best that will be necessary for the calculation of losses and premiums. The manner in which the tables are used is detailed in **Appendix 3**, which shows how A.M. Best calculates capital charges associated with two different GSE-sponsored credit risk-sharing reinsurance programs.

Unpaid Principal Balance Distribution Matrix

The Unpaid Principal Balance (UPB) Distribution Matrix is a grid that demonstrates the percent of the UPB associated with a reference pool segmented by original LTV and original credit score buckets. All of the elements in the matrix add up to 100% to reflect inclusion of the total reference portfolio in the matrix. A.M. Best will provide the UPB Distribution Matrix for each reference pool associated with insurance-based GSE transactions provided that the data is made available by the GSEs. **Exhibit C.1** shows an example of a UPB Distribution Matrix for a reference portfolio.

Exhibit C.1: UPB Distribution Matrix

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(60-65]	0.00%	0.50%	1.00%	1.40%	1.90%	2.40%
(65,70]	0.00%	1.00%	2.00%	2.70%	3.40%	3.80%
(70,75]	0.00%	1.10%	2.90%	4.50%	6.70%	7.20%
(75,80]	0.00%	2.60%	7.30%	12.50%	17.10%	18.00%
(80,85]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(85,90]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(90,95]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(95,97]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
97+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Each time the capital charges associated with a transaction is evaluated, the UPB Distribution Matrix is recalculated based on the original LTVs and original credit scores of the remaining mortgages. The percentages in this matrix may change due to the scheduled amortizations and prepayments associated with the reference pools.

The Stressed Ultimate Loss Matrix

In order to calculate the losses associated with a reference pool of mortgages, it is first necessary to use the Stressed Ultimate Loss (SUL) Matrix for the specific reference pool being evaluated. The SUL Matrix is derived from GSE loan performance data for the 2007 vintage and adjusted by A.M. Best based on quantitative and qualitative considerations. In developing the grid, A.M. Best considered the following elements: 1) the default frequency associated with the 2007 mortgage vintage, 2) the loss severity associated with the 2007 mortgage vintage, 3) the contractual and effective mortgage insurance coverage associated with original LTVs and credit scores, 4) the fact that losses in the 2007 mortgage vintage are still developing, 5) the differences between the types of mortgage loans originated in the 2007 environment versus the current mix of business in today's mortgage marketplace, 6) the more disciplined loan origination environment that emerged after the 2008 credit crisis, and 7) other considerations.

Exhibit C.2 shows an example of the SUL Matrix for a pool of 30-year mortgages at the VaR 99 level. **Exhibit C.3** and **Exhibit C.4** shows all the SUL Matrices at all VaR levels for mortgages based on two different original maturities.

Exhibit C.2: SUL Matrix (30-Year Mortgages, VaR 99)

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	4.48%	2.62%	1.52%	0.96%	0.50%	0.24%
(60-65]	6.44%	4.94%	3.25%	2.21%	1.12%	0.48%
(65,70]	8.00%	6.70%	4.71%	3.39%	1.87%	0.87%
(70,75]	9.29%	8.06%	5.96%	4.52%	2.71%	1.39%
(75,80]	10.44%	9.18%	7.06%	5.59%	3.63%	2.06%
(80,85]	10.14%	9.04%	7.16%	5.89%	4.10%	2.54%
(85,90]	8.36%	7.56%	6.04%	5.10%	3.73%	2.49%
(90,95]	7.77%	7.07%	5.49%	4.67%	3.53%	2.51%
(95,97]	9.40%	8.85%	6.65%	5.77%	4.53%	3.51%
97+	12.47%	11.93%	8.28%	6.96%	5.37%	4.37%

Exhibit C.3: SUL Matrix – All VaR Levels (Maturity > 20 Years)

SUL Matrix – VaR 95

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	2.24%	1.31%	0.76%	0.48%	0.25%	0.12%
(60-65]	3.22%	2.47%	1.62%	1.11%	0.56%	0.24%
(65,70]	4.00%	3.35%	2.36%	1.70%	0.93%	0.43%
(70,75]	4.65%	4.03%	2.98%	2.26%	1.35%	0.70%
(75,80]	5.22%	4.59%	3.53%	2.79%	1.81%	1.03%
(80,85]	5.07%	4.52%	3.58%	2.95%	2.05%	1.27%
(85,90]	4.18%	3.78%	3.02%	2.55%	1.87%	1.25%
(90,95]	3.89%	3.53%	2.75%	2.34%	1.76%	1.25%
(95,97]	4.70%	4.43%	3.33%	2.89%	2.26%	1.76%
97+	6.23%	5.96%	4.14%	3.48%	2.69%	2.18%

SUL Matrix – VaR 99

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	4.48%	2.62%	1.52%	0.96%	0.50%	0.24%
(60-65]	6.44%	4.94%	3.25%	2.21%	1.12%	0.48%
(65,70]	8.00%	6.70%	4.71%	3.39%	1.87%	0.87%
(70,75]	9.29%	8.06%	5.96%	4.52%	2.71%	1.39%
(75,80]	10.44%	9.18%	7.06%	5.59%	3.63%	2.06%
(80,85]	10.14%	9.04%	7.16%	5.89%	4.10%	2.54%
(85,90]	8.36%	7.56%	6.04%	5.10%	3.73%	2.49%
(90,95]	7.77%	7.07%	5.49%	4.67%	3.53%	2.51%
(95,97]	9.40%	8.85%	6.65%	5.77%	4.53%	3.51%
97+	12.47%	11.93%	8.28%	6.96%	5.37%	4.37%

SUL Matrix VaR – 99.5

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	5.38%	3.15%	1.82%	1.15%	0.60%	0.29%
(60-65]	7.73%	5.93%	3.90%	2.65%	1.35%	0.58%
(65,70]	9.60%	8.05%	5.66%	4.07%	2.24%	1.04%
(70,75]	11.15%	9.67%	7.16%	5.42%	3.25%	1.67%
(75,80]	12.53%	11.02%	8.47%	6.70%	4.35%	2.47%
(80,85]	12.17%	10.85%	8.60%	7.07%	4.92%	3.04%
(85,90]	10.04%	9.07%	7.25%	6.12%	4.48%	2.99%
(90,95]	9.33%	8.48%	6.59%	5.61%	4.24%	3.01%
(95,97]	11.28%	10.62%	7.98%	6.93%	5.44%	4.21%
97+	14.96%	14.31%	9.94%	8.36%	6.45%	5.24%

SUL Matrix – VaR 99.6

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	5.60%	3.28%	1.90%	1.20%	0.62%	0.30%
(60-65]	8.05%	6.18%	4.06%	2.76%	1.41%	0.60%
(65,70]	10.00%	8.38%	5.89%	4.24%	2.33%	1.08%
(70,75]	11.62%	10.08%	7.46%	5.65%	3.38%	1.74%
(75,80]	13.05%	11.48%	8.82%	6.98%	4.53%	2.57%
(80,85]	12.67%	11.30%	8.95%	7.37%	5.12%	3.17%
(85,90]	10.45%	9.45%	7.55%	6.37%	4.67%	3.11%
(90,95]	9.71%	8.84%	6.86%	5.84%	4.41%	3.14%
(95,97]	11.75%	11.07%	8.32%	7.21%	5.66%	4.39%
97+	15.59%	14.91%	10.35%	8.71%	6.71%	5.46%

Exhibit C.4: SUL Matrix – All VaR Levels (Maturities <= 20 Years)

SUL Matrix – VaR 95

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	0.90%	0.52%	0.30%	0.19%	0.10%	0.05%
(60-65]	1.29%	0.99%	0.65%	0.44%	0.22%	0.10%
(65,70]	1.60%	1.34%	0.94%	0.68%	0.37%	0.17%
(70,75]	1.86%	1.61%	1.19%	0.90%	0.54%	0.28%
(75,80]	2.09%	1.84%	1.41%	1.12%	0.73%	0.41%
(80,85]	2.26%	2.00%	1.57%	1.29%	0.90%	0.55%
(85,90]	2.34%	2.08%	1.64%	1.38%	1.01%	0.68%
(90,95]	2.14%	1.93%	1.49%	1.28%	0.98%	0.69%
(95,97]	2.28%	2.14%	1.60%	1.40%	1.11%	0.86%
97+	2.71%	2.62%	1.83%	1.57%	1.23%	1.02%

SUL Matrix – VaR 99

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	1.79%	1.05%	0.61%	0.38%	0.20%	0.10%
(60-65]	2.58%	1.98%	1.30%	0.88%	0.45%	0.19%
(65,70]	3.20%	2.68%	1.89%	1.36%	0.75%	0.35%
(70,75]	3.72%	3.22%	2.39%	1.81%	1.08%	0.56%
(75,80]	4.18%	3.67%	2.82%	2.23%	1.45%	0.82%
(80,85]	4.52%	4.00%	3.14%	2.58%	1.79%	1.11%
(85,90]	4.68%	4.17%	3.28%	2.77%	2.03%	1.35%
(90,95]	4.27%	3.87%	2.99%	2.57%	1.96%	1.38%
(95,97]	4.55%	4.28%	3.21%	2.80%	2.21%	1.73%
97+	5.41%	5.23%	3.67%	3.14%	2.46%	2.03%

SUL Matrix – VaR 99.5

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	2.15%	1.26%	0.73%	0.46%	0.24%	0.12%
(60-65]	3.09%	2.37%	1.56%	1.06%	0.54%	0.23%
(65,70]	3.84%	3.22%	2.26%	1.63%	0.90%	0.42%
(70,75]	4.46%	3.87%	2.86%	2.17%	1.30%	0.67%
(75,80]	5.01%	4.41%	3.39%	2.68%	1.74%	0.99%
(80,85]	5.42%	4.80%	3.77%	3.10%	2.15%	1.33%
(85,90]	5.61%	5.00%	3.93%	3.32%	2.43%	1.62%
(90,95]	5.13%	4.64%	3.59%	3.08%	2.35%	1.65%
(95,97]	5.46%	5.13%	3.85%	3.36%	2.66%	2.07%
97+	6.50%	6.28%	4.40%	3.76%	2.95%	2.44%

SUL Matrix – VaR 99.6

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	2.24%	1.31%	0.76%	0.48%	0.25%	0.12%
(60-65]	3.22%	2.47%	1.62%	1.11%	0.56%	0.24%
(65,70]	4.00%	3.35%	2.36%	1.70%	0.93%	0.43%
(70,75]	4.65%	4.03%	2.98%	2.26%	1.35%	0.70%
(75,80]	5.22%	4.59%	3.53%	2.79%	1.81%	1.03%
(80,85]	5.65%	5.00%	3.93%	3.23%	2.24%	1.39%
(85,90]	5.85%	5.21%	4.10%	3.46%	2.53%	1.69%
(90,95]	5.34%	4.83%	3.74%	3.21%	2.45%	1.72%
(95,97]	5.69%	5.35%	4.01%	3.50%	2.77%	2.16%
97+	6.77%	6.54%	4.59%	3.92%	3.08%	2.54%

The Stressed Ultimate Loss

Given an SUL Matrix as described in the prior section, the initial SUL can be calculated by performing a cell-by-cell multiplication of the SUL Matrix and the UPB Distribution Matrix and then adding all the elements in this new matrix.

As an example, multiply the UPB Distribution Matrix in **Exhibit C.1** by the SUL Matrix in **Exhibit C.2**. The cell-by-cell product of these two matrices, as well as the sum of all the elements of this product (i.e., the initial SUL), is shown in **Exhibit C.5**. This sum, 3.66%, represents the initial SUL.

Exhibit C.5: SUL Calculation (30-Year Mortgages, VaR 99)

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(60-65]	0.00%	0.02%	0.03%	0.03%	0.02%	0.01%
(65,70]	0.00%	0.07%	0.09%	0.09%	0.06%	0.03%
(70,75]	0.00%	0.09%	0.17%	0.20%	0.18%	0.10%
(75,80]	0.00%	0.24%	0.52%	0.70%	0.62%	0.37%
(80,85]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(85,90]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(90,95]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(95, 97]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
97+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

SUL = Sum of Elements in the Table = 3.66%[1]

This is the sum of the Cell-by-Cell Product of the UPB Distribution Matrix (**Exhibit C.1**) and the SUL Matrix (**Exhibit C.2**)

[1] Value may not be exact due to rounding

It is important to note that the SUL calculated at the inception of a transaction (the initial SUL) will differ from the SULs calculated as the transaction ages for any or all of the following reasons: 1) the UPB Distribution Matrix may change, 2) the transaction "seasons," or 3) there is a decrease in the UPB of the mortgages in the reference pool over time.

