MOODY'S INVESTORS SERVICE

RATING METHODOLOGY

Life Insurers Methodology

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This rating methodology replaces the *Life Insurers Methodology* published in August 2022. In this update, we have added "Consideration of Accounting Changes: IFRS-17 and US GAAP LDTI" in the "Scorecard Framework" sub-section of "Our General Framework for Rating Life Insurance Companies," which describes that we may adjust factor scores as a result of these accounting changes.

Introduction

In this rating methodology, we explain our general approach to assessing credit risk for issuers in the life insurance industry globally, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector.

We discuss the scorecard used for this sector. The scorecard[1] is a relatively simple reference tool that can be used in most cases to approximate credit profiles in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to companies in this sector. The scorecard factors may be evaluated using historical or forward-looking data or both.

We also discuss other rating considerations, which are factors that may be important for ratings but are not included in the scorecard, usually because they can be meaningful for differentiating credit profiles, but only in some cases. In addition, some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[2] Furthermore, since ratings are forward-looking, we often incorporate directional views of risks and mitigants in a qualitative way.

As a result, the scorecard-indicated outcome is not expected to match the actual rating for each company.

[1] In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

[2] A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Our presentation of this rating methodology proceeds with (i) the scope of this methodology; (ii) our general framework for rating life insurance companies; (iii) a discussion of the scorecard factors; (iv) other scorecard considerations; (v) assessing support; (vi) other rating considerations; (vii) assigning entity-level and instrument ratings; (viii) methodology assumptions; and (ix) limitations. In the appendices, we describe (i) how we use the scorecard; (ii) our approach to rating Takaful insurers; (iii) how we analyze composite firms active in both property and casualty (P&C) and life insurance; (iv) how we incorporate stress testing in our analysis; and (v) a description of the mechanics of the Moody's Capital Tool.

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Scope of This Methodology

Long-term Insurance Financial Strength Ratings (IFSRs[3]) for life insurers are assigned at the legal entity level to insurance operating companies.

In addition to long-term IFSRs, we may assign short-term IFSRs[4] to provide institutional investors and financial intermediaries with opinions about an insurance company's ability to pay punctually its short-term senior policyholder claims and obligations. We use the same prime rating symbols for these ratings that we use for other short-term instruments and obligations.[5]

The methodology also applies to the life insurance business of composite insurers, which engage in other insurance operations in addition to life insurance (please see Appendix 3). Other ratings that may be assigned within the group (e.g., senior unsecured debt issued by the insurer or its parent company) are typically determined in relationship to the IFSRs of the group's main subsidiaries.[6]

Our General Framework for Rating Life Insurance Companies

Our general approach to assessing the credit risk of the various obligations of life insurance companies is based on an assessment of the financial strength of the main operating units within that organization. This methodology is, therefore, intended primarily to explain our approach to assigning IFSRs to operating insurers. Specifically, the methodology describes our general approach to assigning a financial strength rating of a standalone entity before consideration of support. We also describe how we incorporate affiliate[7] support to move from the standalone credit profile to the assignment of the IFSR.[8]

In rating life insurers on a standalone basis, we focus on qualitative and quantitative characteristics in relation to the company's business and financial profile, as well as on the operating environment in which it conducts its business. Regulatory, accounting and product characteristics can vary widely from country to country, and our rating approach considers these differences.

Business Profile	Financial Profile	Operating Environment
Factor 1: Market Position and Brand	Factor 4: Asset Quality	Insurance Systemic Risk Factor
Factor 2: Distribution	Factor 5: Capital Adequacy	Insurance Market Development Factor
Factor 3: Product Focus and Diversification	Factor 6: Profitability	
	Factor 7: Liquidity & Asset/Liability Management	
	Factor 8: Financial Flexibility	

Source: Moody's Investors Service

In the following sections, we describe the key factors underlying an insurer's business and financial profiles, as well as factors that affect its operating environment. We explain our general approach for scoring each

[3] IFSRs are opinions of the ability of insurance companies to pay punctually senior policyholder obligations and claims and also reflect the expected financial loss suffered in the event of default. Please refer to *Rating Symbols and Definitions* for more details; a link can be found in the "Moody's Related Publications" section.

[4] Please refer to our methodology that discusses global short-term ratings. A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

[5] Please refer to *Rating Symbols and Definitions* for more details; a link can be found in the "Moody's Related Publications" section.

[6] Please see our cross-sector methodology that discusses how we assign instrument ratings for insurers. A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

[7] "Affiliate" includes parents, cooperative groups and significant investors.

[8] The standalone credit profile is an opinion of an insurer's standalone intrinsic strength, absent any extraordinary support from an affiliate or government. An analytic unit generally comprises all the operating companies with common analytic and credit characteristics operating in a single country or geographic region. An analytic unit could include a group of companies operating outside of a single geographic region if significant inter-company support arrangements exist, or if there is a high degree of integration in the management, systems, distribution and operations of the group of companies.

scorecard factor and show the weights used in the scorecard. We also provide a rationale for why these scorecard components are meaningful for an insurer's standalone credit profile, what the relevant financial metrics are in analyzing these factors, including regional/supplemental metrics, and how we interpret those metrics. Overall country risk and characteristics of the local insurance operating environment also play an important role in our rating analysis as do other factors, such as management, governance, and accounting policy and disclosure.

We employ the same analytic approach to evaluating life insurance companies worldwide, incorporating the business, financial profile and operating environment dimensions discussed in this methodology. However, each of the various regions has its own market nuances that reflect the local political, social and economic climates. These include the regulatory environment, governance and capital structures,[9] taxation, accounting rules and public reporting requirements, and laws and the litigation environment. If these regional factors are not already captured in the Operating Environment component, we may incorporate them qualitatively into our analysis.

Life insurance groups often consist of subsidiaries operating in more than one geographic region. Where this is the case, we typically consider the largest and most significant units of the group (in terms of revenues and earnings, capital, assets or other key metrics), and, where relevant, apply the quantitative metrics in the methodology to this group of key subsidiaries to arrive at weighted average ratios. In some instances, this group of key subsidiaries may be less than 100% of the analytic unit. Also, in some instances, more than one group of subsidiaries, called analytic units, exist within a life insurance group. Each analytic unit is typically analyzed separately.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. Many of the financial ratios are based on data for the most recent year or are calculated based on a five-year average. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historical and expected future performance for individual periods or periods of several years or more.

Scorecard Framework

This methodology includes a scorecard, which is used in our analysis and reflects our opinion and judgment on each of the broad factors within the rating methodology. Information we use in the scorecard may include proprietary, non-public data. Business Profile factors represent 35% of the overall fixed scorecard weights, and the Financial Profile factors represent 65%; however, weights shown for each factor in the scorecard represent an approximation of their importance for rating decisions, and actual importance may vary substantially. The Operating Environment component, described later in more detail, has a variable weight depending on the assigned score.

The scorecard calculates an unadjusted score for each factor, and analysts typically populate the scorecard with an adjusted score, which can range from Aaa to C. The score is derived from the raw metrics (see Appendix 1), and the adjusted score is based on analytical judgment. The scorecard also factors in the operating environment. We also consider a pre-defined severe stress case scenario.

[9] See Appendix 2 for a discussion of Takaful insurers.

Consideration of Accounting Changes: IFRS 17 and US GAAP LDTI

Insurers reporting under IFRS or US GAAP may be subject to IFRS 17 or long duration targeted improvements (LDTI) under US Generally Accepted Accounting Principles (US GAAP),* respectively, depending on the jurisdiction in which an insurance company reports.

The application of IFRS 17 or LDTI may significantly affect the overall presentation of financial statements as well as certain reported amounts, some of which are inputs to scorecard metrics. These inputs include shareholders' equity, insurance liabilities, revenue and net income.

Scorecard metrics whose inputs are affected by the application of IFRS 17 or LDTI may result in values and unadjusted scores that are significantly different from what would have otherwise resulted. The application of the new accounting standards are not expected to directly affect the underlying economic risk or expected cash flows of in-force business. In addition, for most regulatory jurisdictions, the standards do not directly affect regulatory financial reporting and regulatory capital.

Thus, qualitative adjustments to factor scores of affected metrics will, for a period of time, be particularly important for certain insurance companies, due to limited comparability with prior accounting periods** or with insurers that follow different accounting standards. These adjustments fall within the scope of our overall approach to analyzing life insurers where we may adjust factor scores to reflect our analytical perspective of credit risk.

As described in the "Discussion of the Scorecard Factors" section, we may consider supplemental metrics in our analysis, including metrics calculated or estimated from financial statements. For instance, we may place greater emphasis on leverage excluding accumulated other comprehensive income (AOCI) in assessing financial flexibility and on regulatory capital levels (e.g., Solvency II) in assessing capital adequacy.

* Accounting Standards Update (ASU) 2018-12 is commonly referred to as Long Duration Targeted Improvements, or LDTI, and is effective January 1, 2023, for large US Securities and Exchange Commission (SEC) insurance filers. The LDTI update includes accounting changes for long-duration insurance contracts under US Generally Accepted Accounting Principles (US GAAP), particularly for certain life insurance products. IFRS-17 Insurance Contracts is commonly referred to as IFRS 17 and is effective as early as January 1, 2023, for entities reporting under the International Financial Reporting Standards (IFRS) framework; effective dates depend on the jurisdictions in which a firm reports. The IFRS 17 standard establishes the principles for the recognition, measurement, presentation and disclosure of insurance contracts.

** Specifically, accounting periods for which metric calculations are based on financial reporting prior to the adoption of IFRS 17 and LDTI.

To arrive at the standalone credit profile for the analytic unit, we may assess the company's management, governance and risk management, accounting policy and disclosures, sovereign and regulatory environment as well as any special rating situations. To move from the standalone credit profile to the rating, we consider any explicit or implicit support from affiliates, as well as other rating considerations. Scorecard factors and weights can be found below.

Life Insurers Rating Methodology Scorecard Factors and Weights[10]

	Aaa	Aa	A	Baa	Ba	B	Caa and Lower	Score	Adjusted Score
Business Profile									
Market Position and Brand (15%)									
Relative Market Share Ratio (relative to industry average)									
Distribution (10%)									
Distribution Control									
Diversity of Distribution									
Product Focus and Diversification (10%)									
Product Risk									
Life Insurance Product Diversification									
Financial Profile									
Asset Quality (10%)									
High Risk Assets (HRA) as % of Shareholders' Equity									
(Goodwill & Intangibles) as % of Shareholders' Equity									
Capital Adequacy (15%)									
(Shareholders' Equity minus 10% HRA) as % of (Total Assets minus 10% HRA)									
Profitability (15%)									
Return on Capital (ROC-5 yr. avg.)									
Sharpe Ratio of ROC (5-yr. avg.)									
Liquidity and Asset/Liability Management (10%)									
Liquid Assets as % of Liquid Liabilities (%)									
Financial Flexibility (15%)									
Adjusted Financial Leverage									
Total Leverage									
Earnings Coverage (5-yr. avg.)									
Cash flow Coverage (5-yr. avg.)									
Operating Environment									
Preliminary Standalone Outcome									

Source: Moody's Investors Service

Notching Factors and Support Considerations

- Management, Governance and Risk Management
- Accounting Policy and Disclosures
- Sovereign and Regulatory Environment
- Standalone Credit Profile
- Nature and Terms of Explicit Support
- Nature and Terms of Implicit Support
- Scorecard-Indicated Outcome

[10] See Appendix 1 for sub-factor weight detail.

Standard Adjustments in the Analysis of Financial Statements

The financial statements we use in our analysis generally have a consistent basis of accounting depending upon the region (e.g., Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS)). Different accounting conventions can affect – sometimes materially – comparisons among companies operating in different jurisdictions. Accordingly, we make standard and non-standard adjustments, as described below. The qualitative analysis that we employ may also consider accounting system differences, including when we do not have sufficient information to make specific adjustments. To the extent that other accounting conventions are used by a company, we may also use that data for a more direct comparison to global peers.

All of the quantitative credit metrics incorporate our standard adjustments to income statement, cash flow statement and balance sheet amounts for items such as underfunded pension obligations and operating leases. We may also make other analytical adjustments that are specific to a particular company.

For an explanation of our standard adjustments, please see the cross-sector methodology that describes our financial statement adjustments in the analysis of financial institutions. A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

In addition to the standard adjustments we may also make non-standard adjustments to financial statements for other matters to better reflect underlying economics and improve comparability among peers. For example, we may adjust financial statements in order to reflect estimates or assumptions that we believe better reflect an issuer's sustainable forward-looking credit profile. We may also make non-standard adjustments where local GAAP or the interpretation of IFRS in a particular country or region differs from the norm in an area that would affect our analysis.[11] Our adjustments may incorporate non-public information.

Incorporating Scenario Analysis and Stress Testing for Life Insurers

Developing a forward-looking assessment of an insurer's financial performance under an expected case and stress case is usually important to our assessment of financial strength. Our expectations of an insurer's results over the medium term reflect our opinion of current and projected market conditions. The nature of an insurer's operating and business profile, as well as its product offerings, means that we may have differing levels of confidence in a particular expected case or stress case scenario.

In addition, our credit analysis includes an assessment of the downside risks faced by insurers and their creditors. Because challenging economic and financial events, as well as pandemics , do occur – with potentially adverse effects on the financial and business profiles of life insurers – we typically include an analysis of stress scenarios as part of our analysis.

Stress analysis can take different forms. To assess the impact of stress on an insurer, we may employ a number of different approaches as each situation dictates, including assessing insurers' own -risk modeling frameworks, and performing pre-defined and ad hoc scenario analysis. Please refer to Appendix 5 for a discussion of the pre-defined stress scenarios we use in our stress test. Our ratings reflect an expected scenario, but also take into consideration the impact of the pre-defined stress scenarios on a company's credit profile. We generally expect an insurer to be able to withstand moderate stress while maintaining a credit profile consistent with its assigned rating and that the application of the pre-defined stress scenarios (the stress test) would result in a credit profile deterioration of no more than a few notches below the assigned rating.

[11] See our cross-sector rating methodology on financial statement adjustments in the analysis of financial institutions for a discussion of our adjustments. A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

Discussion of the Scorecard Factors - Business Profile

Factor 1: Market Position and Brand

Why It Matters

Market position, brand, and franchise strength are key factors that represent a company's ability to develop and sustain competitive advantages in its chosen markets. Market position incorporates the firm's sustainable advantages in its key lines of business and considers market share; barriers to entry; scale advantages and their translation to expenses; control over pricing; and control of distribution. Additionally, a firm's brand encompasses a company's image and reputation in the market, brand recognition and perception by distributors and end-consumers, and customer loyalty, as demonstrated by retention rates, distribution costs, and customer purchases of multiple products.

A company's sustainable competitive advantages--the strength of its competitive position and its prospects for organic growth--can have a direct bearing on its future profitability and ability to generate capital internally. In addition, an insurer with a strong market position, brand, and competitive advantage is better able to withstand prolonged difficult market conditions and to capitalize on new, potentially profitable opportunities that may develop in the future. We believe such companies are more likely to meet their obligations through varied economic periods. Conversely, a weak business franchise can indicate financial stress for a company if it generates low or erratic core profitability, and may lead management to enter unfamiliar businesses, take on new and unfamiliar risks, or leverage the company to a greater extent.

