



Insurance Credit Rating Methodology

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Morningstar Insurance Credit Rating Methodology

Credit Score

Four quantitative pillars drive the insurance credit rating methodology:

1. **Insurance Business Risk Score:** This metric encompasses various measures of an insurer's business risk, as well as Morningstar's proprietary Economic Moat™ and Uncertainty Ratings. Weighting: 45%
2. **Insurance Debt Cushion Score:** This is an evaluation of an insurer's ability to cover debt and interest obligations with its balance sheet surplus and future profitability. Weighting: 25%
3. **Insurance Financial Risk Score:** This is a ranking based on an insurer's reserves leverage, debt-to-capital levels, and sensitivity to potential losses in its investment portfolio relative to other insurers. Weighting: 20%
4. **Distance to Default:** A quantitative model that estimates the probability of an insurer falling into financial distress based on the market value and volatility of its assets. Weighting: 10%.

We have set the weightings for each of the pillars such that our assessment of an insurer's credit risk is equally weighted between its business (Business Risk) and financial risk (Debt Cushion and Financial Risk). Because the Financial Risk score tends to be much more variable across insurers, we assign it a lower weighting than the Debt Cushion score. The weighted average of an insurer's score on all four pillars determines the model-recommended final credit score.

Underlying this rating is a fundamentally focused methodology, a robust, standardized set of procedures, and core financial risk and valuation tools used by Morningstar's securities analysts. Based on other qualitative and quantitative factors (e.g. positive/negative trends in various metrics, upcoming corporate actions, etc.), analysts and the credit rating committee will also discuss, and potentially adjust, the recommended score appropriately. All of our credit ratings are reviewed and approved by Morningstar's credit rating committee.

I. Insurance Business Risk Score

The **Business Risk Score** for insurers is similar to the scoring system used for nonfinancial companies. However, it also takes into consideration four insurance-specific considerations: regulatory environment, underwriting profitability, the volatility of underwriting profitability, and overall level of underwriting risk.

Two separate component scores converge to form our final Business Risk Score: country risk and company risk. Once we assign these two component scores, we weight them as follows to determine the overall Business Risk score for each insurer:

Country risk: 10% weighting
Company risk: 90% weighting

Country Risk

No matter how solid an insurer's balance sheet, if it operates in an unstable political or economic environment, it deserves a lower credit rating than a similar firm operating under more benign conditions. We capture our assessment of this consideration by assigning an insurer a score between 1 and 25, with 25 representing the most favorable, or most stable, macro environment rating for this measure.

Company Risk

Size (1-10 points)

We believe that size is relevant in assessing the credit quality of insurers. Large insurers generally have better access to capital markets, and they have more parties with stakes in their survival. We include separate accounts in the size calculation. While these assets are not held for the company's benefit, we believe they factor into the second consideration mentioned above. We rank each insurer on the basis of its asset size on the following scale:

- 1 point: Less than \$780 million
- 2 points: Between \$780 million and \$1.5 billion
- 3 points: Between \$1.5 billion and \$3.1 billion
- 4 points: Between \$3.1 billion and \$6.2 billion
- 5 points: Between \$6.2 billion and \$12.5 billion
- 6 points: Between \$12.5 billion and \$25 billion
- 7 points: Between \$25 billion and \$50 billion
- 8 points: Between \$50 billion and \$100 billion
- 9 points: Between \$100 billion and \$200 billion
- 10 points: Greater than \$200 billion

The breakpoints were set using a sample of publicly traded insurers, and targeting a normal distribution.

Economic Moat (1-10 points)

An essential part of our company analysis is the Economic Moat™ Rating, which encapsulates our view of a company's competitive advantage and ability to earn excess returns on capital.

- 1 point: No Moat
- 5 points: Narrow Moat
- 10 points: Wide Moat

Uncertainty Rating (1-10 points)

We assign a score based on a company's Equity Uncertainty Rating, as determined by our analysts.