Seasoning reflects the phenomenon that as a mortgage pool ages, its aggregate risk of default initially increases and then declines. The rate of increase and decline will vary depending on the time that has passed since the original underwriting of the loans and on the original term of the loans. Therefore, at any given point in time after calculating an initial SUL, the subsequent SULs calculated are multiplied by elements in a Seasoning Vector shown in **Exhibit C.6**. This exhibit shows seasoning factors for mortgages depending on their original terms and how much time has elapsed since their origination. Column A in **Exhibit C.6** is the Seasoning Vector for mortgages with original maturity of greater than 20 years and Column B is the Seasoning Vector for mortgages with original maturity of less than or equal to 20 years.

Exhibit C.6: Seasoning Vectors

Year	A Maturity > 20 Years	B Maturity <= 20 Years
Initial	100%	100%
1	105%	108%
2	109%	115%
3	108%	110%
4	102%	95%
5	94%	78%
6	86%	62%
7	78%	48%
8	70%	36%
9	62%	27%
10	55%	21%
11	48%	15%

The diminution of the UPB of the mortgages in the reference pool is reflected by expressing the new UPB of the reference pool (at the time of the new evaluation of capital charges) as a fraction of the original UPB of the reference pool. This ratio, the Remaining UPB, is also used as a factor in determining subsequent SULs as the transaction ages. The formula for calculating the Seasoned SUL is as follows:

Seasoned SUL = Remaining UPB * Seasoning Factor * SUL

For example, if the reference pool of 30-year mortgages has aged by one year, the Remaining UPB is 85%, and the SUL calculated as previously described is now 3.67% (as opposed to the initial SUL of 3.66%), the 1-Year-Seasoned SUL would be:

1-Year-Seasoned SUL = 85% * 105% * 3.67% = 3.29%

In some cases, a significant amount of time would have elapsed between the formation date of the reference pool on which a reinsurance transaction is based and the average origination date of the mortgages in the pool. In these cases, A.M. Best may choose to advance the seasoning factor in accordance with the actual seasoning period of the mortgage pool.

Loss Pattern Matrix

After determining the SUL of the initial reference pool associated with a portfolio of mortgages, what remains unknown is how this loss manifests over time. A.M. Best has derived a Loss Pattern Matrix for losses throughout the term of the transactions for which capital charges are to be calculated. **Exhibit C.7** and **Exhibit C.8** show the Loss Pattern Matrix associated with mortgages with original maturities over 20 years and maturities less than or equal to 20 years, respectively. Each column in the Loss Pattern Matrix represents the loss pattern associated with an SUL over time. For example, Column A in the Loss Pattern Matrix in **Exhibit C.7** shows the initial loss pattern at the

inception of the transaction. After the transaction has aged by one year, the applicable loss development pattern becomes the 1-Year-Seasoned loss development pattern (Column B). Each column of the Loss Pattern Matrix is referred to as a Loss Pattern Vector. Column A, for example, is known as the initial Loss Pattern Vector.

Exhibit C.7: Loss Pattern Matrix - Maturity > 20 Years

Year	A Initial	B 1-Year-Seasoned	C 2-Year-Seasoned	D 3-Year-Seasoned	E 4-Year-Seasoned	F 5-Year-Seasoned	G 6-Year-Seasoned	H 7-Year-Seasoned	I 8-Year-Seasoned	J 9-Year-Seasoned	K 10-Year-Seasoned	L 11-Year-Seasoned
1	0.23%											
2	2.44%	2.22%										
3	9.60%	9.40%	7.34%									
4	20.17%	19.98%	18.17%	11.69%								
5	31.14%	30.98%	29.42%	23.83%	13.75%							
6	41.34%	41.21%	39.88%	35.11%	26.52%	14.82%						
7	50.51%	50.40%	49.27%	45.25%	38.01%	28.13%	15.63%					
8	58.63%	58.53%	57.60%	54.23%	48.18%	39.92%	29.47%	16.41%				
9	65.75%	65.67%	64.89%	62.11%	57.10%	50.26%	41.61%	30.79%	17.21%			
10	71.93%	71.87%	71.23%	68.95%	64.84%	59.24%	52.15%	43.29%	32.16%	18.05%		
11	77.24%	77.19%	76.67%	74.82%	71.49%	66.94%	61.19%	54.01%	44.98%	33.54%	18.90%	
12	81.75%	81.71%	81.29%	79.81%	77.14%	73.50%	68.89%	63.12%	55.89%	46.72%	34.98%	19.82%

Exhibit C.8: Loss Pattern Matrix - Maturity <= 20 Years

Year	A Initial	B 1-Year-Seasoned	C 2-Year-Seasoned	D 3-Year-Seasoned	E 4-Year-Seasoned	F 5-Year-Seasoned	G 6-Year-Seasoned	H 7-Year-Seasoned	I 8-Year-Seasoned	J 9-Year-Seasoned
1	0.30%									
2	3.73%	3.43%								
3	16.45%	16.20%	13.22%							
4	35.25%	35.05%	32.74%	22.49%						
5	52.90%	52.76%	51.08%	43.63%	27.27%					
6	67.15%	67.05%	65.88%	60.69%	49.28%	30.26%				
7	77.89%	77.82%	77.03%	73.53%	65.85%	53.05%	32.68%			
8	85.61%	85.57%	85.05%	82.78%	77.78%	69.45%	56.19%	34.92%		
9	90.94%	90.92%	90.59%	89.16%	86.01%	80.77%	72.43%	59.04%	37.06%	
10	94.49%	94.47%	94.28%	93.41%	91.49%	88.30%	83.23%	75.08%	61.71%	39.16%

Cumulative Loss Vector

A Cumulative Loss Vector can be calculated given an SUL and a Loss Pattern Vector (from the Loss Pattern Matrix). The Cumulative Loss Vector shows how the ultimate loss associated with a reference pool of mortgages, as represented by the SUL, can be distributed. The calculation of the initial Cumulative Loss Vector is as follows:

Cumulative Loss Vector = SUL * Loss Pattern Vector

For example, **Exhibit C.9** shows the initial Cumulative Loss Vector based on an initial SUL of 3.66% (as determined earlier) for a reference pool of 30-year mortgages. As stated in the prior section, the initial Loss Pattern Vector is Column A in the Loss Pattern Matrix (associated with 30-year mortgages).

Exhibit C.9: Initial Cumulative Loss Vector (30-Year Mortgages)

Year	A[1] Initial Loss Pattern Vector	B Initial SUL	C[2] Initial Cumulative Loss Vector
1	0.23%	3.66%	0.01%
2	2.44%	3.66%	0.09%
3	9.60%	3.66%	0.35%
4	20.17%	3.66%	0.74%
5	31.14%	3.66%	1.14%
6	41.34%	3.66%	1.51%
7	50.51%	3.66%	1.85%
8	58.63%	3.66%	2.15%
9	65.75%	3.66%	2.41%
10	71.93%	3.66%	2.63%
11	77.24%	3.66%	2.83%
12	81.75%	3.66%	2.99%

[1] From Column A of the Loss Pattern Matrix (**Exhibit C.7**)
[2] C = A * B

Amortization Pattern Matrix

Over time, the mortgages in the reference portfolio amortize as projected by the Amortization Pattern Matrix. This matrix is used for transactions where premium calculations are based on UPB as opposed to transactions where premiums are calculated based on the limits of the reinsurance layers. An Amortization Pattern Matrix represents the average annual amortization percentage for a mortgage reference pool. **Exhibit C.11** is the Amortization Pattern Matrix for mortgages with original maturities of greater than 20 years and **Exhibit C.12** is the Amortization Pattern Matrix for mortgages with original maturities of less than or equal to 20 years. It is important to note that each Amortization Pattern Matrix generally considers both scheduled and unscheduled amortizations. In general, unscheduled amortizations, also known as prepayments, are typically extremely low in most stress scenarios.

Each column of the Amortization Pattern Matrix is referred to as an Amortization Pattern Vector. Column A in the Amortization Pattern Matrix, for example, is known as the initial Amortization Pattern Vector.

Exhibit C.10: Initial Amortization Pattern Vector (30-Year Mortgages)

Year	Initial[1]
0	100.00%
1	97.73%
2	92.77%
3	87.43%
4	81.88%
5	76.39%
6	71.11%
7	66.10%
8	61.36%
9	56.87%
10	52.63%
11	48.61%
12	44.80%

[1] From Column A of the Amortization Pattern Matrix (**Exhibit C.11**)

As transactions season, the subsequent columns or other vectors of the Amortization Pattern Matrix are applied to the calculation of capital charges. For example, after the transaction has seasoned by one year, the 1-Year-Seasoned Amortization Pattern Vector is used in the calculation of premiums associated with the transaction. **Exhibit C.10** shows the initial Amortization Pattern Vector for a reference pool of 30-year mortgages.

Exhibit C.11: Amortization Pattern Matrix - Maturity > 20 Years

Year	A Initial	B 1-Year-Seasoned	C 2-Year-Seasoned	D 3-Year-Seasoned	E 4-Year-Seasoned	F 5-Year-Seasoned	G 6-Year-Seasoned	H 7-Year-Seasoned	I 8-Year-Seasoned	J 9-Year-Seasoned	K 10-Year-Seasoned	L 11-Year-Seasoned
0	100.00%											
1	97.73%	100.00%										
2	92.77%	97.30%	100.00%									
3	87.43%	91.73%	96.98%	100.00%								
4	81.88%	85.98%	90.89%	96.74%	100.00%							
5	76.39%	80.25%	84.84%	90.30%	96.60%	100.00%						
6	71.11%	74.72%	79.00%	84.08%	89.94%	96.51%	100.00%					
7	66.10%	69.46%	73.44%	78.16%	83.61%	89.72%	96.45%	100.00%				
8	61.36%	64.48%	68.17%	72.55%	77.62%	83.28%	89.53%	96.38%	100.00%			
9	56.87%	59.77%	63.19%	67.25%	71.94%	77.19%	82.98%	89.33%	96.31%	100.00%		
10	52.63%	55.31%	58.47%	62.23%	66.57%	71.44%	76.79%	82.67%	89.12%	96.23%	100.00%	
11	48.61%	51.09%	54.01%	57.48%	61.49%	65.98%	70.93%	76.36%	82.32%	88.88%	96.13%	100.00%
12	44.80%	47.08%	49.77%	52.97%	56.67%	60.81%	65.37%	70.37%	75.86%	81.91%	88.60%	96.02%

Exhibit C.12: Amortization Pattern Matrix - Maturity <= 20 Years

Year	A Initial	B 1-Year-Seasoned	C 2-Year-Seasoned	D 3-Year-Seasoned	E 4-Year-Seasoned	F 5-Year-Seasoned	G 6-Year-Seasoned	H 7-Year-Seasoned	I 8-Year-Seasoned	J 9-Year-Seasoned
0	100.00%									
1	96.24%	100.00%								
2	88.34%	95.69%	100.00%							
3	80.32%	87.03%	95.24%	100.00%						
4	72.29%	78.40%	85.80%	94.82%	100.00%					
5	64.51%	69.99%	76.60%	84.65%	94.43%	100.00%				
6	57.06%	61.92%	67.76%	74.89%	83.54%	94.01%	100.00%			
7	49.94%	54.19%	59.31%	65.55%	73.12%	82.28%	93.49%	100.00%		
8	43.12%	46.79%	51.21%	56.60%	63.13%	71.04%	80.72%	92.81%	100.00%	
9	36.56%	39.68%	43.42%	47.99%	53.53%	60.24%	68.44%	78.69%	91.91%	100.00%
10	30.23%	32.81%	35.91%	39.69%	44.27%	49.82%	56.60%	65.08%	76.01%	90.68%

Discretion to Modify Matrices or Use Model Results

It is important to note that in calculating capital charges, under certain conditions, A.M. Best may a) use a modified SUL Matrix, Amortization Pattern Matrix, Loss Pattern Matrix, and Seasoning Vector, at each VaR level and maturity, b) use the LoanKinetics application to analyze mortgage risks, or c) consider the views of reinsurers on the appropriate capital charges associated with their exposures. Those conditions may include, but are not limited to, the following:

1. The mortgage pool being evaluated has a significantly different risk profile than the mortgage pool from which the factors were originally derived—for example, if the reference pool being evaluated is made up of multifamily adjustable rate mortgages or if new and riskier products are added to the origination mix
2. Economic conditions warrant such modifications—for example, if the general housing price level is considerably different from the level in existence at the time the mortgage pool used in creating the SUL Matrix was originated leading to an overestimation or underestimation of losses in various stress scenarios

Reinsurer Information for Capital Charge Analysis

In order to calculate the capital charges associated with the GSE-sponsored credit risk-sharing reinsurance programs covered by a reinsurer, A.M. Best expects to review the following: 1) the specific transactions covered by the reinsurer, 2) the proportion of the transactions (and layers, if applicable) covered by the reinsurer, 3) any cessions to other reinsurers associated with the transactions, and 4) any booked reserves associated with the transactions.