Relevant Metrics

Relative market share ratio (premiums and deposits relative to the average industry premiums and deposits by country)[12]

Interpreting the Metrics

We believe that an insurer's relative and absolute size within a given insurance market is highly correlated with its market position and brand, although we believe that absolute size becomes less meaningful the more concentrated a marketplace is. The largest companies in terms of assets, premiums, and capital within a given local region tend to have higher scores for this factor. Conversely, smaller companies tend to have lower scores for this factor. We note that premiums and deposits are important to credit profiles, as companies with greater premium volume tend to have greater pricing power.

That said, the value of absolute size may differ based upon the lines of business a company writes. Absolute size/market share is important for companies focused on products where economies of scale are most advantageous. Important in the evaluation of a company's market share is the company's ability to exercise underwriting and pricing discipline and effectively utilize appropriate risk management in managing its business growth. Aggressive growth in an intensely competitive line of business or specific product can be a negative. Further, significant market share within a smaller niche segment may be a positive, depending upon a company's approach to the risks of the business. Relative measures, such as retention rates and product cross-selling, are also considerations. There may be instances where a company's ability to execute in a key market selling high value-added and low risk products may be strong enough to offset a lower overall relative market share score.

In assessing market position and franchise strength, we typically consider a company's position in its given market(s) and its absolute size within a global context. An insurer may have a significant market share in its given region, but if, for example, it operates solely in a country with a relatively small and/or immature

[12] Where available and when material, the average premium/deposit ratio is determined by dividing 90% of the industry's premiums/deposits by the number of companies that represent 90% of the industry's premiums/deposits. For insurers that have substantial operations in more than one country, we calculate a weighted average based on the result of each country in which the insurer operates. Estimates may be necessary in markets where data are less readily available.

insurance industry, then its product offerings are exposed to a narrowly focused set of legal, political, and economic risks. Such insurers would typically write relatively small amounts of premium compared to larger global companies, with relatively little global brand recognition and ability to meaningfully underwrite outside of their immediate region, although the stronger the barriers to entry in a company's main market(s), the greater the emphasis placed on market share. In contrast, another insurer may have a much lower relative market share, but may be twice as large and operate in a much more diversified, larger and mature marketplace. Furthermore, there are groups that operate in multiple countries within a region whose market share metrics may not fully reflect their transnational footprint. Groups that are major players in a number of mature markets are typically also large in size, and their considerable financial resources and strong brands provide greater flexibility to exit markets and underwrite new products in different regions should a particular operating environment become difficult.

Summary of Relevant Metrics – Relative Market Share Ratio

	Aaa	Aa	A	Baa	Ba	B	Caa
Relative Market Share Ratio (relative to industry average)	≥ 3x	3x> x > 1.5x	1.5x≥ x > 0.5x	0.5x≥ x > 0.25x	0.25x≥ x > 0.15x	0.15x≥ x > 0.05x	≤ 0.05x

Source: Moody's Investors Service

Factor 2: Distribution

Why It Matters:

The methods and mechanisms by which an insurance company delivers its products are another fundamental aspect of the company's business and credit profile. A company's access to distribution channels, its ability to control those channels, and its relationship with its producers relate directly to a company's creditworthiness and standing in the market, as well as its ability to grow revenues, to retain business, to align its distribution with specific product/customer segments, and to control its costs.

Relevant Metrics

Distribution Control – Influence upon/control of distribution channel

Diversity of Distribution - Number of distribution channels with more than 10% of premiums/deposits

Interpreting the Metrics

A company's control and influence over a distribution channel--whether a captive/controlled or independent third-party channel--in achieving its objectives of business production, persistency, and profitability (e.g., expenses associated with distribution) is an important factor in the assessment of the insurer's long-term competitive advantage, franchise strength, and creditworthiness. The diversity in a company's distribution channels can mitigate its dependence on specific channels and its vulnerability to sales disruption. However, we recognize that not all distribution channels are equal in terms of their beneficial impact on an insurer's credit profile.

In assessing a company's distribution effectiveness, we typically consider the various distribution channels and the suitability of each to the products being sold in specific customer segments. The costs involved in developing and maintaining a specific distribution channel, as well as the retention and productivity of distributors, and - by extension - its ultimate customers (particularly in times of stress), are often key considerations in the evaluation of the channel's success. Recruitment of new agents and distributors and refreshing of the distribution force, which is subject to attrition, is a key area of our evaluation. Management of distribution channels is typically assessed as well.

The exclusive or non-exclusive nature of various distribution relationships may pose specific opportunities or challenges for an individual company. In some regions and for certain product lines, distribution may actually be controlled by third parties, which could limit an insurer's ability to conduct business on its own terms. For other insurers, particularly those using exclusive agents, the distribution system may be the group's defining competitive advantage. For still others, their distribution strategy may provide flexibility in terms of cost and business volume management.

The assessment of a company's distribution diversity considers its depth and breadth of distribution channels; the attractiveness of the company to distribution channels (both in a normal operating environment, and in times of company-specific and/or generalized market stress); the company's ability to easily expand its distribution channels on a profitable basis; and its vulnerability to disruption within a single channel. There may be instances where a company's distribution control is so strong and compelling that it compensates for lesser diversity of distribution. For companies whose business is in runoff mode due to some company-specific stress, the lack of distribution access may also be a consideration.

Summary of Relevant Metrics —Distribution

	Aaa	Aa	A	Baa	Ba	B and Below
Distribution Control	Owned captive or controlled distribution system whose high cost structure is aligned with high value products; excellent distribution productivity and retention that leads to persistent, stable, and profitable business.	Blend of controlled distribution and preferred position in multiple unaffiliated independent third-party distribution sources; captive agent distribution systems' higher cost structure is aligned with high value products; above-average distribution productivity and retention leads to persistent, stable, and profitable business; relative strength in negotiating distribution contracts and costs with third parties. Not overly dependent on one distributor for sourcing of business - distribution at company is aligned by product type and costs; able to easily expand distribution and channel- penetration on a profitable basis; attractive provider to new distribution channels.	Blend of controlled distribution and unaffiliated independent third-party distribution sources; controlled distribution systems' high cost structure not effectively aligned with commodity-like products being sold; less preferred position with third-party distributors who are less loyal, resulting in higher surrender rates, increased liquidity concerns and more volatile/less profitable business; able to align third-party distribution with type of products sold, but less negotiating power in arranging distribution contracts and costs.	Unaffiliated independent third-party distribution, not likely to have preferred position with third-party distributors; increased liquidity concerns, increased movement of business if concerns about company's financial position, able to align distribution with type of products sold, but scale and other issues leave company in poor position negotiating distribution contracts and costs.	Unaffiliated independent third-party distribution, marginalized position with third-party distributors; increased liquidity concerns, increased movement of business with concerns about company's weak financial position, may not be able to align distribution with type of products sold, and scale and other issues leaves company in poor position negotiating distribution contracts and costs.	Company has lost access to most or all of its unaffiliated third-party distribution channels and sales production capabilities, due to the run-off of its business resulting from concerns about the company's viability/ financial position.
Diversity of Distribution	Greater than 5 distinct distribution channels each with > 10% of premiums; no concentration in any one channel for sourcing of business; strong alignment by product type and costs; an anchor product provider sought out by new distribution channels.	4 distinct distribution channels with >10% of premiums; no significant dependence on any one distributor for sourcing of business; distribution at company is aligned by product type and costs; able to easily expand distribution on a profitable basis; attractive provider to new distribution channels.	3 distinct distribution channels with >10% of premiums; more dependence on a few sources of distribution; position within third parties is modest; more vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; capable of adding some new distribution outlets on a profitable basis.	Dependence on 2 distribution channels; vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; difficulty in attracting new distributors on a profitable basis.	Dependence on a single distribution channel for all premiums; very vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; unable to attract new distributors.	Company has no active distribution channels; business has either purposely been put into run-off or distribution access has shut down due to company-specific financial stress.

Source: Moody's Investors Service

Factor 3: Product Focus and Diversification

Why It Matters:

A company's chosen lines of business and product offerings are a major influence on its risk profile and creditworthiness, because specific product segments exhibit different volatility and competitive attributes.[13] The extent of a product's risk is often not fully known and understood at the time the product is first introduced and marketed, and underpricing can be an unintended outcome. Product risk appears in many forms and can have significant adverse effects on a company's earnings and capital adequacy.

Diversification, both by product and by region, generally leads to higher scores for this factor. Diversification in earnings, product and geography can reduce the volatility of a firm's earnings, capital, and cash flow, promoting more efficient use of capital resources. Diversification outside of life insurance into ancillary businesses, such as asset management, if appropriately managed and within reasonable limits, can also help the stability of earnings and thus reduce overall earnings volatility. That said, if a company enters a new line of business without the appropriate underwriting and risk management expertise, diversification would typically be viewed as a credit negative.

Product Risk

How We Assess It:

In this qualitative sub-factor, we assess the inherent product risk in the company's particular business mix, and the assessment is informed by the percentage of low-risk reserves to total reserves.

In assessing the risk inherent to the business mix, we consider the products marketed and note that certain products exhibit lower volatility and risk than others. We also typically consider whether the risks in specific products can be mitigated or exacerbated by a particular company's risk management practices, as well as its market position, distribution, underwriting and pricing practices. However, a concentration in more volatile lines of business/products would be viewed as a risk to policyholders/creditors, irrespective of the overall quality of the firm's risk management and underwriting function. A company's response to macroeconomic changes, industry/market conditions, regulatory issues, and competitive pressures with respect to its chosen products and markets is also likely to influence its credit profile.

The assessment of product features incorporates the insurer's ability to transfer risk to policyholders, as well as the specific risks embedded in the product—e.g., interest rate risk, mortality, morbidity or longevity risk, liquidity risk, asset default risk or equity market risk, market conduct risk, embedded options and guarantees.

We evaluate a company's product risk, in part by assessing the "low risk product" reserves as a percentage of the company's total reserves. The classification of "low risk products" may vary from region to region depending on the specific risk profile and guarantees/options embedded in each product. "Low risk products" have minimal or no guarantees or options and maintain significant risk buffers/risk-sharing or experience-rating mechanisms (e.g., dividends or bonuses) to shift the risk from the insurer to the policyholder. Companies with higher scores for this factor tend to have a greater portion of their reserves in "low risk products" than companies with lower scores.

For instance, participating life insurance products in the US tend to carry less risk relative to investment/savings products (such as equity-based annuity products with significant embedded benefit guarantees) and have characteristics consistent with higher scores for this factor. Compared to investment/savings products, participating life insurance products tend to have higher barriers of entry, less

[13] We recognize that the definition of a line of business varies by company and country. For our analysis of life insurers, we have grouped various lines together, because we have determined that, in general, only a limited number of materially different lines of business exist. Those lines are distinct by region.

of a commodity nature, higher persistency, greater fees/charges/margins, and significant risk-sharing with policyholders.

Beyond the metrics, we also may consider the risks of products and activities that a company engages in outside the life insurance arena (e.g., financially engineered, or structured products). These products may include risks that, under certain adverse circumstances, may have negative consequences for the company disproportionate to their recorded financial statement values. Other areas of focus typically considered in the analysis of product risk include policyholder behavior risk, interest rate risk (both long-term low interest rates and a sudden upward spike in interest rates), and reinvestment risk. Recently developed products with scant experience data are typically viewed negatively, given pricing uncertainty due to potential for significant deviation from original pricing assumptions.

Life Insurance Product Diversification

In our assessment of product and market diversity, we consider the breadth and depth of the markets and products the company targets. The evaluation of product/market diversity within a geographic region[14] or across different geographic regions or industries includes an assessment of the concentration and competition in the product/market; attractiveness of product offerings under varying market environments; correlation of revenues and earnings of different markets and products; and whether the product is viewed as a commodity or a value-added offering. An assessment of diversification within product lines is typically important, given that the types of product offerings can vary significantly across the globe.

How We Assess It:

Number of distinct lines of business each producing at least 10% of total premiums and deposits

Beyond the metrics, we may also consider the risks associated with a company's underwriting controls, pricing sophistication, staffing, and technology in the context of the company's chosen lines of business. For example, a company's hedging expertise would be an important consideration, if dictated by the risk profile of the products that it offers.

Given consideration of a specific analytic unit, we may also consider whether the analytic unit has operations outside of life insurance, which may enhance diversification. As such, we also typically consider the quality of diversification; the company's ability to manage diverse businesses unrelated to core businesses; the synergies or lack thereof among diversified businesses; and the degree to which diversified businesses detract from a focus on the core businesses or add value to the enterprise as a whole.

[14] For our analysis of life insurers, a geographic region is generally considered to be any market with a single regulator.

Summary of Relevant Metrics – Product Focus and Diversification

	Aaa	Aa	A	Baa	Ba	B and Lower
Product Risk	Low Risk Reserves are > 50% of Total Reserves; majority of liabilities have high ability to share risk with policyholders; low interest rate, equity market, and/or liquidity risks; liabilities have very modest guarantees and limited policyholder optionality that will be exercised; minimal market conduct risk.	Low Risk Reserves are 40%-50% of Total Reserves; significant portion of liabilities have above-average ability to share risks with policyholders; low or manageable interest rate, equity market, and/or liquidity risks; liabilities have moderate amounts of embedded guarantees and policyholder options; modest market conduct risk.	Low Risk Reserves are 30%-40% of Total Reserves; moderate amount of liabilities have ability to share risks with policyholders; higher interest rate, equity market, and/or liquidity risks in both asset accumulation and protection products; meaningful embedded pricing guarantees and policyholder optionality that could be exercised; moderate market conduct risk.	Low Risk Reserves are 20%-30% of Total Reserves; limited amount of liabilities have ability to share risks with policyholders; higher interest rate, equity market, and liquidity risk in both asset accumulation and protection products; significant embedded pricing guarantees and policyholder optionality resulting in greater variability around expected long term profitability; complex products that may have increased market conduct risks.	Low Risk Reserves are 10%-20% of Total Reserves; low risk sharing with policyholders; high interest rate, equity market, and/or and liquidity risk in just asset accumulation products; substantial embedded long-term pricing guarantees; and policyholder optionality resulting in great variability around expected long term profitability; complex products that may have increased market conduct risks.	Low Risk Reserves 0%-10% of Total Reserves; no risk sharing with policyholders; singular concentration in high risk asset accumulation products; interest rate, equity market, and/or and liquidity risk; substantial embedded long-term pricing guarantees; and policyholder optionality resulting in great variability around expected long term profitability; complex products that may have increased market conduct risks.
Life Insurance Product Diversification	5 or more distinct lines of business each produce at least 10% of total life premiums/ deposits, with limited correlation in revenues and earnings.	4 distinct lines of business each produce at least 10% of total life premiums/deposits, with limited correlation in revenues and earnings.	3 distinct lines of business each produce at least 10% of total life premiums/deposits, with limited correlation in revenues and earnings.	1 or 2 distinct lines of business produce at least 10% of total life premiums/ deposits, with limited correlation in revenues and earnings.	1 distinct line of business produces more than 80% of total life premiums/ deposits.	1 distinct line of business produces all of total life premiums/deposits.