- 1 point: Extreme
- 2.5 points: Very High
- 5 points: High
- 7.5 points: Medium
- 10 points: Low

Management Grade (1-5 points)

Our analysts assign each company we cover a management score of 1 to 5. The score captures our view of a company's transparency, financial prudence, and management credibility. We place particular emphasis on how conservative a management team is in managing its balance sheet, its policies with regards to share buybacks and dividends, its tendency toward M&A activity, and other factors affecting bondholders. We also consider whether the firm does what it says it is going to do with respect to the balance sheet: Has it surprised bond holders (in a bad way) in the past? Is management willing to make hard choices (cut the dividend, dilute equity, etc.) in order to maintain its financial health?

- 1 point: Poor
- 2 points: Below Average
- 3 points: Average
- 4 points: Above Average
- 5 points: Excellent

Regulatory Environment (1-5 points)

Our analysts assess the regulatory environment surrounding each insurer. For example, insurers with concentrated operations in states where the insurance commissioner is elected rather than appointed run a higher risk of negative regulatory outcomes to appease public opinion. We also make a distinction between personal and commercial lines, which stems from our belief that insurers operating in commercial lines run a lower risk of adverse regulatory outcomes to appease public opinion. Finally, we view Bermuda-based insurers favorably on this front, as the island's regulatory environment promotes financial strength relative to our insurance coverage universe in general. The Bermuda market includes a significant wholesale component, where regulation is driven less significantly by attempts to regulate rates, terms, and other conditions that impact the ultimate policyholder.

- 1 point: Extreme exposure to negative regulatory outcomes
- 2 point: Heightened exposure to negative regulatory outcomes
- 3 points: Baseline
- 4 points: Low exposure to negative regulatory outcomes
- 5 points: Negligible exposure to negative regulatory outcomes

Underwriting Profitability (1-10 points)

To assess underwriting profitability, we measure an insurer's combined ratio. A ratio of 100% means the insurer breaks even on underwriting. We use a modified combined ratio that includes fee income to make the measure relevant to life insurers, which typically generate a substantial amount of fee income. We use a 7-year average as the starting point for this score, as we believe this time period is sufficient to cover a cycle, and smooth out the effects of outlier results. We then adjust the measure accordingly to capture our expectations of future underwriting profitability.

We use the following scale to assess the insurer's underwriting profitability:

- 1 point: Greater than 130%
- 2 points: Between 120% and 130%
- 3 points: Between 110% and 120%
- 4 points: Between 105% and 110%
- 5 points: Between 100% and 105%
- 6 points: Between 95% and 100%
- 7 points: Between 90 and 95%
- 8 points: Between 80% and 90%
- 9 points: Between 70% and 80%
- 10 points: Less than 70%

Volatility of Underwriting Profitability (1-10 points)

We assess the historical range of an insurer's modified combined ratio to further gauge its underwriting practices and potential magnitude of losses. An insurer's 7-year track record is used as the starting point for this score. We then adjust the measure accordingly to capture our expectations of the future volatility of underwriting profitability.

- 1 point: Greater than 36 percentage points
- 2 points: Between 32 and 36 percentage points
- 3 points: Between 28 and 32 percentage points
- 4 points: Between 24 and 28 percentage points
- 5 points: Between 20 and 24 percentage points
- 6 points: Between 16 and 20 percentage points
- 7 points: Between 12 and 16 percentage points
- 8 points: Between 8 and 12 percentage points
- 9 points: Between 4 and 8 percentage points
- 10 points: Less than 4 percentage points

Overall Level of Underwriting Risk (1-20 points)

We assess the overall level of an insurer's underwriting risk, applying baseline scores for each subindustry (life, P&C, and reinsurance). Analysts and the credit rating committee may adjust away from these baseline scores for any relevant, firm-specific considerations. In cases where a company operates in different lines, the score is proportional to the amount of premiums collected in each line.

- 4 points: Reinsurance
- 10 points: P&C
- 17 points: Life

The Country Risk and Company Risk scores are weighted, respectively, and then added together, resulting in a possible range of Business Risk Scores between 0 (best) and 1 (worst).

II. Insurance Debt Cushion Score

The **Debt Cushion Score** measures the insurer's ability to cover its debt load and future interest payments with its balance sheet surplus and future profitability. It is derived in three steps:

1. Balance Sheet Surplus: This is calculated as follows, and uses data from the last historical year. We assess whether to adjust for reinsurance recoverables on a company-by-company basis:

$$\text{Investments} + \text{Cash} - \text{Reserves} - \text{Net Unearned Premiums} / \text{Premiums Receivable}$$

2. Total Profitability Available for Debt Service: This is calculated as follows, and is taken from our 5-year projections:

$$\text{Premiums} + \text{Fee \& Other Income} - \text{Operating Expenses} + \text{Investment Income} - \text{Taxes}$$

3. These two numbers are added together, and then divided by the debt balance plus projected interest expense, to calculate the Debt Cushion Score.