The first three data requirements are used to determine the risk factors associated with calculating the expected and unexpected losses associated with mortgage reinsurance coverage of the GSE-sponsored credit risk-sharing programs. The fourth data requirement, booked reserves, is used as a proxy for expected losses. This amount is subtracted from the total capital charges calculated for credit risk-sharing programs to determine the net unexpected capital charge attributed to such programs.

Effect of Reinsurance Capital Charges on BCAR

As discussed in Section B of this criteria procedure, calculating an insurer's BCAR requires calculating its net required capital (NRC)—namely the capital the insurer needs to support the financial risks 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 BCAR formula and its dependence on NRC and Available Capital; **Exhibit B.3** shows the components of NRC.

To illustrate the effect of mortgage-related reinsurance transactions, A.M. Best assumes that the reinsurer taking on the mortgage risk has a well-diversified book of business and has capital and shareholders' funds of USD 4 billion. Furthermore, the example assumes various factor-based unexpected losses (at the VaR levels) associated with USD 1 billion of limit in a reinsurance transaction as shown in **Exhibit C.13**. For example, the exhibit shows that at the VaR 99 level, the unexpected loss as calculated using the factor-based approach is USD 400 million of the USD 1 billion limit or 40% of the limit. The losses calculated using the factor-based approach represents $B5_{cm}$—Net Loss and LAE Reserve Risk associated with current total mortgages covered. For a reinsurer that covers mortgage risks solely through the GSE-sponsored credit risk-sharing reinsurance programs, $B5_{fm}$ is assumed to be 0, therefore $B5_m$ is equal to $B5_{cm}$ (since $B5_m = B5_{cm} + B5_{fm}$).

Exhibit C.13: Assumed Mortgage-Related Losses at VaR Levels (USD 000)

	VaR 95	VaR 99	VaR 99.5	VaR 99.6
Mortgage Exposure Limit[1]	1,000,000	1,000,000	1,000,000	1,000,000
Calculated Unexpected Loss[2]	200,000	400,000	480,000	500,000
Loss as % of Limit	**20%**	**40%**	**48%**	**50%**

[1] Adjusted for retrocession and other risk transfer agreements

[2] Adjusted for company's GSE mortgage exposure reserves

In incorporating mortgage-related reserve risk into the BCAR, A.M. Best assumes a correlation between the mortgage-related Net Loss and Loss Adjustment Expense Reserves Risk ($B5_m$) and Non-affiliated Fixed Income Securities Risk ($B1_n$) of 50%. A.M. Best also assumes a correlation between the mortgage-related Net Loss and Loss Adjustment Expense Reserves Risk ($B5_m$) and Non-affiliated Equity Securities Risk ($B2_n$) of 50%. Furthermore, A.M. Best assumes a correlation between mortgage-related Net Loss and Loss Adjustment Expense Reserves Risk ($B5_m$) and non-life reserves risk associated with other lines of business of 10%.

It is important to emphasize the role diversification plays in the calculation of the NRC and, hence, the BCAR. In the BCAR, the correlation of mortgage losses to other reserve lines is generally assumed to be very low—thus the reserve diversification benefit is high when mortgage risk is added to an insurer's business mix. In addition to the reserve-line diversification, the BCAR level is also affected by the covariance adjustment, which further dampens the effect of the unexpected losses associated with the mortgage-related reinsurance transactions.

Exhibit C.14 shows the overall impact of diversification and the covariance adjustment on the NRC and ultimately on the BCAR associated with the example. For example, the VaR 99 level shows that the unexpected loss associated with the mortgage risk of USD 400 million (or 40% of the USD 1 billion in limit) increases NRC by about USD 168 million (or about 16.8% of the USD 1 billion limit). In this example, it is assumed that there is no affiliated Fixed Income Securities Risk or affiliated Equity Securities Risk.

Exhibit C.14: Impact of Mortgage Capital Charges on NRC and the BCAR (USD 000)

		Var 95	Var 99	VaR 99.5	Var 99.6
Limits and Assumed Losses					
(1)	GSE Mortgage Exposure Limit	1,000,000	1,000,000	1,000,000	1,000,000
(2)	Model Unexpected Loss	200,000	400,000	480,000	500,000
(3) = (2) / (1)	Ratio of Model Unexpected Loss to GSE Mortgage Exposure Limit	**20%**	**40%**	**48%**	**50%**
Net Required Capital					
(4)	Net Required Capital Without Mortgage Risk	1,398,841	2,018,981	2,272,769	2,347,867
(5)	Net Required Capital With Mortgage Risk	1,485,661	2,187,453	2,473,303	2,555,207
(6) = (5) - (4)	Incremental Net Required Capital (INRC)	86,820	168,472	200,534	207,340
(7) = (6) / (1)	Ratio of INRC to GSE Mortgage Exposure Limit	**8.7%**	**16.8%**	**20.1%**	**20.7%**
BCAR					
(8)	BCAR Score Without Mortgage Risk	66.7%	51.9%	45.8%	44.1%
(9)	BCAR Score With Mortgage Risk	64.6%	47.9%	41.1%	39.1%
(10) =(9) - (8)	BCAR Scores (absolute difference)	**-2.07%**	**-4.01%**	**-4.78%**	**-4.94%**

Notes:
Row (1) Gross Mortgage Exposure Limit Adjusted for Retrocession and Other Risk Transfer Agreements
Row (2) Modeled Unexpected Loss - Ground Up Modeled Losses Adjusted for Mortgage Exposure Reserves
Row (3) Ratio of Row 2 to Row 1
Row (4) Net Required Capital before Adding Mortgage-related Losses
Row (5) Net Required Capital after Adding Mortgage-related Losses
Row (6) Net Required Capital after Mortgage Losses less Net Required Capital before Mortgage Losses
Row (7) Ratio of Row 6 to Row 1
Row (8) BCAR Score before Adding Mortgage Risk
Row (9) BCAR Score after Adding Mortgage Risk
Row (10) Row 9 less Row 8

The exhibit also shows that the BCAR score is reduced by a nominal level of about 4.01% (at the VaR 99 level) compared to the base level when mortgage risk is added to the insurer.

D. Rating Considerations: Other Reinsurance Programs

Capital Charges Related to Other Reinsurance Programs

Aside from the GSE-sponsored reinsurance transactions, reinsurers also provide coverage on mortgage pools on both a proportional and non-proportional basis globally. Reinsurers assuming these risks may provide to A.M. Best their views on the capital charges associated with their exposures net of any retrocession agreements. A.M. Best expects a description of the model (if any) used in the analysis and additional information including but not limited to the following:

- Key model inputs and output results
- The underpinnings and rationale regarding the stresses applied to the mortgage portfolio

- Model-derived losses on a gross and net basis at the 95, 99, 99.5 and 99.6 VaR levels—including the assumptions (such as housing price declines, rates, etc.) driving the VaR levels
- Model-derived losses based on a repeat of the 2008 credit crisis
- Treatment afforded to non-U.S. mortgage exposures

In some cases and where appropriate, A.M. Best may request copies of the reinsurance/retrocession agreements underlying these exposures, UPB distribution (segregated by broad product categories and geographical locations inside and outside the United States), detail loan-level data, and other information from the company so it can use the LoanKinetics application to estimate capital charges.

Given the capital charges associated with non-GSE-sponsored mortgage-related reinsurance transactions, A.M. Best will apply the same analytical techniques described in the prior sections to incorporate such charges into a reinsurer's BCAR.

Appendix 1: Credit Risk Model – LoanKinetics

A.M. Best used a third-party Credit Risk Model, LoanKinetics, to develop the Net Loss and Loss Adjustment Expense Reserves and the Net Premiums Written Risks used in BCAR. LoanKinetics is an application developed by Andrew Davidson & Co. (AD&Co) for analyzing the credit risk of a portfolio of mortgage loans, either from the mortgage insurer's or investor's perspective. LoanKinetics integrates AD&Co's Interest Rate Model, Home-Price Model, and LoanDynamics Model (LDM, loan level credit, and prepayment model) described below, in conjunction with a proprietary alternative to Monte Carlo analysis that relies on a grid of 20 deterministic scenarios, to quantify credit risk.

Interest Rate Model

The Interest Rate Model is a term structure model. It is a Hull-White one-factor model calibrated to swaps or Treasury curve and a matrix of at-the-money swaptions.

Home-Price Model

The Home-Price Model is a stochastic, interest-rate-linked model that provides forecasts up to the Metropolitan Statistical Area (MSA) level. The model forecasts Home-Price Indices (HPI) and Home-Price Appreciation (HPA) over time. The model includes four dynamically simulated factors: (1) financing rate, (2) income inflation, (3) HPA diffusion (systematic trend), and (4) HPA jump (non-systemic shocks). In addition, the model considers the historical cost of down payment and underpriced risk; those cost components are projected to be unchanged from the analysis date. Along with factors (1) and (2), the model determines housing affordability and HPA equilibrium ("soft equilibrium"); it is the long-term HPA that the model projects based on housing affordability.

The Home-Price Model models the HPA by a mean-reverting system of equations in that HPA reverts back to HPA equilibrium. The system incorporates the phenomenon that home prices tend to oscillate and overshoot when correcting.

LoanDynamics Model

The LoanDynamics Model (LDM) is an integrated prepayment and credit default and loss-forecasting model that produces monthly time series forecasts of Prepayments, Defaults, Delinquencies, and Loss Severities.

The model is unified across credit sector (jumbo prime, subprime, Alt-A, High LTV) and product type (fixed, adjustable, hybrid, IOs, first and second lien). It relies on observed loan characteristics, such as Credit Score, LTV, Original Loan Sizes, data that are available in the typical servicing system file, and two economic drivers, interest rates and home prices, to make its projections.

There are two model subclasses in LDM: Agency LDM and Non-Agency LDM. Agency LDM was developed using loan data released by The Federal Home Loan Mortgage Corporation (Freddie Mac), covering 2000 to 2015 originations. Non-Agency LDM was estimated from publicly available non-agency securities data collected from the corporate trust department of Wells Fargo Bank, N.A.

The database (used to estimate the initial model) contained over eight million loans from 144 different issuers covering the period from 1998 to 2006. It has since been supplemented with loan level data from Intex and covers a robust cross-section of non-agency loan types, including jumbo prime, new prime, Alt-A, subprime, and second liens. All databases are updated monthly to monitor the accuracy of LDM forecasts and for current model development.

LDM is a state transition model. In LDM, loans can transition between Current (C, 0-1 Month Delinquent), Delinquent (D, 2-5 Months Delinquent), seriously Delinquent (S, 6+ Months Delinquent), and Terminated (T, No Current Balance) states. CT, CD, DC, DT, SC, and ST are the transitions used in the model. For example, CT is the transition where a loan transitions from a Current to a Terminated state.