Source: Moody's Investors Service

Discussion of the Scorecard Factors – Financial Profile

Factor 4: Asset Quality

Why It Matters— High Risk Assets:

Life insurance companies' core assets are typically concentrated in high-quality liquid assets, recognizing that life insurance contracts frequently have embedded policyholder options that create potential uncertainty regarding the timing of the liability payout stream. To improve investment yields and/or to match guarantees embedded in their liabilities, many companies allocate a portion of their investment portfolios to higher-risk assets. Assessing the history and trends in risky asset exposures is important, because changes in the market environment, especially during periods of stress, can depress asset values, earnings, and ultimately, the company's capital base.

Relevant Metric — High Risk Assets:

High Risk Assets as % of Shareholders' Equity[15]

Interpreting the Metric – High Risk Assets

High risk assets broadly comprise all investments other than investment grade bonds and includes below-investment-grade and unrated bonds/loans, common and preferred stock equities, "alternative investments", such as private equity and hedge fund holdings, real estate assets, and other investments that are not classified on the balance sheet.

Companies with higher scores for this sub-factor generally have lower exposure to high risk assets. However, companies that have a stable, long duration, low-risk liability structure (see Factor 3) with little embedded optionality (which provides an offset to the increased liquidity risk and volatility of high risk assets, although scoring poorly on this metric), are likely to be able to tolerate a higher proportion of these assets in their investment portfolios. Solid capital positions and a stable earnings profile, as well as a strong track record and proven expertise in managing more risky asset classes, are important credit strengths.

Companies like mutuals that have a significant proportion of liabilities that share risks with policyholders (e.g., participating liabilities) have a higher tolerance for high risk assets, because they can pass much of the asset risk on to the policyholders. In the assessment of the high-risk asset ratio for mutual insurers, we may also consider the policyholder dividend liability as a percentage of surplus, which is an indicator of how much potential surplus cushion exists (i.e., by reducing policyholder dividends) and can act as a shock absorber to mitigate adverse asset performance and losses.

Beyond this single high risk asset metric, we also consider investment portfolio composition, including the proportion of high risk assets in relation to total invested assets, and investment concentration risk. Excessive concentrations in a single name or sector can amplify market and credit risk and can affect liquidity and the sustainability of investment returns. We also consider the liquidity and volatility of the investment portfolio and the strategy employed by the company, as well as assets that are higher-risk or less liquid due to features specific to a particular market (e.g., commercial mortgage loans in the US).

As part of our analysis, we typically consider an insurer's investment risk. Our investment stress tests, which vary by asset type, are typically conducted on holdings in equities, alternative investments, real estate, mortgage loans, sovereign/sub-sovereign bonds, corporate bonds and structured securities.

Why It Matters— Goodwill and Intangibles:

Goodwill and other intangible assets are derived primarily from acquisitions and new business production. The economic value of these assets is often uncertain and may not be realizable to the extent expected by management at the time of acquisition. Write-downs of intangible assets are typically an indication that the potential profits of a book of business or a subsidiary are lower than what had originally been contemplated by management. Furthermore, although charges related to intangible assets are non-cash, they signal reduced earnings and capital generation, potentially hurting investor confidence and reducing financial flexibility.

[15] Where applicable, we supplement shareholders' equity with other forms of capital, which, although not reported as equity, are nevertheless loss-absorbing. Examples of this include FFA realistic surplus in the UK, free RfB in Germany, and the AVR in the US.

Relevant Metric — Goodwill and Intangibles:

(Goodwill + Deferred Acquisition Costs + Value of Business Acquired/Present Value of Future Profits + Other Intangibles[16]) as % of Shareholders' Equity[17]

Interpreting the Metric – Goodwill and Intangibles

This measure provides an indication of the strength and quality of a company's equity capital base. Companies with higher scores for this sub-factor tend to have lower amounts of goodwill and other intangible assets relative to their equity base compared to companies with lower scores for this sub-factor. Extensive growth through acquisitions usually elevates the credit risk of a group because of the integration challenges and the uncertainty about the ultimate costs and benefits, as well as incremental earnings, to be realized from the acquisition in the context of the purchase price and financing. We assess acquisitions for strategic fit and consider implications to the company's market position and overall diversification.

Although we believe that DAC (Deferred Acquisition Costs), PVFP (Present Value of Future Profits) and VOBA (Value of Business Acquired) have less measurement uncertainty and more economic value than goodwill, we believe that equity associated with any intangible asset is less leverageable than tangible equity.

We also typically analyze other assets such fixed assets and deferred tax assets for reasonableness. As such assets have less liquidity than investments and other financial assets, significant levels of these assets relative to total assets may be discounted when assessing asset quality.

Summary of Relevant Metrics — Asset Quality

	Aaa	Aa	A	Baa	Ba	B	Caa
High Risk Assets as % of Shareholders' Equity	≤ 25%	25%< x < 50%	50%≤ x < 100%	100% ≤ x < 175%	175% ≤ x < 250%	250%≤ x < 325%	≥325%
Goodwill & Intangibles as % of Shareholders' Equity	≤ 20%	20%< x < 30%	30%≤ x < 40%	40%≤ x < 55%	55%≤ x < 75%	75%≤ x < 95%	≥ 95%

Source: Moody's Investors Service

Factor 5: Capital Adequacy

Why It Matters:

Our opinion about an insurer's capital adequacy is a core element of our assessment of its credit profile. An insurer's available capital provides the economic cushion available for the company to absorb unfavorable changes in its results. An insurer's capital adequacy is important because it provides critical information to customers, regulators and other stakeholders about the extent to which the company's available capital would cover losses stemming from the business and financial risks it faces, including from remote loss scenarios. A company with weak capital adequacy may find it difficult to grow its business because, in many markets, customers may consider an insurer's capital adequacy as a signal of its financial capacity. Insurance regulators often require that companies maintain minimum capital levels to operate.

Relevant Metric – Risk-Adjusted Capitalization Ratio

(Shareholders' Equity[18] minus 10% of High Risk Assets) as a % of (Total Assets minus 10% of High Risk Assets)

[16] We use gross intangible assets, instead of net of applicable deferred taxes, to simplify this ratio.

[17] This metric is typically calculated on a consolidated basis if the analytic unit being considered is part of a larger group because goodwill due to acquisitions is not typically pushed down to the analytic unit for financial statement reporting purposes.

[18] We consider equity to include items, which, although not reported under shareholders' equity or regulatory surplus, are nevertheless loss-absorbing. Examples of this include FFA realistic surplus in the UK, free RfB in Germany, and the AVR in the US.

Interpreting the Metric – Risk-Adjusted Capitalization Ratio

In general, capital as a percentage of total assets is useful in assessing how much capital cushion a company has available to support its policyholder obligations and other liabilities. We adjust this ratio by subtracting from both numerator and denominator a percentage (i.e., 10%) of high-risk assets which, in a stress scenario, are likely either illiquid, and/or likely to be impaired or sold for a loss.

Companies with higher scores for this factor tend to have higher capital as a percentage of total assets. In this measure, we include separate account assets because most, although not all, separate account assets have embedded, secondary guarantees that require capital to support these risks. However, this measure's usefulness is somewhat limited because high-risk assets is a relatively simple measure, as noted previously. In addition, the metric does not assess differences in liability risk exposures (i.e., life insurance companies that focus on the sale of accident and health policies – short-tailed policies that require low levels of reserves and assets to support them). As a result, this metric may be used to compare capital adequacy among companies that have a similar business mix and comparable investment portfolio risk.

We use the capital-to-total assets ratio in the methodology because it can be calculated consistently for all life insurers globally. In order to supplement this rather basic and simple ratio, additional capital metrics are available to supplement our analysis and often reflect a risk-adjusted capitalization framework. Therefore, our analysis may incorporate information from a number of sources including Moody's Capital Tool (MCT), capital-adequacy metrics under existing regulatory models, and outputs derived from insurers' capital models.

Moody's Capital Tool

Moody's Capital Tool (MCT) is a stochastic simulation tool that uses information about an insurer's business and financial profile to generate a large number of loss scenarios based on the typical sources of risk that insurers face. The tool uses these losses to estimate the distribution of changes in the insurer's net asset value (NAV)[19] for a single year, thereby providing a basis for analyzing the capital required to fully absorb losses at a specified probability in the distribution (e.g., at the 99.5% quantile).

MCT produces a capital adequacy metric that compares an insurer's available economic resources to absorb losses (i.e., its available capital) to user-selected quantiles for required capital.[20] For example, the MCT calculates the ratio of an insurer's available capital to the tool's estimates of required capital at the 99.5% quantile. Such capital ratios provide a basis for comparison across companies, and we may incorporate them in our assessment of an insurer's adjusted score for capital adequacy. The extent to which we consider this ratio depends on the risk profile of the company (e.g., how well the insurer's business profile matches the tool's parameters), the capacity of the tool to model a large portion of the company's business, or the granularity of data available to run the model.

In comparing insurers with significantly different liability durations, we usually consider that the capital ratios of insurers with shorter-duration liabilities are more stable indicators of capital adequacy (over time) compared to insurers with long-duration liabilities.

MCT provides a common risk-based framework for analyzing the capital adequacy of insurers and provides the flexibility to analyze a range of scenarios including pro forma scenarios (e.g., acquisitions, divestitures, or extreme mortality scenarios) as well as quantifying the risk drivers that insurers typically face. The tool's

[19] An insurer's NAV is the estimated difference between the economic value of its assets and economic value of its liabilities.

[20] To estimate an insurer's available capital, MCT makes economic valuation adjustments to certain asset and liability accounts based on user inputs related to the company's accounting regime. These accounts also typically include the standard adjustments that apply based on our cross-sector methodology on financial statement adjustments for financial institutions (a link to a list of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section). Thus, the tool's estimate of a company's available capital reflects the combined effect of these adjustments on its reported shareholders' equity.

output may also provide indicators that augment our analysis. For example, for a given quantile, the tool estimates the breakdown of the required capital by risk driver.

For additional information about the MCT tool, please see Appendix 6.

Regulatory Metrics

We typically also consider metrics calculated under existing regulatory frameworks. In most regions, the insurance regulators, to varying degrees, have developed more refined measures of capital adequacy/solvency by evaluating the available capital relative to the risk-adjusted exposures of the company. Capital adequacy frameworks used by regulators to assess solvency are very important to our analysis of capital adequacy. The level of sophistication of the risk-based capital regime, the scale on which it is measured, and its usefulness in our assessments vary considerably among regulatory jurisdictions. We often use local regulatory metrics to supplement other measures of capital strength. For example, US regulators employ Risk Based Capital (RBC), Canadian regulators employ MCCSR and Chinese regulators employ C-ROSS. Solvency II in the European Union is also an important local risk-based capital metric.

Below, we provide an indicative mapping between ratios derived from economic capital frameworks that correspond to the Value at Risk at the 99.5% quantile for economic losses in alignment with principles underlying Solvency II. While not our only consideration, this indicative mapping helps provide the analyst with an additional perspective to assess capital adequacy. For example, for a given indicative capitalization score, we would typically expect a higher ratio for a company with higher volatility of capital requirements than shown in the table below.

Capitalization score	Aa	A	Baa and below
European Union Solvency II ratio	≥ 200%	130% - 200%	< 130%

Source: Moody's Investors Service

Insurer Models

We may also incorporate in our assessment of capital adequacy the output from an insurer's internal capital model, if available. We consider the relevance of the company's own model to our assessment of capital adequacy based on (i) our understanding of its scope and operation; (ii) the extent of its incorporation into the company's day-to-day decision-making processes; and (iii) regulatory review and approval, where relevant. We may also consider comparisons of capital positions using the proprietary economic capital models of companies within a peer group or in conjunction with output from MCT. In making such comparisons we would typically consider how assumptions made in one company's model may be different from assumptions used in another model.

In assessing capital adequacy, the potential impacts of stress environments are evaluated. These include pre-defined stress scenarios incorporating potential losses on liabilities and investments (see the "Incorporating Scenario Analysis and Stress Testing for Life Insurers" section above). Also, emerging risk areas are considered in our assessment of prospective capital generation and adequacy.

Summary of Relevant Metrics — Capital Adequacy

	Aaa	Aa	A	Baa	Ba	B	Caa
Shareholders Equity as % Total Assets	≥12%	12% > x > 8%	8% ≥ x > 6%	6% ≥ x > 4%	4% ≥ x > 2%	2% ≥ x > 0%	≤ 0%

Source: Moody's Investors Service

Factor 6: Profitability

Why It Matters:

An insurer's earnings capacity--both quality and sustainability--is a critical component of its creditworthiness, because earnings are a primary determinant of the insurer's ability to meet its policy and financial obligations, the primary source of internal capital generation to assure capital adequacy, and a key determinant of access to the capital markets on favorable terms. Diversification across multiple product lines and markets can result in more stable levels of earnings, increasing the predictability of internal capital growth and strengthening claims/debt paying ability.

Relevant Metrics:

Return on Capital (ROC) - Net income before non-controlling interest expense, as a % of (average financial debt + Shareholders' Equity[21] *+ non-controlling interest (5-year average))*

Sharpe Ratio of Return on Capital - The mean of the company's annual return on capital (5-year average) divided by the standard deviation of return on capital (5-year period)

Interpreting the Metrics:

In general, companies with higher scores for this factor tend to have higher profitability as measured by return on capital (ROC), and have lower earnings volatility as measured by the Sharpe ratio of return on capital. An exception to this is mutually owned life insurers where profitability based on ROC is often relatively low due to high capital positions, a strong policyholder focus and high policyholder dividends that reduce net income.

The ROC ratio is a good measure of how well the insurer is utilizing its capital funds. ROC also equalizes any benefits to earnings from leverage, because the ratio considers both financial debt and equity in its denominator. For this reason, ROC is viewed in concert with a company's financial leverage, since this indicates the level of borrowed funds (if any) required to generate the corresponding ROC, as well as the sustainability and volatility of its profits over time. A company's legal structure can also provide information about its likely use of debt and its ROC risk profile over time. For example, mutually-owned companies tend to be less focused on short-term profitability and are less reliant on debt than shareholder-owned companies.

In addition to the above scorecard metrics, we also typically consider other measures. For example, return on equity (ROE) is also a good measure of profitability, and may provide insights into the impact of shareholder pressure on management to generate sufficient returns on capital. It is important to consider ROE in concert with both a company's financial leverage and organizational/legal structure). The relationship to financial leverage is important, because companies using higher amounts of leverage may exhibit more favorable ROE, since a smaller equity base tends to improve this measure, all else being equal. We also may consider an adjusted ROC metric including total debt (not just financial debt) in the denominator to assess the impact of operating debt deployed on profitability.

We also may consider return on assets (ROA), when appropriate, to a company's business mix. Although the ROA ratio is a somewhat simple measure of profitability, it can be compared with other financial institutions focused on asset accumulation businesses, including banks, finance companies, and asset managers, and therefore, may be useful in our assessment of insurers that engage directly or indirectly in these businesses.

We also recognize that net income can be meaningfully influenced by non-recurring favorable/unfavorable items, most notably realized gains/losses. For analytic units with meaningful investment-related

[21] Note that while many accounting regimes include non-controlling interest in shareholders' equity, Moody's does not.

gains/losses, we also may consider these metrics excluding such gains/losses. We also typically consider the impact on these ratios for entities that record all investments at fair value through the income statement when comparing against insurers that recognize the change in value of investments directly to equity. The effects of hedging may also significantly impact the net income metric and, as such, may be considered in interpreting profitability measures.