The Debt Cushion can be interpreted as primarily a leverage ratio, but it has more robust features. It is forward-looking, and not only takes into account both earnings power and leverage, but also allows its individual components to be dissected and analyzed.

- The higher the balance sheet leverage, the lower the score.
- The lower the future profitability ("earnings power"), the lower the score.
- The higher the debt level, the lower the score.
- For insurers with volatile claims exposure, analysts typically include a high-loss year in future projections, so the higher the claims volatility, the lower the score.

The rating score is expressed as 1 minus the inverse of the Debt Cushion ratio, with a range of scores between 0 (best) and 1 (worst).

A sample Debt Cushion calculation is shown below:

Debt Cushion Score	0.80	>>> raw score				
Surplus Calculation						
Investment Portfolio	14,713.4					
Cash	160.7					
Minus: Reserves	6,653.0					
Minus: Net Unearned Premiums/Premiums Receivable	1,718.1					
Balance Sheet Surplus	6,503.0					
Plus: Interim Investment Gains (Losses)						
Plus: Equity Capital Raised	-					
Other Adjustments	564.8					
Adjusted Balance Sheet Surplus	7,067.8					
Profitability Calculation						
		Dec-10	Dec-11	Dec-12	Dec-13	Dec-14
Premiums		14,543.4	15,297.6	16,653.7	17,883.1	19,025.2
Plus: Fee & Other Income		5.4	5.4	5.4	5.4	5.4
Minus: Operating Expenses		13,453.6	14,000.1	14,921.7	16,828.4	17,314.7
Operating Profitability		1,095.2	1,302.9	1,737.4	1,060.1	1,715.9
Plus: Investment Income		505.7	530.3	557.9	735.3	938.5
Minus: Tax Expense		493.3	576.3	729.9	561.0	840.4
Profitability Available For Debt Service		1,107.7	1,256.8	1,565.3	1,234.3	1,814.0
Debt Cushion Calculation						
Adjusted Balance Sheet Surplus	7,067.8					
Total Profitability Available for Debt Service	6,978.1					
Total Projected Surplus	14,045.9					
Debt Balance	2,177.2					
Interest Expense	617.2					
Total Debt Service	2,794.4					
Debt Cushion	5.03					
<i>Components</i>						
Balance Sheet Surplus	2.53					
Total Profitability	2.50					
Operating Profitability	1.70					
Investment Income	0.80					

The hypothetical insurance company shown above has an average overall Debt Cushion score (5.03). It derives the majority of its profitability through operating activities (1.7), which is a positive, as most insurance companies rely on investment income to augment low underwriting profitability. The stronger operating profitability, however, is mostly offset by lower-than-average marks for investment income (0.8) and balance sheet surplus (2.53). In this case, "other adjustments" include reinsurance recoverables.

III. Insurance Financial Risk Score

The **Insurance Financial Risk Score** is a quantitative assessment of an insurer's credit health based on three specific components:

1. Reserves Leverage: We evaluate *reserves-to-capital* and *premium-to-capital* ratios.
 - a. *Reserves-to-capital* gauges the exposure of the firm's capital to unexpected claims losses.
 - b. *Premium-to-capital* measures the insurer's exposure to underwriting mistakes relative to its capital position.
2. Debt / Capital: This traditional measure captures an insurer's financial leverage.
3. Investment Portfolio Sensitivity Analysis: For this measure, we apply a one standard deviation loss rate to each asset class in the company's investment portfolio. For traditional asset classes like corporate debt and equities, the loss rates are provided by Ibbotson. For newer classes like ABS, loss rates have been estimated from recent experience. We sum the losses from each asset class, and express that total loss as a percentage of the insurer's capital base. Doing so allows us to measure both the riskiness of the company's asset allocation, and the sensitivity of the balance sheet to investment losses.