Voluntary Prepayment Transition

The voluntary prepayment transition (Current to Terminated Prepayment transition) in LDM uses a cumulative distribution function (CDF) to construct the classic refinance S-curve for voluntary prepayments. Variables such as credit score, original loan balance, current LTV (based on local home price indices), and current interest rates all are used in determining the forecasted vector of prepayments directly. Factors in the CT model include the following:

- Rate incentive
- Credit score, loan-to-value ratio (LTV), and original loan size (OLS)
- Turnover and seasonality
- Burnout Effect

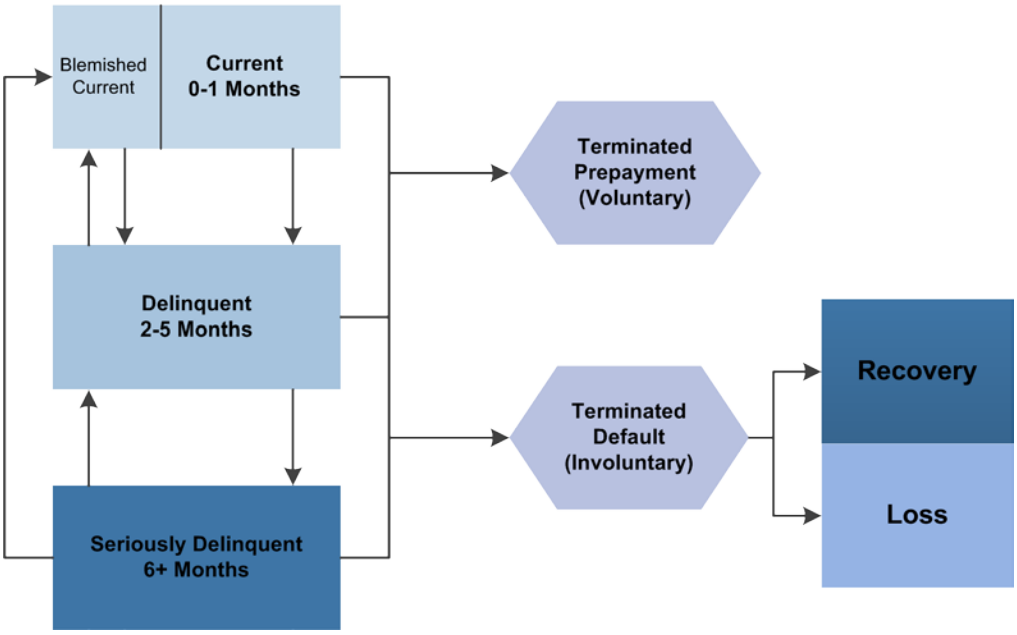
Other Transitions

The other transitions represent different economic situations, as shown below:

CD - Delinquency	(Current to Delinquent)
DC - Cure	(Delinquent to Current)
DT - Delinquent Prepayment / Short Sale	(Delinquent to Terminated)
SC - Cure	(Seriously Delinquent to Current)
ST - REO Liquidation	(Seriously Delinquent to Terminated)

Each transition model uses a specific set of input variables and effects. The major drivers may include, but are not limited to: Age, Credit Score, LTV at Origination, Payment Type (ARM or Fixed), Prepay Penalty, Occupancy, Loan Purpose, Number of Units, Property Type, Amortization Type, Payment Shocks, Previous Delinquencies, Local and National Home Price Appreciation, Seasonality, Current Combined LTV, and Judicial/Non-Judicial.

Exhibit 1: Transition Model



Loss Severity

As loans terminate, the loss severity component of LDM determines if a loss is likely (loss probability) and for what amount (loss magnitude).

Scenario Grid and 3-Part Vasicek Probability Model

The sample Scenario Grid in **Appendix 1: Exhibit 2** contains a set of 20 engineered stress scenarios ranging from best, to base case, to worst. **Appendix 1: Exhibit 2** is only an example and may not reflect the current economic environment. The Scenario Grid settings are updated as needed by AD&Co. Each scenario in the Scenario Grid contains interest rate shifts, settings for the integrated LDM (Default, Severity, and Prepayment), and Home-Price Model. The Scenario Grid settings incorporate adverse modeling error. The extreme scenarios include both economic shocks and model shocks. The following table contains an example of stress scenario variables and their values, which can be categorized as follows:

- Scenario interest rate shifts (IRSHIFT)
- Scenario scales for the LDM (MDR, SEVERITY, and Prepay)
- Stress scenario results from the Home-Price Model (1YrHPA, 2YrHPA, MinHPA)
- The Cumulative Distribution Function (CDF2), which shows the cumulative probability of each level of default rate occurring

The last column in the Scenario Grid shows the cumulative probabilities associated with each scenario.

Exhibit 2: Sample Scenario Grid

DESCR	SCENARIO #	IRSHIFT	MDR	SEVERITY	Prepay	1YrHPA	2YrHPA	MINHPA	CDF2
Good	0	-125.00	0.88	0.88	1.25	16.29	30.43	0.00	0.00
	1	-100.00	0.90	0.90	1.20	14.22	26.34	0.00	2.95
	2	-75.00	0.93	0.93	1.15	12.18	22.39	0.00	8.77
	3	-50.00	0.95	0.95	1.10	10.73	19.55	0.00	15.57
	4	-37.50	0.96	0.96	1.08	8.93	16.17	0.00	23.32
	5	-25.00	0.98	0.98	1.05	7.16	12.88	0.00	32.29
	6	-12.50	0.99	0.99	1.03	5.93	10.59	0.00	39.97
Base	7	0.00	1.00	1.00	1.00	4.21	7.46	0.00	50.00
Bad	8	12.50	1.03	1.01	0.98	2.52	4.42	0.00	60.29
	9	25.00	1.05	1.03	0.95	1.34	2.31	0.00	67.92
	10	37.50	1.08	1.04	0.93	-0.30	-0.59	-0.94	76.60
	11	50.00	1.10	1.05	0.90	-1.92	-3.40	-5.30	84.24
	12	62.50	1.13	1.06	0.88	-3.05	-5.36	-8.73	89.03
	13	75.00	1.15	1.08	0.85	-4.63	-8.05	-13.45	93.60
Extreme	14	100.00	1.20	1.10	0.80	-6.33	-10.93	-18.47	97.12
	15	125.00	1.25	1.13	0.75	-7.55	-13.01	-22.06	98.69
	16	150.00	1.30	1.15	0.70	-9.21	-15.75	-26.69	99.62
	17	175.00	1.35	1.18	0.65	-10.85	-18.41	-31.07	99.94
	18	200.00	1.40	1.20	0.60	-12.03	-20.34	-34.20	99.99
	19	225.00	1.45	1.23	0.55	-13.63	-22.86	-38.16	100.00

These scenarios (which capture both macroeconomic changes as well as shocks to LDM, Home-Price, and Interest Rate models), in combination with a base case scenario, are used to forecast the performance of each loan in terms of its likelihood to prepay, become delinquent, default, or generate a loss of a certain amount. AD&Co has derived the CDF2 for the 20 scenarios by modifying standard Vasicek theory to take into account scenarios in which a loan has neither a 0% likelihood of default nor a 100% likelihood of default. AD&Co research shows that this three-part Vasicek approach captures the tail risk inherent in extremely adverse scenarios, which would otherwise only be simulated using a Monte Carlo approach with a vast number of paths.

Appendix 2: Example of a Primary Mortgage Insurer's BCAR Assessment

The BCAR assessment is an important element in determining the balance sheet strength of an insurer. The following example of a hypothetical primary mortgage insurer will help illustrate the mechanics of the BCAR assessment at the 99.6 VaR level. The mortgage insurer in this example is assumed to have the following characteristics:

1. Risk-In-Force (RIF): USD 51.4 billion
2. Unpaid Principal Balance (UPB): USD 201.1 billion
3. Booked Net Loss and LAE Reserves: USD 398.6 million
4. Policyholders' Surplus: USD 1.8 billion
5. Unearned Premium Reserves: USD 621.5 million
6. 95% of Unearned Premium Reserves is made up of non-refundable single premium

The Available Capital components are shown in **Appendix 2: Exhibit 1**. The components of the mortgage insurer's Net Required Capital (NRC), B1 through B8, are shown in **Appendix 2: Exhibit 3.**

Available Capital

The Available Capital for the mortgage insurer, which is derived from the company's financial statements, is approximately USD 3.83 billion. The components of Available Capital as shown in **Appendix 2: Exhibit 1** are as follows:

- Policyholder's Surplus: USD 1.8 billion
- Contingency Reserves: USD 1.6 billion
- Adjusted Unearned Premium Reserves (non-refundable single premium):USD 442.8 million = A – B – C
    - A: Unearned Premium Reserves: USD 621.5 million
    - B: Reduction for Refundable Unearned Premium Reserves: USD 31.1 million
    - C: Expense Adjustment for Non-Refundable Single Unearned Premium Reserves: USD 147.6 million

Exhibit 1: Available Capital Components

Available Capital Components – VaR 99.6	
Reported Capital (Surplus)	1,764,994
Equity Adjustments:	
Unearned Premium Reserve Equity	0
Loss Reserves Equity	0
Fixed Income Equity	0
Debt Adjustments:	
Contingency Reserves	1,623,570
Unearned premium reserves associated with non-refundable single premium (adjusted for expenses)	442,818
Surplus Notes	0
Off-Balance Sheet Losses	0
Future Dividends	0
Protected Cell Surplus	0
Goodwill & Intangibles	0
Available Capital (AC)	**3,831,382**

Net Required Capital

The NRC for the mortgage insurer is USD 1.78 billion. To calculate NRC it is first necessary to determine the various risks, B1 through B8, as shown in **Appendix 2: Exhibit 2.** The summation of these risks is called Gross Required Capital. Each of these risks is then inserted into the following NRC formula which incorporates diversification benefits associated with the various risks:

Exhibit 2: Mortgage-related NRC Formula

$$NRC = \sqrt{B1^2 + B2^2 + B3^2 + (B1_n + B2_n) * B5_m + (0.5B4)^2 + (0.5B4 + B5)^2 + B6^2 + B8^2} + B7$$

This diversification benefit is shown in **Appendix 2: Exhibit 3** as the Covariance Adjustment.

The following sections show how the components of the NRC shown in **Appendix 2: Exhibit 2** are determined.

Exhibit 3: NRC Components

Net Required Capital Amount – VaR 99.6

Asset Risk:		
(B1) Fixed Income Securities Risk ($B1_a$ + $B1_n$)		**76,610**
($B1_a$) Affiliated Fixed Income Securities Risk	0	
($B1_n$) Non-affiliated Fixed Income Securities Risk	76,610	
(B2) Equity Securities Risk ($B2_a$ + $B2_n$)		**337,680**
($B2_a$) Affiliated Equity Securities Risk	281,328	
($B2_n$) Non-affiliated Equity Securities Risk	56,352	
(B3) Interest Rate Risk		**81,088**
(B4) Credit Risk		**105,429**
Total Asset Risk		**600,807**
Total Underwriting Risk:		
(B5) Net Loss and LAE Reserves Risk (10% Correlation Applied to $B5_m$ and $B5_{nm}$)		**1,623,982**
($B5_m$) Mortgage-related Net Loss and LAE Reserves Risk ($B5_{cm}$ + $B5_{fm}$)	1,623,982	
($B5_{cm}$) Mortgage-related Net Loss and LAE Reserve Risk associated with current total mortgages insured	1,414,542	
($B5_{fm}$) Mortgage-related Net Loss and LAE Reserves Risks associated with future total mortgages insured in the coming calendar year, if applicable	209,440	
($B5_{nm}$) Non-mortgage related Net Loss and LAE Reserves Risks, if applicable	0	
(B6) Net Premiums Written Risk, if applicable		**0**
(B7) Business Risk		**220**
(B8) Catastrophe Risk		**0**
Gross Required Capital (GRC)		**2,225,009**
Less: Covariance Adjustment		**(448,138)**
Net Required Capital (NRC)		**1,776,871**

Total Asset Risk (B1, B2, B3, and B4)

The Total Asset Risk components — Fixed Income Securities Risk (B1), Equity Securities Risk (B2), Interest Rate Risk (B3), Credit Risk (B4) — are derived at the VaR 99.6 level from the BCAR model based on information from the mortgage insurer's statutory financial statement.

The Total Asset Risk of USD 600.8 million includes:

- B1 (Fixed Income Securities Risk): USD 76.6 million
  - $B1_a$ (Affiliated): USD 0 million
  - $B1_n$ (Non-Affiliated): USD 76.6 million
- B2 (Equity Securities Risk): USD 337.7 million
  - $B2_a$ (Affiliated): USD 281.3 million
  - $B2_n$ (Non-Affiliated): USD 56.4 million
- B3 (Interest Rate Risk): USD 81.1 million
- B4 (Credit Risk): USD 105.4 million

Total Underwriting Risk (B5, B6)

The total underwriting risk for a mortgage insurer is represented by B5, the Net Loss and LAE Reserves Risk, because B6 is 0 given the fact that the underwriting risk one year in the future is already embedded in the B5 calculation as described in the main body of this criteria procedure.