The Sharpe ratio of return on capital gauges the inherent volatility in a company's returns in relation to average profitability, and it helps us to formulate an opinion about the predictability and sustainability of a company's earnings. The ratio considers net income, since a company's capital generation is driven by its net income, but we recognize that some capital gains/losses and taxes can at times be somewhat volatile and unpredictable, or, at other times, be used to reduce underlying operational volatility. This ratio's analytic value has little meaning if the numerator is zero or negative, in which case the sub-factor weighting for the Sharpe ratio is allocated to the ROC metric, and within the overall profitability factor, the ROC reverts to 100%. However, the volatility metric is useful in comparing companies' earnings volatility to each other and in identifying trends relative to business mix.

We use five years of data to attempt to capture business cycles.

Summary of Relevant Metrics — Profitability

	Aaa	Aa	A	Baa	Ba	B	Caa
Return on Capital (5-year average)	≥ 12%	12%> x > 8%	8%≥ x > 4%	4%≥ x > 0%	0%≥ x > -4%	-4% ≥ x > -8%	≤ -8%
Sharpe Ratio of Return On Capital (5-year average)	≥ 400%	400%> x >300%	300%≥ x >200%	200%≥ x >100%	100%≥ x >0%	n/a	n/a

Source: Moody's Investors Service

Factor 7: Liquidity and Asset Liability Management

Why It Matters:

Life insurance liabilities are highly confidence-sensitive. Lack of liquidity can quickly result in a company's inability to meet the demands on its liabilities. As a result, financial problems, real or perceived, can lead policyholders to surrender their policies, and, in doing so, create a "run on the bank" scenario, possibly prompting regulatory intervention or a company's insolvency. Consequently, a life insurer's ability to carefully manage its asset liability risk and its associated liquidity risk is critical.

Relevant Metric:

Liquid Assets as % of Liquid Liabilities

Interpreting the Metric:

Asset Liability Management (ALM) is the process undertaken by a life insurer to ensure that its assets are adequate to meet the potential short and long-term needs of its liabilities. ALM seeks to achieve and maintain an overall match between the expected asset cash flows and expected liability cash flows. Our assessment of a company's ALM process includes an assessment of management's tools and techniques used to quantify and accomplish this task.

The typical starting point for assessing a company's ALM process is an understanding of a company's liability profile and complexity, including any options and guarantees embedded in its liabilities. In addition to commonly used ALM methodologies, which include duration matching and cash flow matching, we assess more-dynamic ALM procedures used throughout the industry. These may include dynamic cash flow testing, which attempts to assess the sensitivity and resulting impact (positive or negative) of a wide variety of economic scenarios on a company's asset and liability cash flows, and hence, the impact on its earnings

and capital. We consider whether a company has incorporated into its ALM process a thorough examination of the surrender options and potential liquidity needs embedded in its liabilities, as well as any contingent or off-balance-sheet liquidity needs of the operating company (e.g., springing collateral requirements associated with derivative or reinsurance contracts; payment guarantees of affiliates; rating triggers embedded in muni GICs, and liquidity needs related to hedging of guarantee products using derivatives). A life insurer's ability to cover its liquid liabilities (e.g., liabilities that have significant potential risk of being surrendered) with liquid assets is considered, including an assessment of the company's assets and liabilities, their sensitivity to different economic and market scenarios, segment duration and cash flow matching policies, as well as the company's contingency plans and alternative liquidity sources in the event of a period of strained market liquidity.

As noted above, strong, well-managed ALM and risk management processes and sources of liquidity may mitigate the liquidity risks facing a life insurer. However, significant exposure to liquidity risk arising from the company's liability profile could outweigh these benefits. As a result, companies with more complex liability profiles are unlikely to have high scores for this factor, despite the maintenance of superior ALM practices. Conversely, companies whose liability profiles have limited or no policyholder surrender and/or withdrawal risk, tend to score higher for this factor, although we would consider its asset liability matching discipline as critically important to our assessment of profitability.

We find the ratio of liquid assets to liquid liabilities to be helpful in measuring or estimating a company's liquidity profile and risk.[22] Liquid assets (i.e., the numerator) consider--and are adjusted for--the different levels of liquidity (or illiquidity) inherent in a company's various investments (e.g., cash and cash equivalents, government securities, being the most liquid; affiliated common stock and bonds being among the least liquid). Liquid asset values also reflect market volatility or liquidity premium required by the market when the assets are sold. Liquid liabilities (i.e., the denominator) reflect the redemption value of liabilities that are expected to be demanded when surrendered by policyholders, as defined by a stress scenario, over a one-year time frame.

In general, insurers with higher scores for this factor have stronger liquidity profiles than insurers with lower scores. We are usually focused on the company's asset liquidity relative to its potential liquidity demands. However, we recognize that, in many jurisdictions, the potential liquidity risk associated with liabilities can be quite modest, and, instead, the ALM risk and analysis are focused more on the "build-up" of guarantees and longevity risk. It is also important to note that not all liabilities that are surrenderable have the same likelihood of being surrendered. The type of policy (e.g., life insurance vs. investment product), the distribution channel (e.g., captive agent vs. third-party intermediary), the existence of surrender charges/penalties, the age and profile of the policyholder, and the type of policyholder (e.g., institutional vs. retail) influence the likelihood and timing of surrender. Institutional liabilities, such as funding agreement-backed notes[23] that may be surrendered prior to maturity, are usually thought to be among the most at-risk of all insurance liabilities. Significant liquidity risk can also arise from retail products including investment products, savings products, deposits, annuities — which can easily be transferred to another insurer without significant financial loss or loss in insurance coverage to the policyholder.

Summary of Relevant Metric —Liquidity and Asset/Liability Management

	Aaa	Aa	A	Baa	Ba	B	Caa
Liquid Assets as % of Liquid Liabilities	≥ 4x	4x> x > 2x	2x≥ x >1.5x	1.5x≥ x >1x	1x≥ x >0.75x	0.75x≥ x >0.50x	≤0.50

Source: Moody's Investors Service

[22] The liquid asset to liquid liability ratio is described in Appendix 4.

[23] These products have been most prevalent in the US.

Factor 8: Financial Flexibility

Why It Matters:

It is important that a company be able not only to fund its business growth via internal capital generation, but also to maintain capital market confidence, and demonstrate the ability to service its obligations without stress. Insurers benefit from having the capacity to raise capital externally for additional growth or acquisitions, and to meet unexpected financial demands--whether these needs come from an unusually negative credit/market environment, earnings volatility, or other planned or unplanned capital needs. Financial flexibility--as indicated by adjusted and total leverage, double leverage, earnings coverage, dividend coverage, holding company liquidity, and access to capital markets--is a key determinant of the insurer's credit profile. We also consider, as discussed at the end of this section, the depth of the capital markets of a company's domicile, which if thin can lead to limited financial flexibility despite what may appear to be strong capital and income metrics.

Relevant Metrics:

Adjusted Financial Leverage: Adjusted debt (Financial debt (including preferred stock) + Moody's pension, hybrid, and operating lease adjustments) divided by (adjusted debt + shareholders' equity)

Total Leverage: [Financial debt (including preferred stock) + operating debt + Moody's pension and operating lease adjustments] divided by [financial debt + operating debt + Moody's pension and operating lease adjustments + shareholders' equity (adjusted for any non-debt items)]

Earnings Coverage: Adjusted earnings before interest and taxes divided by interest expense and preferred dividends (5-year average)

Cash Flow Coverage: Dividend capacity from subsidiaries divided by interest expense and preferred dividends (5-year average)

Interpreting the Metrics:

Financial leverage measures the amount of a company's capital base that is financed through borrowed money, typically short- and long-term debt and hybrid capital securities, which can be issued at an operating company or holding company. Our adjusted financial leverage calculation considers all forms of debt (including surplus notes and hybrid securities--adjusted for Moody's Debt/Equity Continuum[24]--plus unfunded and underfunded pension obligations and operating leases, and uncollateralized letters of credit for Lloyd's of London underwriting purposes) used to fund the company's operations as leverage. Shareholders' equity in the adjusted financial leverage calculation includes accumulated other comprehensive income (AOCI), as we believe reported equity and the impact of changes in AOCI, primarily from changes in value of investment securities, impact the markets' perception of life insurers' ability to access capital markets at attractive funding costs. Consideration is also given to leverage metrics calculated using shareholders' equity without AOCI, especially during periods of volatile interest rate changes or where assets are reported at fair value but liabilities are reported at book value. In general, insurers with higher scores for this factor tend to have lower levels of financial leverage.

The typical starting point for our leverage metrics – whether it be adjusted financial leverage or total leverage, discussed below – is consolidated leverage, rather than the leverage ratio of individual entities or analytic units. Our attribution of an insurance group's consolidated financial leverage ratio to all members or analytic units of the group is based on our assumption that each subsidiary/analytic unit benefits from, as well as contributes to, the group's debt service coverage to a greater or lesser degree (in some cases, subject

[24] We believe that it is appropriate for our credit analysis to limit the amount of total equity credit that is derived from the issuance of hybrid securities within a capital structure. Please refer to our cross-sector methodology for hybrid equity credit. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

to a domestic sovereign rating cap, discussed below). Analysts may then make adjustments for subsidiaries or units that are not core to the group, and are unlikely to benefit from parent company debt or equity capital support.

In addition to our standard adjustments to financial leverage and earnings coverage, further adjustment to these metrics is sometimes necessary for individual companies. For example, an adjustment may include adding back as debt an off-balance-sheet obligation because we believe the company will support the debt obligation, if necessary, as a result of reputation or economic incentives. In contrast, match-funded or self-liquidating debt appearing on a company's balance sheet is likely to be excluded from adjusted financial leverage and earnings/cash flow coverage metrics because the debt is analytically viewed as operating debt instead of financial debt.

However, we also believe it is important to consider, in tandem with our adjusted financial leverage metric, the total debt profile of a group, on an unadjusted basis (apart from pension obligations and operating leases) and including reported operating debt. Although potentially match-funded, operating debt nevertheless involves external debt-raising and needs to meet certain criteria to avoid being classified as financial leverage.[25] The scoring ranges for the adjusted financial leverage and total leverage metrics are the same in order to highlight those groups most reliant on the use of hybrids and operating debt.

Other considerations incorporated into our opinions about financial leverage may include--where applicable--a company's double leverage (i.e., investments in subsidiaries funded by parent company debt or a stacked ownership structure), historical trends, management's target level for leverage relative to current position, and maturity profile, as well as the complexity of the capital structure itself.

The debt capacity of an insurer can also be implied by its earnings capacity and dividend capacity relative to its interest expense and preferred dividends, although there can be substantial variability in these figures from year to year. Insurers with higher scores for this factor tend to have stronger earnings and cash flow coverage metrics than insurers with lower scores.

The earnings coverage ratio is calculated on a consolidated basis (US GAAP, IFRS or an equivalent standard) and considers consolidated earnings (pre-tax, pre-interest expense and preferred dividends coverage of consolidated interest expense and preferred dividends). The focus is typically on coverage of interest expense and preferred dividends, although the numerator and denominator are also adjusted for pensions and leases. Because there can be regulatory restrictions on dividend capacity from an operating company to its holding company, the earnings coverage ratio is usually evaluated in the context of the insurer's actual flexibility, in terms of cash available to be sent up to the holding company.

The cash flow coverage ratio assesses the flexibility of the parent holding company, which usually is the issuer of debt and/or hybrid securities.[26] The ratio relates the recurring sources of cash to the holding company to its uses of cash. For cash sources, we include the maximum available dividends (unrestricted) from regulated subsidiaries (subject to the condition that capital adequacy is maintained at the operating company). For cash uses, we include interest expense and preferred dividends at the holding company. The cash flow coverage ratio cannot be calculated in all jurisdictions due to varying disclosures. If we are unable to calculate cash flow coverage due to a lack of disclosure, we allocate the weight assigned to this sub-factor to our earnings coverage sub-factor.

When analyzing the coverage ratios, we generally consider any differences that may exist between interest expense and the cash payments associated with interest. We also typically assess the inter-relationship

[25] Please refer to our cross-sector rating methodology that discusses how we assess operating debt used by insurance companies. A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

[26] See our cross-sector methodology for assigning instrument ratings for insurers for more information on the relationship between IFSRs and other ratings. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

between cash flow coverage and earnings coverage by considering a) whether material earnings are generated in regions where dividend extraction is more difficult, b) if the parent has meaningful and consistent sources of cash flow from unregulated entities, and c) the relative levels of dividend capacity compared to earning capacity. In instances where dividend capacity significantly exceeds earnings capacity, this may indicate that dividend capacity is unlikely to be replenished should a significant dividend be made.

In addition to these metrics, we also may consider holding company liquidity, measuring the extent to which financial debt obligations, covering near-term debt maturities, interest expense and preferred and common stock dividends, are covered by readily realizable assets (i.e., cash, investment-grade bonds, and all publicly-traded equities). This is relevant in light of the large proportion of debt typically issued by a parent company and the aforementioned regulatory restrictions regarding dividend up-streaming by operating companies. As with the coverage ratios, we also may assess the extent to which a holding company is unduly reliant on subsidiaries where dividend extraction is difficult, as well as any other liquidity resources that could be drawn upon if necessary.

We also recognize that it is important for a company to maintain capital market confidence. Ready access to the capital markets is necessary for many insurers needing to raise capital after a severe unexpected event, to fund an acquisition or simply to expand internal growth plans. The inability to access the capital markets at all, or on non-attractive terms, can significantly impair a company's financial flexibility. As a result, we view life insurers' access to the capital markets--which can be limited by outsized financial leverage or poor coverage--as important, given the inherent volatility of the business.

We additionally may consider a company's backup lending facilities, contingent capital and letter of credit arrangements, and the conservatism of covenants, if any, embedded in borrowing arrangements. Strong backup facilities with limited restrictive covenants enhance financial flexibility for a company, particularly in times of stress.

In assessing financial flexibility, we also consider the country in which a company is domiciled. We believe that the ability to raise debt and equity, as governed by the scale and sophistication of a country's capital markets, is an important adjunct to the level of Group debt and its debt servicing capability. As a result, our financial flexibility scores are typically capped by the local currency bond rating of the country in which it operates. This cap applies as well to the local subsidiaries of foreign insurance groups, even if the foreign insurance group has strong financial flexibility.

Summary of Relevant Metrics — Financial Flexibility

	Aaa	Aa	A	Baa	Ba	B	Caa
Adjusted Financial Leverage	≤ 15%	15%< x <30%	30%≤ x < 40%	40%≤ x < 50%	50%≤ x < 60%	60%≤ x < 70%	≥ 70%
Total Leverage	≤ 15%	15% < x < 30%	30% ≤ x < 40%	40% ≤ x < 50%	50% ≤ x < 60%	60% ≤ x < 70%	≥ 70%
Earnings Coverage--EBIT/ int exp. + pref. div. (5-yr. avg.)	≥12x	12x> x >8x	8x≥ x >4x	4x≥ x >2x	2x≥ x >0x	≤ 0x	n/a
Cash Flow Coverage--Dividend capacity/interest + pref. div. (5-yr. avg.)	≥ 7x	7x > x > 5x	5x ≥ x > 3x	3x ≥ x > 1.5x	1.5x ≥ x ≥ 0x	< 0x	n/a

Source: Moody's Investors Service

Operating Environment

Why It Matters:

Although our analysis of insurers is focused predominantly on company-specific characteristics and on business and financial parameters in the context of an insurer's operations within its industry sector, an important component of our analysis – particularly in developing markets – is the extent to which external conditions can exert a meaningful influence on insurers' credit profiles.