The loss rates applied to the various asset classes are listed below:

Investment Portfolio Assumed Loss Rates	
U.S. Government Obligations	5.7%
Municipal Bonds	6.8%
Other Government Obligations	7.0%
Corporate Debt	8.3%
Residential Mortgage-Backed Securities (Agency)	6.0%
Residential Mortgage-Backed Securities (Non-Agency)	11.5%
Commercial Mortgage-Backed Securities	10.5%
Non-Mortgage Asset-Backed Securities	7.3%
General Asset-Backed Securities	8.8%
Preferred Stock	14.4%
Equity	20.5%
Short-Term Investments	5.7%

Analysts also have the ability to add additional, nonstandard asset classes to accommodate more unique investment portfolios and special situations.

The Insurance Financial Risk Score is expressed as the following:

$$\frac{1}{0.25 * (\text{Reserves/Capital}) + 0.25 * (\text{Premium/Capital}) + 3 * (\text{Debt/Capital}) + 2.5 * (\text{InvestmentSensitivityScore})}$$

We have used different multiples for each ratio, as each ratio operates on a different scale. For instance, debt-to-capital, by definition, cannot exceed 1, but reserves-to-capital is typically much higher than 1 for most insurers. The multipliers were chosen so that each measure contributes roughly equally to the overall score, on average. We set the range of scores between 0 (best) and 1 (worst), such that each underlying pillar's raw score (Business Risk, Debt Cushion, Financial Risk, and Distance to Default) is on a consistent scale.

IV. Distance to Default Score

Merton describes the rationale and methodology for structural models of default¹. Suffice it to say that the underlying premise in such models is that default occurs when the market value of the firm's assets falls below a certain level of the firm's liabilities, or "default barrier". Since the market value of the firm's assets cannot be observed, a modified European call option for dividend-paying stocks was used to establish a relationship between the market value of the firm's assets, its volatility, and the firm's market value of shareholders' equity.

As long as the firm's market value of assets is less than the book value of its liabilities, the market value of shareholders' equity is zero, and the firm's assets are claimed by bondholders. On the other hand, if the market value of the firm's assets exceeds the firm's liabilities--assumed to be equivalent to the notional principal of a risk free zero-coupon bond--shareholders receive the residual value, while their payoff increases linearly with the market value of the firm's assets.

The calculation employed in the distance to default measure for insurers is identical to that used for nonfinancial firms. However, the interpretation and impact on the score differs slightly, as the breakpoints and the contribution to the final score minimize the impact of small differences in relatively healthy scores. A poor DTD score acts as a flag and can materially impact the final rating.

The following reveals the translation of the raw distance to default score to the score applied in the rating:

- 0: Less than -1
- 0.1: Between -0.99 and -0.5
- 0.2: Between -0.49 and -0.25
- 0.3: Between -0.24 and 0
- 0.4: Between 0.01 and 0.25
- 0.5: Between 0.26 and 0.5

¹ Merton, R. C., On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, Journal of Finance, 29 (1974), 449-70.

- 0.6: Between 0.51 and 1
- 0.7: Between 1.01 and 2
- 0.8: Between 2.01 and 4
- 0.9: Between 4.01 and 8
- 1: Greater than 8.01

Recommended Credit Ratings

The weighted scores from each of the four components (45% for Insurance Business Risk, 25% for Insurance Debt Cushion, 20% for Insurance Financial Risk, and 10% for Distance to Default) are added to achieve a final score ranging from 0 (best) to 1 (worst). This score is multiplied by 100 and then mapped to the following alpha distribution:

Alpha Score	Description	Minimum	Maximum
AAA	Negligible Risk	0	0
AA+	Very Low Risk	1	5
AA		6	10
AA-		11	15
A+	Low Risk	16	20
A		21	25
A-		26	30
BBB+	Medium Risk	31	35
BBB		36	40
BBB-		41	45
BB+	High Risk	46	50
BB		51	55
BB-		56	60
B+	Very High Risk	61	65
B		66	70
B-		71	100
CCC	Currently Very High Risk		
CC	Currently Extreme Risk		
C	Imminent Payment Default		

Based on relevant firm-specific conditions (including an assessment of the timing to potential default), the credit rating committee will make an assessment of whether an insurer should receive a final alpha score below B-. All of our ratings are reviewed and approved by the credit rating committee.