Net Loss and LAE Reserves Risk (B5) is estimated using an independent 3rd party Credit Risk Model. The procedures for determining B5 risk is as follows (See **Appendix 2: Exhibit 3**):

1. Calculate $B5_{cm}$: The Net Discounted Loss associated with current total mortgages insured less booked mortgage Net Loss and LAE Reserves, assuming that these reserves are adequate. The estimated $B5_{cm}$ for the mortgage insurer is approximately USD 1.4 billion.
2. Calculate $B5_{fm}$: 70% of the difference between the Net Discounted Loss and Non-Refundable Single Premium Credit associated with the current vintage. The estimated $B5_{fm}$ for the mortgage insurer is approximately USD 209.4 million.
3. Calculate $B5_m$: The sum of Net Loss and LAE Reserves Risk associated with the current total mortgages insured ($B5_{cm}$) and Net Loss and LAE Reserves Risk associated with the upcoming year's mortgage business ($B5_{fm}$). The estimated $B5_m$ for the mortgage insurer is approximately USD 1.6 billion.
4. Calculate $B5_{nm}$: Given that the hypothetical mortgage insurer is a monoline company, non-mortgage-related Net Loss and LAE Reserves ($B5_{nm}$) is 0.
5. Calculate B5: A. M. Best assumes a 10% correlation between mortgage-related Net Loss and LAE Reserves Risk ($B5_m$) and non-mortgage-related Net Loss and LAE Reserves Risk ($B5_{nm}$). Given that $B5_{nm}$ is 0, B5 is equal to USD 1.62 billion.

Exhibit 4: Calculation of Total Underwriting Risk

	Risk-In-Force (RIF)		51,369,330
	Unpaid Principal Balance (UPB)		201,133,439
	Gross Discounted Loss (model), all years		-3,965,271
	Gross Discounted Periodic Premium (model)		3,586,802
	Expense (25% of Gross Discounted Total Premium)	-896,700	
	Haircut (15% of Gross Discounted Periodic Premium)	-538,020	
	Premium Credit		2,152,081
	Net Discounted Loss (reflects Premium Credit)		-1,813,190
	Booked Mortgage Loss and LAE Reserves		398,647
Step 1	**$B5_{cm}$ - Mortgage-related Net Loss and LAE Reserves Risk associated with current total mortgages insured**		**1,414,542**
	RIF Current Vintage Year		13,900,000
	UPB Current Vintage Year		55,900,000
	Gross Discounted Loss (model), based on current vintage year portfolio		-1,161,640
	Gross Discounted Periodic Premium (model), based on current vintage year portfolio		1,172,765
	Gross Single Non-refundable Premium, based on current vintage year portfolio		211,709
	Expense (25% of Gross Discounted Total Premium)	-346,119	
	Haircut (15% of Gross Discounted Periodic Premium)	-175,915	
	Premium Credit		862,440
Step 2	**$B5_{fm}$ - Mortgage-related Net Loss and LAE Reserves Risk associated with future total mortgages insured in the coming calendar year**		**209,440**
Step 3	**$B5_{m}$ - Mortgage-related Net Loss and LAE Reserves Risk = $B5_{cm}$ + $B5_{fm}$**		**1,623,982**
Step 4	**$B5_{nm}$ - Non-mortgage-related Net Loss and LAE Reserves Risk**		**0**
Step 5	$B5 = \sqrt{B5_m^2 + B5_{nm}^2 + 2 * 0.1 * B5_m * B5_{nm}}$		**1,623,982**

Other Risks (B7 and B8)

Business Risk (B7) of USD 220.0 million is estimated using A.M. Best's BCAR model and incorporating information from the mortgage insurer's financial statements. The Catastrophe Risk (B8) is assumed to be 0.

The BCAR Score

The BCAR score for the mortgage insurer in this example at the VaR 99.6 level is 53.6. This is calculated as follows:

$$\text{BCAR} = [(\text{Available Capital} - \text{NRC})/\text{Available Capital}] * 100$$

$$\text{BCAR} = [(3.83 - 1.78)/3.83] * 100 = 53.6$$

The BCAR assessment for the hypothetical mortgage insurer is viewed as "Strongest", based on its BCAR scores. Scores above 25.0 at the VaR 99.6 level indicate a BCAR assessment of "Strongest". In addition, the analysis of balance sheet strength continues with other assessment factors noted in the BCRM.

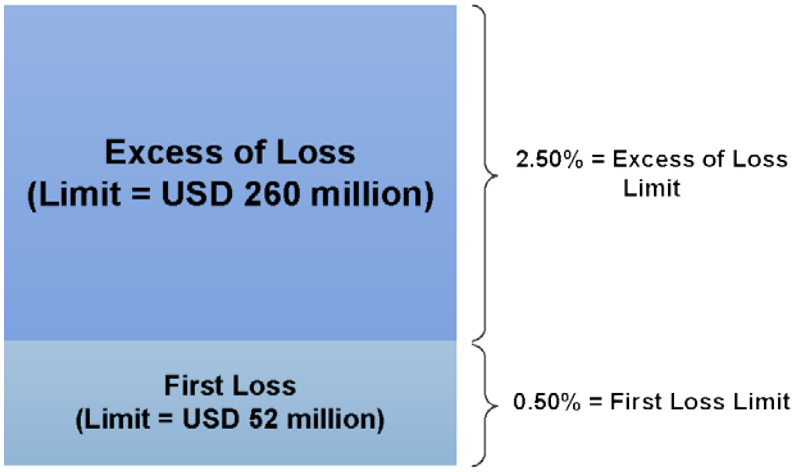
Appendix 3: Factor-Based Capital Charge Calculations

The following examples of insurance-based risk transfer programs will help illustrate the important elements of the procedures for the capital charge calculations. Example 1 is partially derived from an actual transaction and relates to an insurance-based risk transfer program where a reinsurer has chosen to provide coverage for a program with a single risk layer. Example 2 shows the calculation for another transaction in the insurance-based risk transfer program, where a reinsurer provides coverage for a program with multiple layers of risk.

Example 1

Example 1 shows the initial capital charge and the capital charge after one year of seasoning of the transaction associated with the VaR 99 level. The example assumes that in a reference pool consisting of USD 10.3 billion of 30-year fixed rate mortgages with LTVs greater than 60% and less than or equal to 80%, a GSE desires to transfer an exposure of up to 2.50% of the unpaid principal balance, after the first loss of 0.50% of UPB over a 10-year risk period. Any losses realized after that 10-year risk period associated with mortgage defaults that occurred within the 10-year risk period are also covered by the reinsurers. Thus, in this simplified example, A.M. Best assumes that losses continue for 12 years, while premiums earned by reinsurers cease by the tenth year. For the reinsurer providing the excess of loss coverage, this means it can cover a maximum exposure of about USD 260 million (USD 260 million = 2.50% * USD 10.3 billion) associated with the mortgage reference pool on the first day in which it enters the reinsurance contract. The reinsurer's exposure may decline as the UPB decreases due to scheduled amortizations and prepayments. **Appendix 3: Exhibit 1** shows the risk tower associated with this particular example of an insurance-based risk transfer program.

Exhibit 1: Transaction Risk Tower



The exposure layers with associated premiums based on the Remaining UPB as shown in **Appendix 3: Exhibit 1** are as follows:

- First Loss: 0.50% of losses associated with the USD 10.3 billion reference pool
- Single Tranche: 2.50% excess of 0.50% of losses associated with the USD 10.3 billion reference pool; premiums are 14bps of the Remaining UPB

In this example, the calculation of the initial and 1-Year-Seasoned capital charges for the excess of loss layer is shown.

Initial Capital Charge Calculation

Calculating the Initial Stressed Ultimate Loss

The first step is to calculate the initial SUL to help determine the net losses in the reference portfolio. In this example, the assumption is made that the initial UPB Distribution Matrix is the same matrix as shown in **Exhibit C.1** and that the SUL Matrix is the same matrix as shown in **Exhibit C.2**. Thus, the initial SUL (as calculated earlier and shown in **Exhibit C.5**) is 3.66%.

Calculation of Initial Gross Capital Charge

The initial Gross Capital Charge (GCC) is the loss that builds up in the excess of loss layer as a percentage of the limit before taking premiums into consideration. **Appendix 3: Exhibit 2** illustrates the procedures and elements associated with the initial Gross Capital Charge of the reinsurance contract. Explanations of the columns in the exhibit follow:

Column A: Initial Loss Pattern Vector
Description: This is Column A in the Loss Pattern Matrix (**Exhibit C.7**).

Column B: Initial Stressed Ultimate Loss
Description: This is the initial SUL as calculated using the SUL Matrix and initial UPB Distribution Matrix.

Column C: Total Realized Loss—the cumulative losses at the time of the analysis.
Description: The Total Realized Loss is 0 at the beginning of the transaction; as the transaction ages, the Total Realized Loss will grow.

Column D: Initial Cumulative Loss Vector
Description: This is the product of the Initial Loss Pattern Vector and the SUL. The Total Realized Loss is also added to this vector but this is 0 at the beginning of the transaction and will increase as the transaction ages.
Formula: (Column A * Column B) + Column C

Column E: Initial Remaining Limit
Description: This is the limit that remains after considering losses.

Formula: Max [0, min (Excess of Loss Limit, Maximum Limit[1] – Column D)]

Column F: Tranche Cumulative Loss
Description: This is the amount of loss suffered by the tranche. Note that the tranche is not breached until the first loss position is exhausted.
Formula: Min [Max (0, Column D – First Loss Limit), Excess of Loss Limit]

Column G: Tranche Incremental Loss
Description: This is the mathematical difference (except for the first year) between Column F at any particular year and Column F in the prior year.
Formula: $(\text{Column F})_t - (\text{Column F})_{t-1}$

Column H: PV of Tranche Incremental Loss
Description: This is the present value of the Tranche Incremental Loss (Column G) before taking premiums into consideration. A 4% discount rate is used in the calculation to remain consistent with A.M. Best's calculation methodology for asset capital charges.[2]
Formula: PV of Column G

The initial Gross Capital Charge is the sum of the present value of Tranche Incremental Loss (Column H) divided by the Excess of Loss Limit. This value is 1.90% / 2.50% = 76.10%.

[1] Maximum Limit is the detachment point associated with the layer.
[2] In this criteria procedure, mid-period present values are calculated; thus, the first term in the discount rate is 0.5 years, the second term is 1.5 years, etc.

Exhibit 2: Initial Gross Capital Charge Calculation

Year	A[1] Initial Loss Pattern Vector	B Initial SUL	C Total Realized Loss	D[2] Initial Cumulative Loss Vector	E[3] Initial Remaining Limit	F[4] Tranche Cumulative Loss	G[5] Tranche Incremental Loss	H PV of Tranche Incremental Loss
1	0.23%	3.66%	0.00%	0.01%	2.50%	0.00%	0.00%	0.00%
2	2.44%	3.66%	0.00%	0.09%	2.50%	0.00%	0.00%	0.00%
3	9.60%	3.66%	0.00%	0.35%	2.50%	0.00%	0.00%	0.00%
4	20.17%	3.66%	0.00%	0.74%	2.26%	0.24%	0.24%	0.21%
5	31.14%	3.66%	0.00%	1.14%	1.86%	0.64%	0.40%	0.34%
6	41.34%	3.66%	0.00%	1.51%	1.49%	1.01%	0.37%	0.30%
7	50.51%	3.66%	0.00%	1.85%	1.15%	1.35%	0.34%	0.26%
8	58.63%	3.66%	0.00%	2.15%	0.85%	1.65%	0.30%	0.22%
9	65.75%	3.66%	0.00%	2.41%	0.59%	1.91%	0.26%	0.19%
10	71.93%	3.66%	0.00%	2.63%	0.37%	2.13%	0.23%	0.16%
11	77.24%	3.66%	0.00%	2.83%	0.17%	2.33%	0.19%	0.13%
12	81.75%	3.66%	0.00%	2.99%	0.01%	2.49%	0.17%	0.11%

Sum of Column H = Sum of PV of Tranche Incremental Loss = 1.90%

Gross Capital Charge = Sum of Column H/Initial Limit = 76.10%

[1] From Column A of the Loss Pattern Matrix (**Exhibit C.7**)

[2] D = (A * B) + C

[3] E = Max [0,Min(2.50%, 3.00% - D)]

[4] F = Min [Max (0, D - 0.50%), 2.50%]

[5] $G = F_t - F_{t-1}$

Calculation of Initial Premium Credit

The Premium Credit represents premium that is collected based on a fixed premium rate and the average UPB associated with the reference pool. **Appendix 3: Exhibit 3** shows the elements used in calculating the Premium Credit associated with the reinsurance contract. Explanations of the columns in **Appendix 3: Exhibit 3** follows:

Column A: Initial Remaining Limit

Description: This is the limit that remains after considering losses. This was already calculated in **Appendix 3: Exhibit 2** (Column E). The premiums are earned as long as the Remaining Limit is greater than 0.

Column B: Premium Rate

Description: This is the premium rate that is applied to the Remaining Amortization Pattern Vector (as described later).