The Operating Environment serves to capture relevant economic, social, judicial, institutional and general business conditions in a particular country as regards the insurance sector. Country-specific trends and developments can over time have as much of a bearing on insurers' long-term viability as the intrinsic strength of their own operations. Considerations can include the trajectory of economic development relative to other countries, major social or political developments, and the degree of utilization, recognition and acceptance of insurance as a legitimate vehicle for asset accumulation and wealth protection.

Relevant Metrics:

The Operating Environment incorporates scores for multiple factors in two categories – Insurance Systemic Risk, and Insurance Market Development – by country, based on the country in which an insurer operates. For insurers that have meaningful operations in multiple countries or jurisdictions, we consider a blended approach to evaluating the overall Operating Environment score.

Three of the five country-specific components of the Operating Environment score that pertain to Insurance Systemic Risk are based on macro-level indicators from our sovereign rating methodology[27] and country research. The remaining two components – pertaining to Insurance Market Development – assess the degree of development of the insurance sector in a given country.[28]

Insurance Systemic Risk

Economic Strength: We use our published factor score for a sovereign's Economic Strength.

Institutions and Governance Strength: We use our published factor score for a sovereign's Institutions and Governance Strength.

Susceptibility to Event Risk: We use our published factor score for the sovereign's Susceptibility to Event Risk.

In each case, the broad alpha or alphanumeric sovereign factor score is mapped to a numeric as described below.

Insurance Market Development

Insurance Penetration (%): *Total (life and non-life) industry-wide insurance premiums (excluding cross-border business) as a percentage of GDP*. Insurance penetration assesses the significance of a country's insurance market in the national economy.

[27] For more details on our sovereign rating methodology, a link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[28] We generally assess the degree of the development of the insurance sector in a given country and may consider indicators such as those published annually by Swiss Re Sigma, or through equivalent data otherwise captured by Moody's.

Insurance Density (percentile-rank): *Percentile-rank, worldwide, of total (life and non-life) industry-wide insurance premiums (excluding cross-border business) per capita*. Insurance density assesses the extent of utilization of insurance protection in a given country.

Interpreting the Operating Environment Metrics:

In our view, the better the operating environment, the less it impinges on the intrinsic strength of an insurer's credit profile. To the extent that the operating environment is considered more favorable than the insurer's own intrinsic credit profile, it is typically not a material consideration in the rating analysis. Furthermore, operating environments at the A or higher rating level are considered to be sufficiently strong so as to be neutral with respect to insurers' credit profiles, and are therefore not considered. Consequently, operating environments have only a neutral-to-negative impact on our ratings for insurers. Additionally, we believe that the weaker the operating environment, the greater influence it has on an insurer's overall credit profile, as the structural strength of the insurance industry and contractual agreements increasingly come into question.

Insurance Systemic Risk

Economic Strength – The intrinsic strength of an economy provides critical indications of a sovereign's resilience to external shocks. A sovereign's ability to generate sufficient revenue to service debt over the medium term relies on sustained economic growth and prosperity, i.e., wealth.

Institutions and Governance Strength – The strength of institutions and governance are important determinants of a sovereign's creditworthiness because they influence the predictability and stability of the legal and regulatory environment. Institutions and governance provide a strong indication of a government's willingness to repay its debt. They influence the sovereign's capacity and willingness to formulate and implement economic, fiscal and monetary policies that support growth, socioeconomic stability and fiscal sustainability, which in turn protect the interests of creditors over the long term.

Susceptibility to Event Risk – Susceptibility to sudden, extreme events that could severely impact the country's economy or its institutions, or strain public finances is an important indicator of a sovereign's creditworthiness. Event risks are varied and typically include domestic political and geopolitical risks, government liquidity risk, banking sector risk and external vulnerability risk. We believe that such events could have significant negative implications for financial institutions such as insurance companies.

Insurance Market Development

Insurance Penetration and Density – Insurance markets around the world vary significantly in their degree of development with respect to the range of product offerings, utilization, and the significance of insurance as a means of risk mitigation and asset protection. Whereas Insurance Penetration considers the importance of the industry sector relative to the overall national economy, Insurance Density considers its importance relative to the population base of a country, thereby providing a helpful demographic perspective. Taken together, these two measures offer a more balanced perspective than either one taken in isolation. Broadly speaking, and all other things being equal, the higher the penetration and density levels, the more highly developed the insurance market, including the scopes of coverage provided, and the greater the perceived utility of the product. We also note that the particularities of different countries' insurance market structure and insurance accounting can significantly influence their penetration and density levels. Nevertheless, we believe that insurance penetration and density provide a meaningful basis of macro-level differentiation among countries, with respect to the utilization and development of insurance.

Calculating the Operating Environment Score

The Operating Environment score is derived by combining the scores for Insurance Systemic Risk, composed of Economic Strength (25%), Institutions and Governance Strength (50%) and Susceptibility to Event Risk (25%); with Insurance Market Development, composed of Insurance Penetration (50%) and Insurance Density (50%).

For Insurance Systemic Risk, we start with the published factor scores for the sovereign's Economic Strength and Institutions and Governance Strength, which are expressed on an alphanumeric scale, and Susceptibility to Event Risk, which is expressed on a broad alpha scale.[29] We then convert these scores to numeric scores using the two Mapping Sovereign Rating Methodology Scoring tables below, and we combine them according to the weights described in the prior paragraph. Specifically, the numeric equivalent score for each sovereign methodology factor assigned score is multiplied by its weight, with the results then summed to produce a numeric Insurance Systemic Risk factor score.

[29] Broad alpha scores ranging from Aa to Caa are mapped at the midpoint of the associated alphanumeric scores; e.g. for an Aa broad alpha score, we would use Aa2, which maps to a numeric equivalent of 1.71 using the exhibit for Mapping Sovereign Methodology Scoring for Susceptibility to Event Risk

Mapping Sovereign Rating Methodology Scoring for Economic Strength and Institutions and Governance Strength*

Economic Strength and Institutions and Governance Strength	Numeric Equivalent
aaa, aa1	2.00
aa2, aa3	1.71
a1	1.43
a2	1.14
a3	0.86
baa1	0.57
baa2	0.29
baa3	0.00
ba1, ba2	-0.29
ba3	-0.57
b1	-0.86
b2	-1.14
b3	-1.43
caa1, caa2	-1.71
caa3, ca	-2.00

* The effect of this mapping is to compress the alphanumeric sovereign factor scores and convert them to a numeric score for use in the scorecard for life insurers.

Source: Moody's Investors Service

Mapping Sovereign Rating Methodology Scoring for Susceptibility to Event Risk

Susceptibility to Event Risk	Numeric Equivalent
aaa	2.00
aa	1.71
a	1.43
baa	0.57
ba	0.00
B	-0.86
caa	-1.71
ca	-2.00

Source: Moody's Investors Service

The numeric Insurance Systemic Risk score is then mapped back to an alphanumeric score as shown in the table below.

The Insurance Market Development factor is based on a simple averaging of separate indicators for Insurance Penetration (total premiums – life and non-life – as a percentage of GDP) and Insurance Density (total premiums – life and non-life – per capita). Insurance Penetration is mapped to the global rating scale directly as indicated in the table below. Insurance Density is assessed by country, and then measured or estimated on a worldwide percentile-rank basis, with premiums denominated in US dollars. The Insurance Market Development factor is calculated using three-year averages. These results are then mapped to our global rating scale as shown in the table below.

Modifiers (1, 2, 3) for broad alpha categories from Aa to Caa are produced by interpolating the numerical result to the upper, middle and lower tercile of each factor range, as indicated in the following table.

Summary of Relevant Metrics:

Indicator	Factor Weights	Sub-factor Weights	Aaa	Aa	A	Baa	Ba	B	Caa
Insurance Systemic Risk	2/3		≥2.0	2.0> x ≥ 1.0	1.0> x ≥ 0.5	0.5> x ≥ 0	0> x ≥ (0.5)	(0.5)> x ≥ (1.0)	<(1.0)
Insurance Market Development	1/3								
Insurance Penetration (% GDP)		50%	≥ 6.5%	6.5%> x ≥ 5.5%	5.5% > x ≥ 4.5%	4.5% > x ≥ 3.5%	3.5% > x ≥ 2.5%	2.5% > x ≥ 1.5%	x<1.5%
Insurance Density (percentile-rank)		50%	≥ 90%	90%> x ≥ 75%	75%> x ≥ 60%	60%> x ≥ 45%	45%> x ≥ 30%	30%> x ≥ 15%	<15%

* An indicator's alphanumeric scoring bands are based on an equal-width partition of the corresponding broad alpha scoring band for the indicator.

Source: Moody's Investors Service

Having calculated the Insurance Systemic Risk and Insurance Market Development indicators, and mapping each to our global rating scale, these two factors are, in turn, mapped to Aaa to Caa3 (1-19; please see the first table in Appendix 1, which shows alphanumeric and numeric equivalents). The final Operating Environment score is then determined by averaging these numeric scores with a 2/3 weight for Insurance Systemic Risk and a 1/3 weight for Insurance Market Development, and then mapping the result (rounded to the nearest whole number between 1 and 19) to Aaa to Caa3, using the first table in Appendix 1. Absent extraordinary systemic (e.g., economic, social, institutional, political, and judicial) or market development considerations that may not be adequately reflected in these metrics, we generally expect to apply the Operating Environment result without further modification.

Other Scorecard Considerations in Determining the Standalone Credit Profile: Notching Factors

Management, Governance, and Risk Management

We evaluate an insurer's management, governance, and risk management processes as part of our credit assessment. However, an insurer's management, governance and risk management only affect the scorecard-indicated outcome to the extent we believe they are not reflected in the preliminary standalone outcome score derived from the Business Profile, Financial Profile and Operating Environment, discussed above. Notching for these factors has typically been limited. That said, in some instances further assessment of management, governance or risk management may lead to upward or downward notching. Considerations in this factor include:

» Key person risk. A high dependence on a single executive or group of executives can pose increased risks, because the loss of a single person could adversely affect the insurer's future fundamentals. For example, an insurer whose corporate customers closely associate the chief executive with the institution itself could suffer loss of business, earnings and ultimately reduced capital if the chief executive were to leave, absent adequate succession planning.

» Strategy and management. A radical departure in strategy, a shake-up in management, or an untested team can all herald sudden change that increases the uncertainty about risk profile. An aggressive growth plan can also signal an elevated risk appetite, while clear weaknesses in risk management can increase exposure to adverse developments. Any concerns regarding the rigor of Board or management oversight may also be considered here.

» Dividend policy. An aggressive dividend policy may imply reduced financial flexibility. Management teams are often slow to reduce established dividend levels out of concern over negative signaling and adverse share price impact. (The same can be said of share buybacks, although to a lesser extent, as the

timing and certainty of execution of even announced buyback programs leave greater management discretion).

» Compensation policy. Similarly, an aggressive compensation policy, for example, widespread use of high bonus payments relative to salaries, and skewed towards cash, may encourage short-term risk-taking behavior to the detriment of bondholders.

We may reduce our preliminary standalone outcome score if we judge that any of these factors has a material bearing on the insurer's overall risk profile. Typically, this would be one notch but could be more if we perceive multiple and/or more deep-seated and serious issues. We may also adjust our preliminary standalone outcome score upwards, for example where we perceive sustained exemplary stewardship over time, or exceptional risk management and controls, with a tangible impact on the insurer's risk profile.

Accounting Policy and Disclosures

Relevant and timely financial information is a critical part of any financial analysis. Many insurers prepare financial information under generally accepted accounting principles either developed by their home country or based on international standards. Financial information is also generally prepared on a regulatory basis of accounting that may be different from generally accepted accounting principles. The presence of a strong government/independent body for financial standards is considered a positive factor when evaluating an accounting regime.

Disclosure of financial information varies widely on a global basis and within regions. In certain locations, regulatory bodies provide access to financial information, although the depth of that information also varies. Some companies have chosen to provide market participants with easy access to their own financial data which we view favorably.

The consistent application of financial information is a fundamental presumption of financial analysis. When evaluating accounting principles, we consider how well financial reporting mirrors economic reality. Where we believe the economics of a transaction are not consistent with financial reporting, we may make analytic adjustments to metrics derived from financial statements to facilitate our analysis.

Sovereign and Regulatory Environment

Deterioration in sovereign credit quality can directly affect the credit standing of insurers domiciled within the sovereign, and, more generally, tends to be associated with macroeconomic and financial market trends that are unfavorable for all.[30]

Issuers in the same sovereign environment are exposed to some degree to the transmission of shocks across sectors in the economy and the domestic banking system. In addition, they are subject to defensive sovereign actions that can include austerity measures, changes in tax or regulatory policies, and interference during a crisis. Given this linkage, sovereign credit quality can constrain the IFSR of an insurer.

[30] See our methodology that discusses how sovereign credit quality can affect other ratings. A list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Our cross-sector methodology that discusses how sovereign credit quality can affect other ratings describes how we consider the insurer's geographic diversification, direct exposure to government debt and product characteristics in analyzing these impacts. Insurers with high geographic diversification, low direct exposure to government debt and product characteristics less sensitive to sovereign risks can have an IFSR above the sovereign rating, but generally no more than two notches above.

Moving from the Standalone Credit Profile to the IFSR — Assessing Support

While the above factors are critical in order to determine the standalone credit profile of life insurers, the analytic consideration of support -- explicit or implicit -- from a parent company or affiliate is necessary to determine the IFSR, which can be higher than the company's standalone credit profile. It is important to note that a well-capitalized, profitable insurance operating company with a highly leveraged parent or a weak affiliate often has a lower IFSR than it would have were it a free-standing company because of the pressure those factors can place on its earnings and capital.

Support from a Parent Company or Affiliate

The credit rating of an insurer can ultimately be affected by its relationship to its parent, a subsidiary, or affiliate companies through either explicit or implicit support.[31] We incorporate support from a parent company or affiliate into the rating by narrowing the spread (expressed in number of rating notches) between the standalone credit profile of the entity/security and the rating of the entity providing the support.[32]

Ultimately, our assessment of the extent to which the affiliation benefits the rating is based on a number of variables, including the supporting company's level of commitment to the country / region of the affiliate, brand-name sharing, our assessment of how important this entity is to the overall enterprise business model, its size relative to the whole, its geographic proximity to the supporting entity, existence of shared regulatory oversight, full or partial ownership, and its integration with the rest of the organization from a management, distribution, and operating perspective, as well as our view of the company's ability and willingness to support that entity. Support is evaluated incorporating an assessment of past actions of the support provider, current public statements of support and our assessment of the outlook for future support.

Our judgment of how the prospective supporting entity is likely to behave in the future is strongly influenced by our assessment of its prospective economic motivations. Accordingly, strong public statements of support would not be a persuasive reason to raise the rating of a weaker subsidiary if a sound economic rationale for doing so seems lacking. Although support may provide uplift to a company's rating, it may not necessarily raise it to the same level as that of the supporting entity.