Column C: Initial Amortization Pattern Vector

Description: This is from Column A in the Amortization Pattern Matrix (**Exhibit C.11**)

Column D: Remaining UPB

Description: This is the percentage of the original UPB that remains in the reference portfolio. This is 100% at the inception of the transaction but will be reduced over time due to scheduled amortization and prepayments.

Column E: Remaining Amortization Pattern Vector

Description: This is the product of the Initial Amortization Pattern Vector and the Remaining UPB. This product is equal to the Initial Amortization Pattern Vector at the beginning of the transaction but will be reduced as Remaining UPB diminishes.

Column F: Incremental Premium Credit

Description: This is the Incremental Premium Credit based on the Premium Rate and the Remaining Amortization Pattern Vector. Note that the premium payments cease by the 10th year although the losses beyond ten years are recognized in the Gross Capital Charge calculation.

Formula: Column B * Column E

Column G: PV of Incremental Premium Credit

Description: This is the present value of the Incremental Premium Credit (Column F). A 4% discount rate is used in the calculation to remain consistent with A.M. Best's calculation methodology for asset capital charges.

Formula: PV of Column F

The sum of the present value of the Incremental Premium Credit (Column G) divided by the Excess of Loss Limit is the Premium Credit to the loss layer at the inception of the transaction. This value is 0.88% / 2.50% = 35.24%.

Exhibit 3: Initial Premium Credit

Year	A[1] Initial Remaining Limit	B Premium Rate	C[2] Initial Amortization Pattern Vector	D Remaining UPB	E[3] Remaining Amortization Pattern Vector	F[4] Incremental Premium Credit	G PV of Incremental Premium Credit
1	2.50%	0.14%	97.73%	100.00%	97.73%	0.14%	0.13%
2	2.50%	0.14%	92.77%	100.00%	92.77%	0.13%	0.12%
3	2.50%	0.14%	87.43%	100.00%	87.43%	0.12%	0.11%
4	2.26%	0.14%	81.88%	100.00%	81.88%	0.11%	0.10%
5	1.86%	0.14%	76.39%	100.00%	76.39%	0.11%	0.09%
6	1.49%	0.14%	71.11%	100.00%	71.11%	0.10%	0.08%
7	1.15%	0.14%	66.10%	100.00%	66.10%	0.09%	0.07%
8	0.85%	0.14%	61.36%	100.00%	61.36%	0.09%	0.06%
9	0.59%	0.14%	56.87%	100.00%	56.87%	0.08%	0.06%
10	0.37%	0.14%	52.63%	100.00%	52.63%	0.07%	0.05%
11	0.17%	0.00%	48.61%	100.00%	48.61%	0.00%	0.00%
12	0.01%	0.00%	44.80%	100.00%	44.80%	0.00%	0.00%

Sum of Column G = Sum of PV Incremental Credit = 0.88%

Initial Premium Credit = Sum of Column G/Initial Limit = 35.24%

[1] From Column E of the Calculation of Initial Gross Capital Charge (**Appendix 3: Exhibit 2**)

[2] From Column A of the Amortization Pattern Matrix (**Exhibit C.11**)

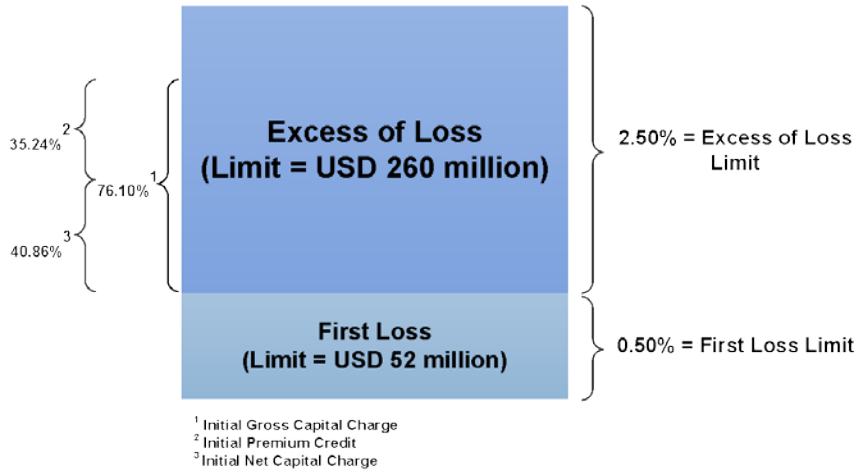
[3] E = C * D

[4] F = B * E

Calculation of Initial Net Capital Charge

The initial Net Capital Charge (NCC), (40.86% = 76.10% - 35.24%), is the initial Gross Capital Charge minus the initial Premium Credit. **Appendix 3: Exhibit 4** is a diagram of the initial Net Capital Charge associated with the layer in the reinsurance tower.

Exhibit 4: Diagram of Initial Net Capital Charge



1-Year-Seasoned Capital Charge Calculation

Calculating the 1-Year-Seasoned Stressed Ultimate Loss

To calculate the 1-Year-Seasoned SUL, it is necessary to first determine the SUL as described earlier. In summary, the SUL is calculated as the sum of the cell-by-cell product of the 1-Year-Seasoned UPB Distribution Matrix and the SUL Matrix.

The 1-Year-Seasoned UPB Distribution Matrix is shown in **Appendix 3: Exhibit 5**. It is very similar to the initial UPB Distribution Matrix in **Exhibit C.1** because only one year has elapsed since the transaction's inception. One would not expect that the portion of the UPB in each original LTV and original credit score bucket to have changed significantly in that time period.

Exhibit 5: 1-Year-Seasoned UPB Distribution Matrix

	Original Credit Score					
Original LTV	**<620**	**[620,660)**	**[660,700)**	**[700,740)**	**[740,780)**	**>=780**
<=60	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(60-65]	0.00%	0.48%	0.98%	1.35%	1.87%	2.38%
(65,70]	0.00%	0.96%	1.93%	2.65%	3.42%	3.76%
(70,75]	0.00%	1.10%	2.82%	4.40%	6.56%	7.20%
(75,80]	0.00%	2.67%	7.40%	12.67%	17.29%	18.12%
(80,85]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(85,90]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(90,95]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(95,97]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
97+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

A) New SUL = 3.67% (This is the sum of all cell-by-cell products of the UPB Distribution Matrix above and the SUL Matrix in **Exhibit C.2)**
B) Seasoning Factor = 105% (From Column A [**Year 1**] of **Exhibit C.6)**
C) Remaining UPB = 85% (Assumed)
D) 1-Year-Seasoned SUL = 3.29% (**Item A** * **Item B** * **Item C**)

The newly calculated SUL, 3.67%, is the sum of the cell-by-cell product of the 1-Year-Seasoned UPB Matrix shown in **Appendix 3: Exhibit 5** and the SUL Matrix. The assumption is made that the Remaining UPB is 85% after one year, and the Seasoning Factor (from the one-year row of the Seasoning Vector, **Exhibit C.6**) is 105%. The 1-Year-Seasoned SUL is then calculated as follows:

1-Year-Seasoned SUL = 85% * 105% * 3.67% = 3.29%

Calculation of 1-Year-Seasoned Gross Capital Charge

Appendix 3: Exhibit 6 illustrates the procedures and elements associated with the 1-Year-Seasoned Gross Capital Charge of the reinsurance contract. Explanations of the columns in the exhibit follow:

Column A: 1-Year-Seasoned Loss Pattern Vector
Description: This is Column B in the Loss Pattern Matrix (**Exhibit C.7**).

Column B: 1-Year-Seasoned Stressed Ultimate Loss
Description: This is the 1-Year-Seasoned SUL as calculated using the SUL Matrix, the 1-Year-Seasoned UPB Distribution Matrix, the Seasoning Factor after one year, and the Remaining UPB.

Column C: Total Realized Loss
Description: This is the cumulative losses at the time of the analysis. Total Realized Loss should be small in the early years of the transaction.

Column D: 1-Year-Seasoned Cumulative Loss Vector
Description: This is the product of the 1-Year-Seasoned Loss Pattern Vector and the SUL. The Total Realized Loss is also added to this vector but the expectation is that this will be small in the early years of the transaction.
Formula: (Column A * Column B) + Column C

Column E: 1-Year-Seasoned Remaining Limit
Description: This is the limit that remains after considering losses.
Formula: Max[0, min(Excess of Loss Limit, Maximum Limit – Column D)]

Column F: Tranche Cumulative Loss
Description: This is the amount of loss suffered by the tranche. Note that the tranche is not breached until the first loss position is exhausted.
Formula: Min[Max(0, Column D – First Loss Limit), Excess of Loss Limit]

Column G: Tranche Incremental Loss
Description: This is the mathematical difference (except for the first year) between Column F in any particular year and Column F in the prior year.

Formula: $(\text{Column F})_t - (\text{Column F})_{t-1}$

Column H: PV of Tranche Incremental Loss

Description: This is the present value of the Tranche Incremental Loss (Column G) before taking premiums into consideration. A 4% discount rate is used in the calculation to remain consistent with A.M. Best's calculation methodology for asset capital charges.

Formula: PV of Column G

The 1-Year-Seasoned Gross Capital Charge, 69.17%, is the sum of the present value of the Tranche Incremental Loss (Column H) divided by the Excess of Loss Limit.

Exhibit 6: 1-Year-Seasoned Gross Capital Charge

	A[1]	B	C	D[2]	E[3]	F[4]	G[5]	H
Year	1-Year-Seasoned Loss Pattern Vector	1-Year-Seasoned SUL	Total Realized Loss	1-Year-Seasoned Cumulative Loss Vector	1-Year-Seasoned Remaining Limit	Tranche Cumulative Loss	Tranche Incremental Loss	PV of Tranche Incremental Loss
1	0.00%	0.00%	0.0003%	0.0003%	2.50%	0.00%	0.00%	0.00%
2	2.22%	3.29%	0.0003%	0.07%	2.50%	0.00%	0.00%	0.00%
3	9.40%	3.29%	0.0003%	0.31%	2.50%	0.00%	0.00%	0.00%
4	19.98%	3.29%	0.0003%	0.66%	2.34%	0.16%	0.16%	0.14%
5	30.98%	3.29%	0.0003%	1.02%	1.98%	0.52%	0.36%	0.32%
6	41.21%	3.29%	0.0003%	1.36%	1.64%	0.86%	0.34%	0.28%
7	50.40%	3.29%	0.0003%	1.66%	1.34%	1.16%	0.30%	0.24%
8	58.53%	3.29%	0.0003%	1.93%	1.07%	1.43%	0.27%	0.21%
9	65.67%	3.29%	0.0003%	2.16%	0.84%	1.66%	0.23%	0.17%
10	71.87%	3.29%	0.0003%	2.36%	0.64%	1.86%	0.20%	0.15%
11	77.19%	3.29%	0.0003%	2.54%	0.46%	2.04%	0.17%	0.12%
12	81.71%	3.29%	0.0003%	2.69%	0.31%	2.19%	0.15%	0.10%

Sum of Column H = Sum of PV of Tranche Incremental Loss = 1.73%

Gross Capital Charge = Sum of Column H/Initial Limit = 69.17%

[1] From Column B of the Loss Pattern Matrix (**Exhibit C.7**)

[2] $D = (A * B) + C$

[3] $E = \text{Max}[0,\text{Min}(2.50\%, 3.00\% - D)]$

[4] $F = \text{Min}[\text{Max}(0, D - 0.50\%), 2.50\%]$

[5] $G = F_t - F_{t-1}$

Calculation of 1-Year-Seasoned Premium Credit

The 1-Year-Seasoned Premium Credit is premium that is collected based on a fixed premium rate and the average UPB associated with the reference pool. **Appendix 3: Exhibit 7** shows the elements used in calculating the Premium Credit associated with the reinsurance contract. Explanations of the columns in **Appendix 3: Exhibit 7** follows:

Column A: 1-Year-Seasoned Remaining Limit

Description: This is the limit that remains after considering losses as calculated in **Appendix 3: Exhibit 6** (Column E). The premiums are earned as long as the 1-Year-Seasoned Remaining Limit is greater than 0.

Column B: Premium Rate

Description: This is the premium rate that is applied to the Remaining Amortization Pattern Vector (described later).

Column C: 1-Year-Seasoned Amortization Pattern Vector
Description: This is Column B in the Amortization Pattern Matrix (**Exhibit C.11**).

Column D: Remaining UPB
Description: This is the percentage of the original UPB that remains in the reference portfolio.

Column E: Remaining Amortization Pattern Vector
Description: This is the product of the 1-Year-Seasoned Amortization Pattern Vector and the Remaining UPB.