While, in most instances, support is incrementally positive, there are instances where group affiliation may constrain the rating of an entity/security relative to its standalone level. For example, if the insurer is affiliated with weak or highly leveraged entities, such associations usually, in turn, weaken the insurer. Capital often flows from stronger to weaker companies within a controlled group, and frequently before regulatory action can occur.

Explicit support is usually intended to transfer the credit of the supporting entity to the supported affiliate or obligation. Explicit support is generally in the form of a capital maintenance agreement, minimum net

[31] For additional discussion of our rating guidance related to support, see our cross-sector rating methodology on rating non-guaranteed subsidiaries, which includes credit considerations for assigning subsidiary ratings in the absence of legally binding parental support. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section. In addition, affiliate companies generally refer to companies outside of the analytic unit being rated.

[32] When this occurs, our research typically describes the relationship between the analytic unit and the supporting organization and provides a discussion of the standalone credit profile of the analytic unit.

worth agreement, or some type of direct guarantee. It can also take the form of management contracts, marketing arrangements, reinsurance agreements, or tax-sharing agreements.

In analyzing explicit support, we consider the specific legal nature and enforceability of the support, as well as its possible termination. Explicit support depending on its structure can achieve credit transference and bring the affiliate's rating up to that of the supporting entity. However, we also make an assessment as to whether the extension of this support (as well as with implicit support) will weaken the credit profile of the parent or affiliate.

Where support is present, the IFSR typically receives one or two notches of uplift from the standalone credit profile. Although rare, three or more notches of uplift is possible although typically only when strong explicit support is provided. In addition, uplift -- such that the supported entity's rating is equal to the supporter's rating -- is rare without meaningful explicit support. This can be the case even where the company's management states that the subsidiary is core to its ongoing strategy and operation, primarily due to the risks that the supporter may change its strategy or the supporter's regulator may constrain support in times of stress, particularly if support is to be provided outside of their own jurisdiction.

Where the owner-supporter is a government and we are using this methodology to assign a BCA to incorporate support we use our methodology that discusses government-related issuers and the joint default analysis approach described therein. For clarity, support from a non-government owner is incorporated using the support portion of the Life insurers scorecard, whereas support from a government owner is considered outside of the Life scorecard.

Factoring in Support from Other-Than-Related Entities

Our ratings of life insurers do not typically reflect an expectation of government support. Based on our observations, we believe government support would neither be widely offered nor sufficiently reliable nor predictable to be routinely incorporated into our life insurance ratings. In the limited cases where such support is received, we consider its credit implications on a case-by-case basis. If we believe government support is long term in nature, or if the insurer is directly owned by the government, we may apply the rating methodology for government-related issuers (GRIs) when evaluating the credit profile of the insurer.[33] (Please see the Assigning Insurance Financial Strength and Instrument Ratings section below).

If the insurer is part of a bancassurance group, and there is clear evidence that failure of the insurer would have negative implications on the creditworthiness of banking operations, the likelihood of support by the government may increase. However, we expect such support to be rarely applied and focused on limiting any damage to the bank franchise.

Other Rating Considerations

Ratings may include additional factors that are not in the scorecard, usually because they may have a meaningful effect in differentiating credit quality, but only in some cases. Such factors include financial controls and the quality of financial reporting; the quality and experience of management; environmental and social considerations; exposure to uncertain licensing regimes; and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings.

[33] A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

Following are some examples of additional considerations that may be reflected in our ratings and that may cause ratings to be different from scorecard-indicated outcomes.

Special Rating Situations

In a few, very special – and typically adverse – situations, a single factor or sub-factor may be so important to a company's financial health and solvency, that it overrides all of the others, despite its nominal weighting in the scorecard. This would typically occur in highly adverse situations, where a company's solvency or liquidity is at stake. Examples of this would include the breach of local capital-solvency or risk-based capital thresholds that precede regulatory intervention, or concerns of a looming liquidity crisis – e.g., a material holding company debt maturity with a highly uncertain source of repayment.

If a rated entity has cliff-like rating triggers,[34] its susceptibility to events may be exacerbated.

Special Rating Situations often deal with information that is not necessarily captured by point-in-time ratios, or annual / quarterly regulatory or reporting requirements. For this reason, we may stress critical solvency ratios and liquidity needs to identify potentially severe pressure points, and the resultant scenario may be considered in an additional view of the scorecard.

Financial Institutions with Limited Financial History

Most rated insurers have many years of financial history and lengthy operating track records that generally act as the basis for our forward-looking credit analysis. Insurers with limited financial history may undergo rapid evolution initially, before developing readily distinguishable and stable operating characteristics. Financial institutions are highly confidence-sensitive. A demonstrable track record can be instrumental in building customer and market trust, which creates franchise value and supports the institution's performance during a down cycle.

The franchise value of start-up insurers is usually weak, and most tend to lack product depth, market share, operating experience as an institution (rather than as a collection of individuals) and a record of resilience through a full credit cycle. Their systems, policies and procedures tend to be less robust than those of established insurers.

For start-ups that lack a financial history of at least several years and in cases of a material transformation in an insurer's business, such that its financial history does not provide a good indication of future results (collectively, insurers with limited financial history), existing financial history provides less insight into the future credit profile. In these cases, our baseline projections may reflect more-conservative expectations than management's projections. In addition, we are likely to make downward adjustments to several factors in our scorecard in order to reflect the considerable uncertainty around our baseline expectations of future operations and financial profile. To the extent these risks and uncertainties are not fully captured in the scorecard, they may be reflected in an assigned IFSR that is lower than the scorecard-indicated outcome.

Insurers with limited financial history may benefit from external support. When material, we incorporate that support into our ratings. In assessing the level of expected support, we generally consider whether the company's status as a start-up could affect the willingness of the support provider to step in should support be needed. For a highly publicized start-up subsidiary of a parent with a solid credit profile, we may expect a high level of support. Certain parent companies and affiliates, conversely, could be less willing to provide support if the reputational and financial risks attached to failure of an early-stage business venture were lower than for subsidiaries with long track records and entrenched businesses in their home markets. We generally expect that governmental support for start-ups, typically small players in the early years of

[34] Rating triggers are typically used in credit agreements covering funded bank loans and unfunded credit lines (providing back-stop liquidity) and in bond indentures and reinsurance contracts. Creditors often use rating triggers in an attempt to protect themselves in the event of credit deterioration. A rating trigger typically provides creditors with certain rights in the event that a borrower's credit ratings change to predetermined levels. These rights run the gamut from step-ups in loan pricing (not very risky) to events of default that would enable the creditor to "put" or accelerate the debt (very risky).

operations that are not systemically important, to be low. Exceptions could include government-owned start-ups and start-up insurers of long-term strategic importance to government policy initiatives.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including the proper tone at the top, centralized operations, and consistency in accounting policies and procedures. Auditors' comments in financial reports and unusual financial statement restatements or delays in regulatory filings may indicate weaknesses in internal controls.

Additional Metrics

The metrics included in the scorecard are those that are generally most important in assigning ratings to companies in this industry; however, we may use additional metrics to inform our analysis of specific companies. These additional metrics may be important to our forward view of metrics that are in the scorecard or other rating factors.

Environmental Risks, Including Climate Change

Life insurance companies typically invest predominantly in long-term bonds to match their long-term liabilities and have broadly diversified portfolios that include credit exposure to sectors affected by environmental risks, such as oil and gas and utilities. However, active portfolio management, including managing credit risks, is a core strength of the industry. Additionally, our review of investment risk typically includes a review of sector concentrations. The relatively long runway for most environmental risks provides time for forward-looking insurers to adjust their investment holdings. Climate change could somewhat affect mortality rates over the long term, and insurers that underwrite policies in a limited geographic area (small country or region) could be more affected by natural and man-made disaster risks.

Social Issues

For issuers in this sector, we also consider social issues that could materially affect the likelihood of default and severity of loss, for example through adverse impacts on business reputation, brand strength and employee relations.

Assigning Insurance Financial Strength and Instrument Ratings

IFSRs are opinions of the ability of insurance companies to pay punctually senior policyholder obligations and claims and also reflect the expected financial loss suffered in the event of default.[35] IFSRs are assigned to legal entities.

In contrast, our long-term debt and preferred stock ratings are assigned to specific instruments issued by either a holding or operating company. The relationship between IFSRs and instrument ratings depends on the legal and regulatory framework in a particular jurisdiction and the relative standing of policyholders and instrument holders in the event of insolvency, bankruptcy, reorganization or liquidation of the entity. The relationship between the ratings for these different classes of creditors is discussed in our cross-sector methodology providing guidance on assigning ratings to instruments issued by insurers.[36] For issuers that benefit from rating uplift from government ownership or other government support, we may assign a Baseline Credit Assessment.[37]

[35] Please refer to *Rating Symbols and Definitions* for more details. A link can be found in the "Moody's Related Publications" section.

[36] A link to an index of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

[37] For an explanation of the Baseline Credit Assessment, please refer to Rating Symbols and Definitions and to our cross-sector methodology for government-related issuers. A link to an index of our sector and cross-sector methodologies and a link to Rating Symbols and Definitions can be found in the "Moody's Related Publications" section.

Global and National Scale Ratings

With the extension of credit ratings to a broader range of markets, our rating scales have evolved to provide comparability on both a globally and nationally consistent basis.

We have developed two rating scale conventions, namely Global Foreign and Local Currency Ratings (GFC and GLC Ratings) and National Scale Ratings (NSRs).[38] By convention, reference to an insurer's IFSR is understood to refer to the Local Currency IFSR on the global rating scale, unless otherwise specified. Foreign Currency IFSRs are the same as the Local Currency IFSRs, except where the Local Currency IFSR is above the country's Foreign Currency Bond Ceiling, in which case it will be the same as the Foreign Currency Bond Ceiling.

Assumptions

Key rating assumptions that apply in this sector include our view that sovereign credit risk is strongly correlated with that of other domestic issuers, that legal priority of claim affects average recovery on different classes of debt sufficiently to generally warrant differences in ratings for different debt classes of the same issuer, and the assumption that access to liquidity is a strong driver of credit risk.

Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, industry competition, disruptive technology, or regulatory and legal actions.

Limitations

In the preceding sections, we have discussed the scorecard factors, many of the other rating considerations that may be important in assigning ratings, and certain key assumptions. In this section, we discuss limitations that pertain to the scorecard and to the overall rating methodology.

Limitations of the Scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual ratings.

The scorecard in this rating methodology is a relatively simple tool focused on indicators for relative credit strength. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

The weights for each sub-factor and factor in the scorecard represent an approximation of their importance for rating decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual company's circumstances.

Factors that are outside the scorecard, including those discussed above in the "Other Rating Considerations" section, may be important for ratings, and their relative importance may also vary from company to company. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[39] Examples of such considerations include

[38] See our cross-sector methodology for mapping national scale ratings from global scale ratings. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[39] A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

the following: how sovereign credit quality affects non-sovereign issuers, the assessment of credit support from other entities, the relative ranking of different classes of debt and hybrid securities, and the assignment of short-term ratings.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way.

General Limitations of the Methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning ratings in this sector. Companies in the sector may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other rating considerations, typically diminishes. In any case, predicting the future is subject to substantial uncertainty.

Appendix 1: Using the Scorecard

This appendix describes how we use the scorecard to arrive at an alphanumeric scorecard-indicated outcome.

Alphanumeric categories from Aaa to C are mapped to numeric values of 1 through 21, as follows:

Alphanumeric Categories	Numeric Value
Aaa	1
Aa1	2
Aa2	3
Aa3	4
A1	5
A2	6
A3	7
Baa1	8
Baa2	9
Baa3	10
Ba1	11
Ba2	12
Ba3	13
B1	14
B2	15
B3	16
Caa1	17
Caa2	18
Caa3	19
Ca	20
C	21

Source: Moody's Investors Service

Qualitative sub-factors are scored on a broad alpha scale based on the scoring descriptions (with an equivalent numeric score based on the midpoint of that alpha category), and these sub-factor scores are combined to produce an alphanumeric factor score. A numeric value for each score is mapped from the table above. A numeric value between 1 and 18 is established for each financial metric through linear interpolation. Taking, for example, the scoring ranges for the Financial Flexibility factor, a company with adjusted financial leverage of 22% would map to a numeric score of 2.9 and fall within the Aa range for that metric, and a company with financial leverage of 34% (mapping to a 5.7 numeric score) would fall within the A range. The weightings per the table below are then applied to arrive at an overall numeric value for each scorecard factor. The numeric value by scorecard factor is mapped back to the Aaa through C scale shown above.

Each scorecard factor is assessed and then weighted according to its importance within our rating approach for the industry. The Operating Environment score, to the extent it corresponds to a broad alpha category of Baa or below, is accorded a weight as shown in the following table. These weights apply regardless of the modifier (1, 2 or 3). The Operating Environment's weight is variable and increases toward the lower end of

the rating scale for scores at the Baa level or below. Importantly, the Operating Environment component is reflected in an insurer's credit profile only to the extent that it exerts a downward influence.

	Aaa	Aa	A	Baa	Ba	B	Caa
Operating Environment Weights	n/a	n/a	n/a	20%	40%	60%	80%

Source: Moody's Investors Service

Once the weighted average result (based on the company-specific business and financial factors) is calculated, it is multiplied by one minus the Operating Environment weight, and then added to the result of the Operating Environment weight multiplied by the numeric value associated with the Operating Environment component. Using those weightings, a weighted average is calculated, which is then mapped back to the Aaa through C scale shown above. The result is oriented to the IFSR in the local or foreign currency. This scorecard-indicated outcome may be different from the final rating because it does not consider the analyst's input to the individual factors, or management and governance, special rating situations, and accounting policy and disclosure, as well as implicit/explicit support.

The weightings shown below are our assessment of the typical relative importance of the company-specific factors and sub-factors, and of the Operating Environment for life insurers, but in assigning ratings, individual factors or sub-factors may have greater or lesser weight, depending on the specific characteristics of the insurer. The metrics are primarily calculated based on public information. Non-public financial data or public financial data modified due to accounting and reporting formats in other than US GAAP or IFRS may also be used.

	Factor Weighting	Metric Weighting (relative to factor weights)
Business Profile		
Factor 1: Market Position and Brand	**15%**	
Relative Market Share Ratio (relative to industry average)		100%
Factor 2: Distribution	**10%**	
Distribution Control		50%
Diversity of Distribution		50%
Factor 3: Product Focus and Diversification	**10%**	
Product Risk		60%
Life Insurance Product Diversification		40%
Financial Profile		
Factor 4: Asset Quality	**10%**	
High Risk Assets (HRA) as % of Shareholders' Equity		75%
(Goodwill & Intangibles as % of Shareholders' Equity		25%
Factor 5: Capital Adequacy	**15%**	
(Shareholders' Equity as % of (Total Assets		100%
Factor 6: Profitability	**15%**	
Return on Capital (ROC 5-yr. average)		50%
Sharpe Ratio of ROC (5-yr. average)		50%
Factor 7: Liquidity and Asset/Liability Management	**10%**	
Liquid Assets as % of Liquid Liabilities (%)		100%
Factor 8: Financial Flexibility	**15%**	
Adjusted Financial Leverage		25%
Total Leverage		15%
Earnings Coverage (5-yr. average)		30%
Cash Flow Coverage (5-year average)*		30%
Subtotal – company-specific factors	100%	
Operating Environment	**Variable**	

* This ratio's analytic value has little meaning if the numerator is negative, in which case the sub-factor weighting for the Sharpe ratio is allocated to the ROC metric, and within the overall profitability factor, the ROC reverts to 100%.