Column F: Incremental Premium Credit
Description: This is the Incremental Premium Credit based on the Premium Rate and the 1-Year-Seasoned Remaining Amortization Pattern Vector. Note that the premium payments cease by the 10^{th} year although the losses beyond ten years are recognized in the Gross Capital Charge calculation.
Formula: Column B * Column E

Column G: PV of Incremental Premium Credit
Description: This is the present value of the 1-Year-Seasoned Incremental Premium Credit (Column F). A 4% discount rate is used in the calculation to remain consistent with A.M. Best's calculation methodology for asset capital charges.
Formula: PV of Column F

The sum of the present value of the 1-Year-Seasoned Incremental Premium Credit (Column G) divided by the Excess of Loss Limit, 27.73%, is the 1-Year-Seasoned Premium Credit to the loss layer.

Exhibit 7: Example: 1-Year-Seasoned Premium Credit

Year	A[1] 1-Year-Seasoned Remaining Limit	B Premium Rate	C[2] 1-Year-Seasoned Amortization Pattern Vector	D Remaining UPB	E[3] Remaining Amortization Pattern Vector	F[4] Incremental Premium Credit	G PV of Incremental Premium Credit
1	-	-	-	-	-	-	-
2	2.50%	0.14%	97.30%	85.00%	82.70%	0.12%	0.11%
3	2.50%	0.14%	91.73%	85.00%	77.97%	0.11%	0.10%
4	2.34%	0.14%	85.98%	85.00%	73.08%	0.10%	0.09%
5	1.98%	0.14%	80.25%	85.00%	68.21%	0.10%	0.08%
6	1.64%	0.14%	74.72%	85.00%	63.52%	0.09%	0.07%
7	1.34%	0.14%	69.46%	85.00%	59.04%	0.08%	0.07%
8	1.07%	0.14%	64.48%	85.00%	54.81%	0.08%	0.06%
9	0.84%	0.14%	59.77%	85.00%	50.80%	0.07%	0.05%
10	0.64%	0.14%	55.31%	85.00%	47.01%	0.07%	0.05%
11	0.46%	0.00%	51.09%	85.00%	43.42%	0.00%	0.00%
12	0.31%	0.00%	47.08%	85.00%	40.02%	0.00%	0.00%

Sum of Column G = Sum of PV of Incremental Premium Credit = 0.69%

1-Year Seasoned Premium Credit = Sum of Column G/Initial Limit = 27.73%

[1] From Column E of the Calculation of 1-Year-Seasoned Gross Capital Charge (**Appendix 3: Exhibit 6**)

[2] From Column B of the Amortization Pattern Matrix (**Exhibit C.11**)

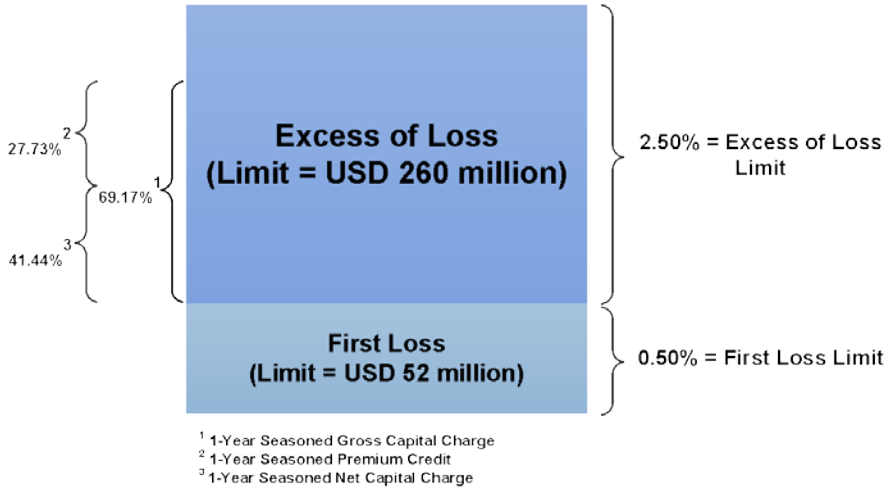
[3] E = C * D

[4] F = B *E

Calculation of 1-Year-Seasoned Net Capital Charge

The 1-Year-Seasoned Net Capital Charge, (41.44 % = 69.17% - 27.73%), is the 1-Year-Seasoned Gross Capital Charge minus the 1-Year-Seasoned Premium Credit. **Appendix 3: Exhibit 8** is a diagram of the 1-Year-Seasoned Net Capital Charge associated with the layers in the reinsurance tower.

Exhibit 8: Example: Diagram of 1-Year-Seasoned Net Capital Charge



Capital Charge Results Summary

The results of the capital charge calculation are shown in **Appendix 3: Exhibit 9** below. In addition, the exhibit extends the capital charge calculation to the third, fifth, and seventh year seasoning periods.

To extend to capital charge calculations, A.M. Best assumes the following:

- The UPBs in the third, fifth, and seventh years as a percentage of the original UPB are 55%, 35% and 10%, respectively.
- The cumulative realized losses in the third, fifth, and seventh years are 0.03%, 0.08% and 0.15%, respectively.
- The UPB Distribution Matrix is the same as the 1-Year-Seasoned UPB Distribution Matrix.

Some of these assumptions are based on currently observed reference pool behavior and may not reflect the true behavior of a pool of mortgages under stressed conditions.

Exhibit 9: Capital Charges Associated with Example over Various Seasoning Periods

	Initial	1-Year Seasoned	3-Year Seasoned	5-Year Seasoned	7-Year Seasoned[1]
Gross Capital Charge	76.10%	69.17%	42.02%	15.78%	0.00%
Premium Credit	35.24%	27.73%	15.02%	7.49%	1.42%
Net Capital Charge	40.86%	41.44%	27.00%	8.30%	-1.42%

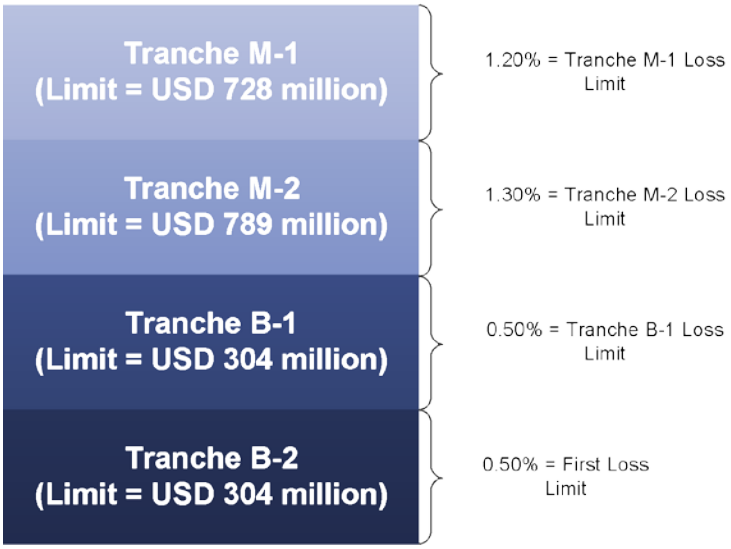
[1] All risk charges will be floored at 5% of the remaining limit.

Example 2

Calculating Capital Charges for another Variety of CRT Transactions

In Example 2, the calculation of the initial capital charge and the capital charge after one year of seasoning of the transaction associated with the VaR 99 level is shown. The example assumes that in a reference pool consisting of USD 60.7 billion of 30-year fixed rate mortgages with LTVs greater than 60% and less than or equal to 80%, a GSE desires to transfer an exposure of up to 3.00% of the UPB, after the first loss of 0.50% of UPB over a 12-year period. For the reinsurer providing the excess of loss coverage, this means it can cover a maximum exposure of USD 1.82 billion (USD 1.82 billion = 3.00% * USD 60.7 billion) associated with the mortgage reference pool on the first day in which it enters the reinsurance contract. Because the risks are broken out into different layers, reinsurers can choose which layer they will cover based on their risk appetite. **Appendix 3: Exhibit 10** shows the risk tower associated with this particular example of an insurance-based risk transfer program.

Exhibit 10: Example: Transaction Risk Tower



The exposure layers as shown in **Appendix 3: Exhibit 10**, with associated premiums based on the remaining limits is as follows:

- Tranche B-2 (First Loss): 0.50% of losses associated with the USD 60.7 billion reference pool
- Tranche B-1: 0.50% excess of 0.50% of losses associated with the USD 60.7 billion reference pool; premiums are 4.95% of remaining limit
- Tranche M-2: 1.30% excess of 1.00% of losses associated with the USD 60.7 billion reference pool; premiums are 3.25% of remaining limit
- Tranche M-1: 1.20% excess of 2.30% of losses associated with the USD 60.7 billion reference pool; premiums are 1.10% of remaining limit

In this example, the assumption is that the reinsurer is covering only the M-2 risk layer. The capital charge calculation is similar to the calculation in Example 1 except that 1) the premiums are calculated based on the remaining limits of each layer covered by a reinsurer, and 2) due to the structure of this particular type of reinsurance program, the risk limits are generally reduced sequentially, such that the highest layer receives all the scheduled amortizations and prepayments before the subordinate layers.

The average life of each tranche varies because the exposure of each tranche is paid down sequentially (from safest tranche to riskiest tranche) generally in proportion to the amortization and prepayment of the reference pool, under most economic conditions. Essentially, the reduction of the exposures is disproportionately advantageous to the top tranche because the higher-level exposures are reduced first, before the lower level exposures. For this reason, the expected life of the top tranche can be much shorter than that of the lower tranches. However, the VaR levels considered in the criteria procedure project losses so severe that the principal allocation tests (which

determine whether prepayments can accrue to the reinsurance layers) fail, thereby prohibiting principal prepayments to the reinsurance tranches. In this scenario, the expected life of these tranches is much longer than the expected life in what is considered a "normal" loss environment.

Initial Capital Charge

The Initial Gross Capital Charge

Calculation of the initial Gross Capital Charge for the M-2 layer first requires the initial SUL. As discussed earlier, deriving the initial SUL requires a cell-by-cell multiplication of the SUL Matrix (**Exhibit C.2**) and the UPB Matrix, which is assumed to be the same UPB Matrix as in **Exhibit C.1**. The sum of the cell-by-cell product of the SUL Matrix and the UPB Matrix, as described in the main body of this criteria procedure, is the initial SUL.

Given this initial SUL of 3.66%, the initial Gross Capital Charge calculation for the M-2 layer is shown in **Appendix 3: Exhibit 11** as the sum of Column H—the PV of Tranche Incremental Loss—divided by the Tranche M-2 Excess of Loss Limit. Thus, the Gross Capital Charge for the M-1 layer is 77.69%. The elements in **Appendix 3: Exhibit 11** for the Gross Capital Charge calculation are the same elements described in Example 1.

Exhibit 11: Initial Gross Capital Charge for M-2 Layer

Year	A[1] Initial Loss Pattern Vector	B Initial SUL	C Initial Total Realized Loss	D[2] Initial Cumulative Loss Vector	E[3] Initial Remaining Limit	F[4] Tranche Cumulative Loss	G[5] Tranche Incremental Loss	H PV of Tranche Incremental Loss
1	0.23%	3.66%	0.00%	0.01%	1.30%	0.00%	0.00%	0.00%
2	2.44%	3.66%	0.00%	0.09%	1.30%	0.00%	0.00%	0.00%
3	9.60%	3.66%	0.00%	0.35%	1.30%	0.00%	0.00%	0.00%
4	20.17%	3.66%	0.00%	0.74%	1.30%	0.00%	0.00%	0.00%
5	31.14%	3.66%	0.00%	1.14%	1.16%	0.14%	0.14%	0.12%
6	41.34%	3.66%	0.00%	1.51%	0.79%	0.51%	0.37%	0.30%
7	50.51%	3.66%	0.00%	1.85%	0.45%	0.85%	0.34%	0.26%
8	58.63%	3.66%	0.00%	2.15%	0.15%	1.15%	0.30%	0.22%
9	65.75%	3.66%	0.00%	2.41%	0.00%	1.30%	0.15%	0.11%
10	71.93%	3.66%	0.00%	2.63%	0.00%	1.30%	0.00%	0.00%
11	77.24%	3.66%	0.00%	2.83%	0.00%	1.30%	0.00%	0.00%
12	81.75%	3.66%	0.00%	2.99%	0.00%	1.30%	0.00%	0.00%

Sum of Column H = Sum of PV of Tranche Incremental Loss = 1.01%

Gross Capital Charge = Sum of Column H/Initial Limit = 77.69%

[1] From Column A of the Loss Pattern Matrix (**Exhibit C.7**)

[2] D = (A * B) + C

[3] E = Max[0,Min(1.30%, 2.30% - D)]

[4] F = Min [Max (0, D – 1.0%), 1.30%]

[5] $G = F_t - F_{t-1}$

The Initial Premium Credit

The Initial Premium Credit is premium that is collected based on a fixed premium rate for each risk layer and the limit of each risk layer. **Appendix 3: Exhibit 12** shows the elements used in calculating the Premium Credit associated with the reinsurance contract. The elements in **Appendix 3: Exhibit 12** for the Premium Credit calculation are the exact same elements that are described in Example 1 with the following exception: the premium credit relies only on the remaining limit of the risk layer, not on the remaining UPB of the mortgages in the reference pool.