* If we are unable to calculate cash flow coverage due to lack of disclosure, we allocate the weight assigned to this sub-factor to our earnings coverage sub-factor.

Source: Moody's Investors Service

Differences between the scorecard-indicated outcome and the standalone credit profile may exist due to analytic judgment regarding the weighting of the factors, the importance of the other analytic considerations, or other unique fundamentals of the company not appropriately captured or weighted by the scorecard. Furthermore, the standalone credit profile may be different from the actual rating due to affiliate support or sovereign considerations.

Appendix 2: Takaful (Islamic) Insurers

Takaful is a form of insurance that complies with the fundamentals of Sharia (Islamic religious law). It is based on the principles of mutual assistance, co-operation and voluntary contribution, with risks shared collectively and voluntarily by a group of participants. Participants in Takaful arrangements agree to contribute a sum of money (tabarru) to a common pool with the intention of financially assisting fellow participants in case of any misfortune. In this respect, it is similar to conventional mutual insurance arrangements, and we make a number of adjustments to our standard life insurance and property and casualty insurance (P&C) methodologies as a result.

Main differences between Takaful and Conventional insurers

A Takaful insurer's financial statements include an income statement and balance sheet for both the Takaful fund (policyholder) and shareholder fund. Depending on the specific Takaful model adopted by the insurer, the shareholder fund typically receives revenue streams either from i) a profit-sharing agreement based on the underwriting profit of the Takaful fund (Al Mudharaba, as is common in Malaysia), or ii) via fees charged to the Takaful fund on revenues to cover the operating costs (Wakala) and the asset management costs (Mudaraba), as is common in the Middle East. A third Takaful model, Waqf, also exists where the distribution of generated surplus is not permitted and the fund operates as a public foundation.

Irrespective of the Takaful model used, if the policyholder fund falls into deficit, the Takaful insurer's shareholders typically have a constructive obligation to make an interest-free loan (Qard-al-Hassan) available to the Takaful fund to meet this deficit, which is repayable out of future profits emerging from the Takaful fund.

Analytic adjustments

Because of these inter-relationships between shareholders and policyholders, our analytical approach is to effectively aggregate the two sets of income statements and balance sheets and eliminate any double counting.

However, a number of additional concepts are relevant in our analysis of Takaful insurers, including the following: i) because Sharia law prohibits the payment of riba (interest), this disqualifies conventional bonds as an acceptable investment class, increasing the likely exposure to higher-risk asset classes, such as real estate or Sharia-compliant equities; ii) as Sharia-compliance is monitored by a Sharia board at the insurer, this poses additional reputational risks relative to a conventional insurer in the event of non-compliance with Sharia law; and iii) as with mutuals, we recognize that the maximization of return on capital, particularly within the policyholder fund, is not always the company's primary objective.

Regarding market position and brand, the importance of purchasing a Takaful product for some policyholders effectively limits their choice to Islamic insurers. We, therefore, consider the market position and brand of an issuer within the Takaful segment of the overall insurance market the issuer operates in and within the total insurance market.

With regard to asset risk, as discussed earlier, Takaful insurers' investment options are somewhat restricted compared to a conventional insurer. We therefore consider the investment risk of the issuer in the context of the asset classes in which a Takaful insurer is permitted to invest. Notwithstanding this, we typically consider higher-risk assets such as equities and real estate to be detrimental to the creditworthiness of Takaful.

Arguably the most significant adjustment relates to capital adequacy. As discussed above, we effectively aggregate the shareholder and policyholder balance sheets (and income statements) of a Takaful insurer,

and we evaluate the company's capital position on a consolidated basis, reflecting the capital available in the policyholder and shareholder funds. However, if the policyholder fund is in a sustained, structural deficit position and is reliant on funding from the shareholders, we typically cap our assessment of the insurer's capital adequacy at the Ba level, notwithstanding that many Takaful insurers generate only modest insurance revenues relative to their consolidated capital base. As part of this analysis, we also consider the fungibility of capital between the balance sheets, with shareholders obliged to make an interest free loan to the policyholder fund if this is in deficit. However, because the loan is repayable out of future profits emerging from the policyholder fund, sustained losses may mean it is not possible to repay this loan.

We also aggregate the profitability of the policyholder fund with that of the shareholders and eliminate any intra-income statement balances. This ensures that if the fees charged to the policyholder fund by shareholders do not exactly reflect the actual expenses incurred in any particular accounting period, the net impact is zero once the fees are eliminated. This facilitates a better assessment of the underlying profitability of the business written.

Appendix 3: Analyzing 'Composite' Firms Active in Both Property and Casualty and Life Insurance

This appendix identifies the key metrics used when evaluating companies that have a diversified business model writing meaningful amounts of both property and casualty (P&C) and life insurance business within the same analytic unit.[40] Such insurers are referred to as composites.

Scorecard Factors and Key Metrics for Composite Companies

Examples of insurers writing both P&C and life insurance business within the same legal entity, or where the combined non-life and life operations of a company are considered as one analytic unit, have been largely confined to Europe. In assessing such companies, we use a composite scorecard, for which we have selected all of the key factors within the P&C and life insurance methodologies.

[40] Examples of analytic units for which a composite scorecard is produced include legal entities that write both life and non-life business, and a regional group of non-life and life companies that are subject to common management, systems, distribution, and internal review and may publish consolidated accounts. These analytic units typically have P&C insurance premiums/reserves and life insurance premiums/reserves that individually represent more than 15% of total premiums/reserves.

Composite Insurers: Summary of Scorecard Factors, Metrics and Scoring Guidelines

Key Factors and Metrics (weights/sub-factor weights relative to factor weights)	Aaa	Aa	A	Baa	Ba	B	Caa
Business Profile							
Market Position and Brand (20%)							
Relative Market Share (relative to industry average)	≥ 3x	1.5x < x < 3x	0.5x < x ≤ 1.5x	0.25x < x ≤ 0.5x	0.15x < x ≤ 0.25x	0.05x < x ≤ 0.15x	≤ 0.05x
Distribution (5%)							
Distribution Control (50%)	Owned captive or controlled distribution system whose high cost structure is aligned with high value products; excellent distribution productivity and retention that leads to persistent, stable, and profitable business.	Blend of controlled distribution and preferred position in multiple unaffiliated independent third-party distribution sources; captive agent distribution systems' higher cost structure is aligned with high value products; above-average distribution productivity and retention leads to persistent, stable, and profitable business; relative strength in negotiating distribution contracts and costs with third parties. Not overly dependent on one distributor for sourcing of business - distribution at company is aligned by product type and costs; able to easily expand distribution and channel-penetration on a profitable basis; attractive provider to new distribution channels.	Blend of controlled distribution and unaffiliated independent third party distribution sources; controlled distribution systems' high cost structure not effectively aligned with commodity-like products being sold; less preferred position with third-party distributors who are less loyal, resulting in higher surrender rates, increased liquidity concerns and more volatile/less profitable business; able to align third-party distribution with type of products sold, but less negotiating power in arranging distribution contracts and costs.	Unaffiliated independent third-party distribution, not likely to have preferred position with third-party distributors, increased liquidity concerns, increased movement of business if concerns about company's financial position, able to align distribution with type of products sold, but scale and other issues leave company in poor position negotiating distribution contracts and costs.	Unaffiliated independent third-party distribution, marginalized position with third-party distributors, increased liquidity concerns, increased movement of business with concerns about company's weak financial position, may not be able to align distribution with type of products sold, and scale and other issues leaves company in poor position negotiating distribution contracts and costs.	Company has lost access to most or all of its unaffiliated third-party distribution channels and sales production capabilities, due to the run-off of its business resulting from concerns about company's viability/financial position.	n/a

Composite Insurers: Summary of Scorecard Factors, Metrics and Scoring Guidelines

Key Factors and Metrics (weights/sub-factor weights relative to factor weights)	Aaa	Aa	A	Baa	Ba	B	Caa
Diversity of Distribution (50%)	Greater than 5 distinct distribution channels each with > 10% of premiums; no concentration in any one channel for sourcing of business; strong alignment by product type and costs; an anchor product provider sought out by new distribution channels.	4 distinct distribution channels with >10% of premiums; no significant dependence on any one distributor for sourcing of business; distribution at company is aligned by product type and costs; able to easily expand distribution on a profitable basis; attractive provider to new distribution channels.	3 distinct distribution channels with >10% of premiums; more dependence on a few sources of distribution; position within third-parties is modest; more vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; capable of adding some new distribution outlets on a profitable basis.	Dependence on 2 distribution channels; vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; difficulty in attracting new distributors on profitable basis.	Dependence on a single distribution channel for all premiums; very vulnerable to disruption and changes in distribution channels, as distributors can easily switch to other carriers; unable to attract new distributors.	Company has no active distribution channels; business has either purposely been put into run-off or distribution access has shut down due to company-specific financial stress.	n/a
Product Focus and Diversification (10%)							
Product Risk – P&C (25%)	Very granular exposures; short-tail lines; very low risk of estimating ultimate claim costs.	Granular exposures; short- and medium-tailed lines represent more than 2/3rd of premiums; generally moderate risk of estimating ultimate claim costs, but may have manageable property catastrophe risk.	Policies may have high gross limits relative to equity; risk of estimating ultimate claim costs is meaningful; longer-tailed lines may represent more than 1/3rd of premiums; manageable catastrophe risk may be present in either casualty or property exposures.	Longer-tailed lines are majority of premiums and/or policies have high gross limits relative to equity; risk of estimating ultimate claim cost may be significant; significant catastrophe risk may be present in either casualty or property exposures.	Combination of size of in-force portfolio and size of individual policies limits application of "law of large numbers"; claim cost estimation risk is high; catastrophe risk is substantial.	Extremely volatile in-force portfolio, the size of which and the size of individual policies significantly limits application of "law of large numbers"; claim cost estimation risk is very high; catastrophe risk is substantial.	n/a
Product Risk – Life (25%)	Low Risk Reserves are > 50% of Total Reserves; majority of liabilities have high ability to share risk with policyholders; low interest rate, equity market, and/or liquidity risks; liabilities have very modest guarantees and limited policyholder optionality that will be exercised;	Low Risk Reserves are 40%-50% of Total Reserves; significant portion of liabilities have above-average ability to share risks with policyholders; low or manageable interest rate, equity market, and/or liquidity risks; liabilities have moderate amounts of embedded guarantees and policyholder	Low Risk Reserves are 30%-40% of Total Reserves; moderate amount of liabilities have ability to share risks with policyholders; higher interest rate, equity market, and/or liquidity risks in both asset accumulation and protection products; meaningful embedded pricing guarantees and	Low Risk Reserves are 20%-30% of Total Reserves; limited amount of liabilities have ability to share risks with policyholders; higher interest rate, equity market, and liquidity risk in both asset accumulation and protection products; significant embedded pricing guarantees and	Low Risk Reserves = 10%-20% of Total Reserves; low risk sharing with policyholders; high interest rate, equity market, and/or and liquidity risk in just asset accumulation products; substantial embedded long-term pricing guarantees; and policyholder optionality	Low Risk Reserves = 0%-10% of Total Reserves; no risk sharing with policyholders; singular concentration in high risk asset accumulation products; interest rate, equity market, and/or and liquidity risk; substantial embedded long-term pricing guarantees; and policyholder optionality	n/a

Composite Insurers: Summary of Scorecard Factors, Metrics and Scoring Guidelines

Key Factors and Metrics (weights/sub-factor weights relative to factor weights)	Aaa	Aa	A	Baa	Ba	B	Caa
	minimal market conduct risk.	options; modest market conduct risk.	policyholder optionality that could be exercised; moderate market conduct risk.	policyholder optionality resulting in greater variability around expected long term profitability; complex products that may have increased market conduct risks.	resulting in great variability around expected long term profitability; complex products that may have increased market conduct risks.	resulting in great variability around expected long term profitability; complex products that may have increased market conduct risks.	
Product Diversification (25%)	Minority segment produces at least 35% of gross written premiums.	Minority segment produces 25%-35% of gross written premiums.	Minority segment produces 15%-25% of gross written premiums.	n/a	n/a	n/a	n/a
Geographic Diversification (25%)	No single regulated region generates more than 20% of total net premiums written.	No single regulated region generates more than 40% of total net premiums written.	No single regulated region generates more than 60% of total net premiums written.	No single regulated region generates more than 80% of total net premiums written.	One regulated region generates more than 80% of total net premiums written.	n/a	n/a
Financial Profile							
Asset Quality (10%)							
High Risk Assets % of Shareholders' Equity (55%)	≤ 25%	25% < x < 50%	50% ≤ x < 100%	100% ≤ x < 175%	175% ≤ x < 250%	250% ≤ x < 325%	≥ 325%
Reinsurance Recoverables % of Shareholders' Equity (15%)	< 35%	35% ≤ x < 70%	70% ≤ x < 100%	100% ≤ x < 150%	150% ≤ x < 200%	200% ≤ x < 250%	≥ 250%
Goodwill & Intangibles % of Shareholders' Equity (30%)	≤ 20%	20% < x < 30%	30% ≤ x < 40%	40% ≤ x < 55%	55% ≤ x < 75%	75% ≤ x < 95%	≥ 95%
Capital Adequacy (15%)							
(Shareholders' Equity minus 10% of HRA) as % of (Total Assets minus 10% of HRA) (100%)	≥ 12%	8% < x < 12%	6% < x ≤ 8%	4% < x ≤ 6%	2% < x ≤ 4%	0% < x ≤ 2%	≤ 0%
Profitability (15%)							
Return on Capital (5yr. avg.) (50%)	≥ 12%	8% < x < 12%	4% < x ≤ 8%	0% < x ≤ 4%	(4%) < x ≤ 0%	(8%) < x ≤ (4%)	≤ (8%)
Sharpe Ratio of Return on Capital (5 yr.) (50%)	≥ 400%	300% < x < 400%	200% < x ≤ 300%	100% < x ≤ 200%	0% < x ≤ 100%	n/a	n/a

Liquidity and Asset/Liability Management (5%)							
Life Liquid Assets as % of Life Liquid Liabilities (100%)	≥ 4x	2x < x < 4x	1.5x < x ≤ 2x	1x < x ≤ 1.5x	0.75x < x ≤ 1x	0.5x < x ≤ 0.75x	≤ 0.5x
Reserve Adequacy (5%)							
Loss Reserve Development as % of Reserves (100%)	≤ (5)%	(5)% < x < (2)%	(2)% ≤ x < 2%	2% ≤ x < 5%	5% ≤ x < 7%	7% ≤ x < 9%	≥ 9%
Financial Flexibility (15%)							
Adjusted Financial Leverage (25%)	≤ 15%	15% < x < 30%	30% ≤ x < 40%	40% ≤ x < 50%	50% ≤ x < 60%	60% ≤ x < 70%	≥ 70%
Total Leverage (15%)	≤ 15%	15% < x < 30%	30% ≤ x < 40%	40% ≤ x < 50%	50% ≤ x < 60%	60% ≤ x < 70%	≥ 70%
Earnings Coverage (5 yr. avg.) (60%)	≥ 12x	8x < x < 12x	4x < x ≤ 8x	2x < x ≤ 4x	0x < x ≤ 2x	(2x) < x ≤ 0x	≤ (2x)
Operating Environment (Variable %)							

Source: Moody's Investors Service

For some of the factors common to both P&C and life insurance, we have used either P&C metrics (e.g., for Asset Quality), or life insurance metrics (e.g., for Capital Adequacy), or, in the case of Product Focus and Diversification, combined various elements. For each key factor selected, the scorecard metrics correspond exactly to the ones used in the P&C and life insurance methodologies, apart from the Product Diversification and Geographic Diversification metrics under the Product Focus and Diversification factor. In light of the combination, and therefore greater number of key factors employed, the factor weightings in the composite scorecard are different in some cases from those used in the P&C and life insurance methodologies. Sub-factor weightings are different only for the Asset Quality and Product Focus and Diversification factors.