For this reason, the Incremental Premium Credit shown in Column C of **Appendix 3: Exhibit 12** is simply the product of the Premium Rate and the Initial Remaining Limit. The Initial Premium Credit of 17.21% is the sum of Column D divided by the Tranche M-2 Excess of Loss Limit.

Exhibit 12: Initial Premium Credit Charge Calculation

Year	A Initial Remaining Limit	B Premium Rate	C[1] Incremental Premium Credit	D PV of Incremental Premium Credit
1	1.30%	3.25%	0.04%	0.04%
2	1.30%	3.25%	0.04%	0.04%
3	1.30%	3.25%	0.04%	0.04%
4	1.30%	3.25%	0.04%	0.04%
5	1.16%	3.25%	0.04%	0.03%
6	0.79%	3.25%	0.03%	0.02%
7	0.45%	3.25%	0.01%	0.01%
8	0.15%	3.25%	0.01%	0.00%
9	0.00%	3.25%	0.00%	0.00%
10	0.00%	3.25%	0.00%	0.00%
11	0.00%	3.25%	0.00%	0.00%
12	0.00%	3.25%	0.00%	0.00%

Sum of Column D = Sum of PV Incremental Premium Credit = 0.22%

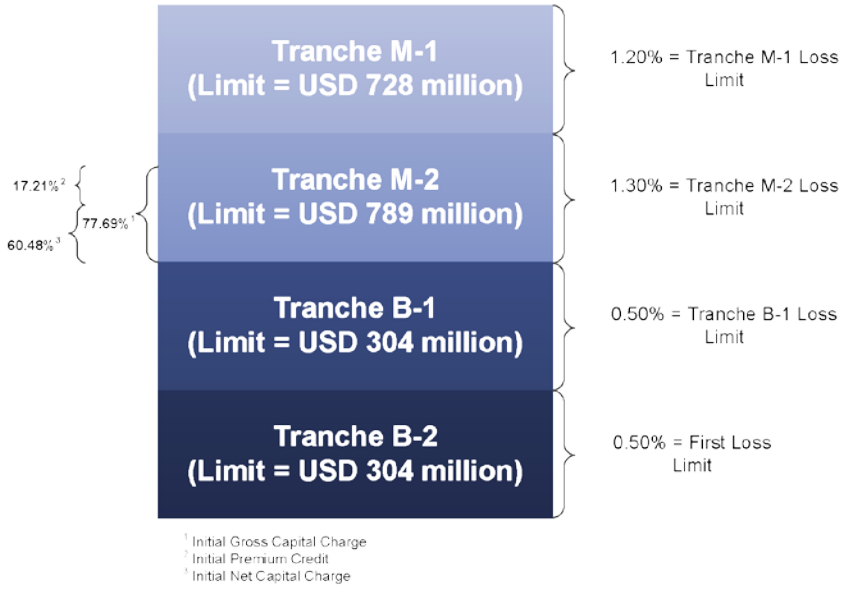
Initial Premium Credit = Sum of Column D/Initial Limit = 17.21%

[1] C = A * B

Calculation of Initial Net Capital Charge

The Initial Net Capital Charge, 60.48% (= 77.69% - 17.21%), is the Initial Gross Capital Charge minus the Initial Premium Credit. **Appendix 3: Exhibit 13** is a diagram of the Initial Net Capital Charge associated with the M-2 layer.

Exhibit 13: Example: Diagram of Initial Net Capital Charge



1-Year-Seasoned Capital Charge

The 1-Year-Seasoned Gross Capital Charge

Calculating the 1-Year-Seasoned Gross Capital Charge for the M-2 layer first requires the 1-Year-Seasoned SUL. The 1-Year-Seasoned SUL, in turn, requires the 1-Year-Seasoned UPB Matrix, the Remaining UPB (assumed to be 85% in this example), the corresponding Seasoning Factor (105% from **Exhibit C.6**), and the standard SUL (the sum of the elements in the cell-by-cell product of the 1-Year-Seasoned UPB Matrix and the SUL Matrix). Assuming that the 1-Year-Seasoned UPB Matrix is the same as shown in Example 1 (**Appendix 3: Exhibit 5**), the SUL is 3.67%. Therefore, the 1-Year-Seasoned SUL is calculated as follows:

$$\text{1-Year-Seasoned SUL} = 85\% * 105\% * 3.67\% = 3.29\%$$

Given the 1-Year-Seasoned SUL, the calculations for the 1-Year-Seasoned Gross Capital Charge are fairly routine and are shown in **Appendix 3: Exhibit 14** as 78.81%. Once again, the elements in **Appendix 3: Exhibit 14** for the Gross Capital Charge Calculation are the exact same elements that are described in Example 1.

Exhibit 14: 1-Year Seasoned Gross Capital Charge

Year	A[1] 1-Year-Seasoned Loss Pattern Vector	B 1-Year-Seasoned SUL	C Total Realized Loss	D[2] 1-Year-Seasoned Cumulative Loss Vector	E[3] 1-Year-Seasoned Remaining Limit	F[4] Tranche Cumulative Loss	G[5] Tranche Incremental Loss	H PV of Tranche Incremental Loss
1	0.00%	0.00%	0.0000%	0.00%	1.30%	0.00%	0.00%	0.00%
2	2.22%	3.29%	0.0003%	0.07%	1.30%	0.00%	0.00%	0.00%
3	9.40%	3.29%	0.0003%	0.31%	1.30%	0.00%	0.00%	0.00%
4	19.98%	3.29%	0.0003%	0.66%	1.30%	0.00%	0.00%	0.00%
5	30.98%	3.29%	0.0003%	1.02%	1.28%	0.02%	0.02%	0.02%
6	41.21%	3.29%	0.0003%	1.35%	0.95%	0.35%	0.34%	0.28%
7	50.40%	3.29%	0.0003%	1.66%	0.64%	0.66%	0.30%	0.24%
8	58.53%	3.29%	0.0003%	1.92%	0.38%	0.92%	0.27%	0.21%
9	65.67%	3.29%	0.0003%	2.16%	0.14%	1.16%	0.23%	0.17%
10	71.87%	3.29%	0.0003%	2.36%	0.00%	1.30%	0.14%	0.10%
11	77.19%	3.29%	0.0003%	2.54%	0.00%	1.30%	0.00%	0.00%
12	81.71%	3.29%	0.0003%	2.69%	0.00%	1.30%	0.00%	0.00%

Sum of Column H = Sum of PV of Tranche Incremental Loss = 1.02%

Gross Capital Charge = Sum of Column H/Initial Limit = 78.81%

[1] From Column B of the Loss Pattern Matrix (**Exhibit C.7**)

[2] D = (A * B) + C

[3] E = Max [0, Min (1.30%, 2.30% - D)]

[4] F = Min [Max (0, D – 1.0%), 1.30%]

[5] $G = F_t - F_{t-1}$

1-Year-Seasoned Premium Credit

The 1-Year-Seasoned Premium Credit is based on a fixed premium rate for the M-2 risk layer and the remaining limit of that risk layer. **Appendix 3: Exhibit 15** shows the elements used in calculating the 1-Year-Seasoned Premium Credit associated with the reinsurance contract. Once again, the elements in **Appendix 3: Exhibit 15** for the Premium Credit calculation are the exact same elements that are fully described in Example 1, with the following exception: unlike Example 1, the premium credit relies only on the remaining limit of the risk layer, not the remaining UPB of the mortgages in the reference pool. For this reason, the Incremental Premium Credit shown in Column C of **Appendix 3: Exhibit 15** is simply the product of the Premium Rate times the 1-Year-Seasoned Remaining Limit. The 1-Year Seasoned Premium Credit of 16.26% is the sum of Column D divided by the Tranche M-2 Excess of Loss Limit.

Exhibit 15: 1-Year-Seasoned Premium Credit

Year	A 1-Year-Seasoned Remaining Limit	B Premium Rate	C[1] Incremental Premium Credit	D PV of Incremental Premium Credit
1	-	-	-	-
2	1.30%	3.25%	0.04%	0.04%
3	1.30%	3.25%	0.04%	0.04%
4	1.30%	3.25%	0.04%	0.04%
5	1.28%	3.25%	0.04%	0.04%
6	0.95%	3.25%	0.03%	0.03%
7	0.64%	3.25%	0.02%	0.02%
8	0.38%	3.25%	0.01%	0.01%
9	0.14%	3.25%	0.00%	0.00%
10	0.00%	3.25%	0.00%	0.00%
11	0.00%	3.25%	0.00%	0.00%
12	0.00%	3.25%	0.00%	0.00%

Sum of Column D = Sum of PV of Incremental Premium Credit = 0.21%

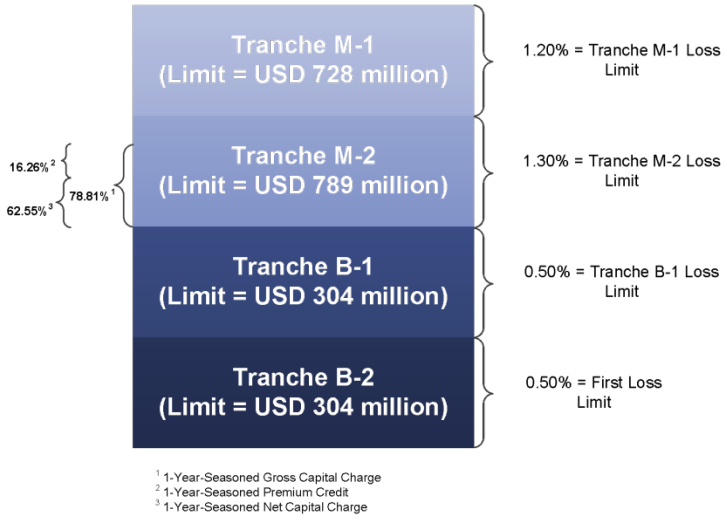
Initial Premium Credit = Sum of Column D/Initial Limit = 16.26%

[1] C = A * B

Calculation of 1-Year-Seasoned Net Capital Charge

The 1-Year-Seasoned Net Capital Charge, (62.55% = 78.81% - 16.26%), is the 1-Year-Seasoned Gross Capital Charge minus the 1-Year-Seasoned Premium Credit. **Appendix 3: Exhibit 16** is a diagram of the 1-Year-Seasoned Net Capital Charge associated with the M-2 layer.

Exhibit 16: Example: Diagram of 1-Year-Seasoned Net Capital Charge



Capital Charge Results Summary

The results of the capital charge calculation are shown in **Appendix 3: Exhibit 17**. In addition, the exhibit extends the capital charge calculation to the third, fifth, and seventh year seasoning periods.

To derive the capital charge calculations, A.M. Best made the following assumptions:

- The UPBs in the third, fifth, and seventh years as a percentage of the original UPB are 55%, 35% and 10%, respectively.
- The cumulative realized losses in the third, fifth, and seventh years are 0.03%, 0.08% and 0.15%, respectively.
- The UPB Distribution Matrix is the same as the 1-Year-Seasoned UPB Distribution Matrix.

Some of these assumptions are based on currently observed reference pool behavior and may not reflect the true behavior of a pool of mortgages under stressed conditions.

Exhibit 17: Capital Charges Associated With Example over Various Seasoning Periods

	Initial	1-Year Seasoned	3-Year Seasoned	5-Year Seasoned[1]	7-Year Seasoned[1]
Gross Capital Charge	77.69%	78.81%	65.15%	0.00%	0.00%
Premium Credit	17.21%	16.26%	10.03%	1.59%	0.00%
Net Capital Charge	60.48%	62.55%	55.12%	-1.59%	0.00%

[1] All-risk charges will be floored at 5% of the total remaining limit associated with each transaction after considering the layers covered by the reinsurer.

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METHODOLOGY AND CRITERIA

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