Using the Scorecard for Insurers That Write Both P&C and Life Business

Differences between the scorecard-indicated outcome and the actual standalone credit profile may exist due to analytic judgment regarding the weighting of the factors, the importance of the other analytic considerations, or other unique fundamentals of the company not appropriately captured or weighted by this scorecard. Furthermore the standalone credit profile may be different from the actual rating due to parental support or sovereign rating considerations.

Appendix 4: Liquid Assets to Liquid Liabilities Ratio

Our liquid assets to liquid liabilities ratio uses a simple classification scheme to rank and classify operating companies' assets and liabilities into discrete "buckets," where assets (or liabilities) with similar liquidity characteristics are grouped together in a common bucket. We assign a corresponding liquidity factor to each asset or liability bucket. The liquidity factor for each asset bucket considers the expected realizable value of assets in the bucket sold during liquidity stress, as a percentage of carrying value. Similarly, the liquidity factor for each liability bucket considers the percentage of reserve liabilities in a bucket demanded by policyholders during stress, over a one-year time frame. Our approach to estimating asset liquidity risk incorporates an assumption for market value volatility in addition to any liquidity premium that the market might demand.

First, the book and market value totals for each asset bucket, and the total carrying value for each liability bucket (i.e., regulatory reserves), are compiled. Next, liquid liabilities are calculated for each liability bucket by multiplying the bucket's liability factor by the carrying amount; total liquid liabilities, which is the sum of liquid liabilities by bucket, represent the cash that may be needed to meet stress liabilities. Similarly, total liquid assets are calculated by multiplying bucket asset factors by their corresponding carrying amounts and summing all of the bucket liquid assets. Total liquid assets represents the amount of cash estimated to meet liquid liabilities.

Asset Buckets

Asset Bucket Label	Bucket Descriptor	US Examples	Bucket Percentage[41]
Extremely limited liquidity	Securities with a very inactive or non-existent secondary market	Private equity, real estate and other illiquid alternative investments	10%
Limited liquidity	Securities with a limited secondary market and potentially high market volatility	Private non-investment grade (NIG) bonds and preferred stock, commercial mortgage loans	25%
Moderate liquidity	Liquid privates, securities with high volatility and/or complex/low quality structured securities	Investment grade (IG) private placements, bank loans, CDOs and all NIG ABS	50%
Good liquidity	Vanilla non-gov't/agency securities with a very active secondary market	NIG public corporates, IG vanilla non-gov't/agency MBS and ABS, public equities, public preferred stock	75%
High liquidity	Structured gov't/agency debt that does not qualify for 100% liquidity because of structural complexity and high quality corporates	Agency CMOs, IG public corporates and less liquid IG sovereign/sub-sovereign debt	90%
100% liquidity	Cash, Aaa sovereign/sub-sovereign/regional/municipal debt	Cash, gov't securities, agency senior debt and MBS pass-through	100%

Source: Moody's Investors Service

[41] Asset bucket factors include recognition for potential market value risk in addition to liquidity risk.

Liability Bucket Comparison Across Selected Regions

Liability Bucket Label	Bucket Descriptor	US	UK	Germany	Japan	Bucket Percentage
0% liquidity	Liabilities with no redemption rights or which place zero liquidity strain on the issuer	Payout annuity, non-surrenderable deferred annuity, separate account/unit linked annuity based on NAV	Unit-linked / Non - profit immediate annuities / Non - profit protection	Term Insurance / Annuities in payment / Unit-linked no guarantees	Separate accounts	0%
Low liquidity	Very high quality retail policies with an extremely stable redemption profile: produced by controlled distribution, tax penalties for early withdrawal, risk of loss of insurability	Participating whole life, with-profits life insurance, non-life contingent payout annuities, low face amount home service permanent insurance	Conventional with profit (protection)	Deferred annuities / Unit-linked with guarantees	Life & medical insurance via controlled distribution	10%
Moderate Liquidity	Retail liabilities redeemable at book value with a high penalty charge that are inherently not "sticky"	General account annuities with >5% surrender charge	Non-profit deferred annuities		Life & medical via 3rd-party distribution; individual annuities w/ guaranteed interest rate 2x prevailing rate	25%
High Liquidity	Retail products with very little or no impediment to surrender that are distributed by producers who have some incentive to conserve the business	General account annuities surrenderable at book value with <5% penalty, or with MV adjustment only	Unitized with-profit	Endowment policies	Other individual annuities not in 25% or 75% buckets; Group annuity with surrender charges	50%
Extremely High Liquidity	Products with very little or no impediment to surrender that are distributed by producers who have no incentive to conserve the business				Individual annuities via 3rd party w/o MVA; Group annuity without surrender charges	75%
100% Liquidity	Liabilities expected to be fully paid within a year by definition and redeemable/putable institutional liabilities	Policyholder dividends due and unpaid (D&U), contract claims D&U, reinsurance experience refunds D&U, IIP business putable <13 months, IIP maturing within 12 months			Deferred amounts[42]	100%

Source: Moody's Investors Service

We supplement the liquid assets to liquid liabilities ratio with realized gains (losses)/invested assets and realized gains (losses)/equity. We estimate the amount of realized investment losses that would be recognized as assets are sold to fund the liquid liabilities. These investment losses reflect the amount of capital that would be lost under a liquidity stress scenario, ignoring other sources of liquidity that might be available to the company. The calculation assumes that the company sequentially sells assets starting from the most liquid asset bucket, progressing to less liquid asset buckets, as necessary, until sufficient cash has been raised to fund the liquid liabilities. If only a portion of an asset bucket needs to be sold, the calculation assumes that a pro rata portion of the asset bucket will be sold. We next calculate two ratios to relate the estimated investment losses to (1) invested assets and (2) equity, in order to assess the severity of the impact of forced liquidations on the company's balance sheet.

[42] Represents policyholder benefits on deposit with insurer, receiving a low interest crediting rate and withdrawable at any time at book value.

Appendix 5: Incorporating Stress Testing in Our Analysis — The Pre-defined Stress Scenario

In order to capture the risk to an insurer's credit profile posed by potentially volatile economic and financial conditions, as well as the possibility of catastrophic loss events, we typically consider stress scenarios as a fundamental part of our rating analysis. This appendix explains our approach and, more specifically, our pre-defined stress scenarios.

Combining results of a pre-defined stress scenario with an expected case allows us to gauge the impact of stress on capital of an individual insurer and relative to a group of insurers. Our stress scenario is generally focused on short- to medium-term shock losses to earnings/capital and not on every risk faced by insurers. We also perform supplemental insurer-specific stress tests when an insurer's business profile does not lend itself well to the pre-defined stress scenario.

Our ratings reflect our assessment of the insurer's relative credit profile in a forward-looking expected scenario, but also considers the volatility of a company's credit profile implied by the results of our stress scenario. We generally expect that an insurer can withstand moderate stress while maintaining a credit profile consistent with its assigned rating. In cases where a more severe stress scenario indicates that the company's credit profile would deteriorate dramatically (e.g., by the equivalent of three or more rating notches), we would in most cases assign a rating lower than indicated by our analysis of the expected case scenario.

Our Stress Test Scenario Analysis Focuses on Common Near-to-Medium-Term Risks

We apply a specific stress scenario that is generally focused on short-to-medium-term shock losses to earnings/capital and not on every risk faced by insurers (e.g., not on particularly long-term risks, such as prolonged low interest rates). While we recognize the lack of complete coverage of all risks, we typically assess shock events that offer the insurer limited time to correct for and manage through over a short time horizon. We consider long-term risks faced by insurers and we may additionally undertake insurer-specific stress analysis when an insurer's business profile does not lend itself well to the pre-defined stress test. However, we do not typically consider stress scenarios where the outcome is subject to meaningful variability that is contingent on management's future actions.

Our stress scenario analysis, when combined with an expected case, allows us to gauge the relative impact of stress on the capital and credit profile of an insurer compared to the performance of a group of insurers.

Key Risks Subject to the Stress Scenarios

In the table below, we identify the key "shock" risks we assess. In addition, we summarize the stress scenario we postulate for each key risk. Rather than trying to create stress scenarios that mimic specific historical events, we develop scenarios by specifying defined stresses to key financial attributes. This uniform application of stress analysis facilitates peer comparison.

Although we attribute no specific event probability to our stress scenario, we consider each scenario to be severe.

Key Risk Area	Risk	Stress Scenario[43]
Investments	The risk that investments perform worse than expected	See table below
Catastrophes	The risk of significant underwriting losses arising from a major natural catastrophe like a hurricane or earthquake or a pandemic event	Increased mortality by 1.5 deaths per thousand
Secondary guarantees	The risk of significant losses arising from secondary guarantees, particularly on variable annuities	Impact on liabilities from a 30% drop in equities market

Source: Moody's Investors Service

Of note, our investment stress analysis is based on economic loss, instead of market value, because of the industry's strong liquidity profile and the nature of its (mostly) non-putable liabilities (or putable, with a meaningful penalty to the policyholder in terms of amount reimbursed or coverage forfeited). That said, we generally supplement our economic-loss-based investment scenarios analysis by considering the sensitivity of those results to actual market value losses in times of severe market dislocation. In certain instances, we may use the greater of actual market value losses or economic losses for our analysis of investment stress.

Investment Economic Loss Percentages

Investment Categories	Stress Scenario Loss Percentages
Cash	0%
Fixed maturities[44]	
Aaa/Aa/A	0.5%
Baa	3.5%
Ba	11.7%
B	32.5%
Caa and below	50%
Mortgage/real estate	
Commercial mortgage loans	3.5%
Other mortgage loans	3.5%
Real estate investments	20%
All other	
Non-redeemable preferred securities	5%
Other equity securities	25%
Alternatives	25%
Derivatives	10%
All Other (including corporate and other loans)	10%

Source: Moody's Investors Service

Adding Up Stress for the Stress Test Scenario

Once stress losses from all sources are derived, we assess the impact on capital adequacy. While we recognize the likelihood of each risk occurring simultaneously is low, historical results have shown cycles in

[43] The information necessary to complete the stress test is sourced from public and private sources. When full information is not available, estimates may be used. In addition, adjustments to information may be warranted upon review.

[44] Our fixed income factors are derived from the two-year expected loss after notching down from current rating levels. We adjust for material impairments taken for the lowest-rated instruments.

insured losses and the potential for confluent events to affect investment returns. For this scenario analysis, each risk is summed without the benefit of diversification to create a severe stress scenario.[45] The diversification benefit is less relevant given our objective to look for those insurers whose results deviate materially from the average.

In interpreting the results of the stress test on a subsidiary of a larger group, we consider the extent to which unencumbered excess[46] cash available at an unregulated holding company or affiliate would likely be made available to the operating company(ies)[47] as a capital contribution, if need be. Our analysis of excess cash considers the ongoing permanence of funds maintained outside of the operating company that is above and beyond any amount that would lead to a narrowing of standard debt notching practices for the holding company.

Below is our pre-defined stress scenario template for a life insurance company. In this scenario, investment losses are based on idealized expected losses. When the actual market value of investment losses (calculated as the unrealized loss excluded from opening equity) exceeds severe stress economic investment loss, we may replace the economic loss with the market value of investment loss.

Pre-defined Stress Scenario - Equity Impact Analysis
Beginning Reported Surplus or Equity
Exclude Unrealized Gains or Losses on Investments
Adjusted Beginning Surplus or Equity
Equity Roll Forward:
Recurring Operating Income Before Taxes
Less Stress Losses:
Catastrophe Losses
Investment Losses
Secondary Guarantees
Total: Stress Losses
EBIT
Tax Expense (Benefit)
Net Income
Preferred Dividends
Net Income to Common Shares
Change in Surplus or Equity
% Change in Adjusted Beginning Surplus or Equity Due to Stress Losses

Source: Moody's Investors Service

[45] We do consider losses after tax benefits, although we reduce the tax benefit from local statutory rates to reflect recoverability risk.

[46] E.g., after interest expense and other debt service coverage needs as well as expected shareholder dividend needs.

[47] Scenario testing is performed on an analytic unit basis, which may include more than one legal operating company.

How Ratings Reflect the Stress Scenarios

We typically prepare an alternate view of the scorecard that shows the pre-defined stress scenario analysis. Each insurance scorecard includes an adjusted score for each key rating factor. We combine the adjusted factor scores to arrive at the scorecard-indicated outcome.[48]

While a company's expected performance is already reflected in the adjusted scores, a separate set of adjusted scores are typically prepared for our pre-defined stress scenario (which is severe). The adjusted scores for this severe scenario are generally lower than our expected case adjusted scores. Lower adjusted scores are typical for several financial profile key factors, such as asset quality, capital adequacy, profitability and financial flexibility. In addition, some Business Profile scores may be lower under the pre-defined stress scenario. In many cases, the magnitude of the difference is directly influenced by the relative results of our stress testing.

In cases where the pre-defined stress scenario indicates that the company's credit profile would deteriorate dramatically (e.g., by the equivalent of three or more rating notches), the assigned rating would typically be lower than the expected case scorecard-indicated outcome, in recognition of the potential downside risk to the insurer's credit profile if the stress case were to occur over the medium term.

[48] In certain instances, assigned ratings may reflect uplift where warranted from support from a parent or affiliate. Our scenario testing is performed on a standalone basis before consideration of support.

Appendix 6: Moody's Capital Tool

MCT (Moody's Capital Tool) is a tool used to quantify the typical sources of risk an insurance company[49] faces in order to gauge the adequacy of its resources for covering those risks. MCT uses information about an insurer's business and financial profiles to generate a large number of stochastic loss scenarios and estimate the distribution of changes in the insurer's net asset value (NAV) for a single year.[50] The change-in-NAV distribution, therefore, provides an estimate of the capital required for the company to fully absorb losses at a specified probability (e.g., the 99.5% quantile). MCT produces capital adequacy metrics that compare an insurer's available capital[51] to user-selected quantiles for required capital.

MCT also provides quantitative information about the principal sources of risk facing insurers, allowing an approximate allocation of required capital to a line of business and risk category.

MCT uses a set of economic and insurance scenarios generated by Moody's Analytics Real-World Scenario Generator and a set of proxy functions that are used to estimate the change in assets and insurance liabilities in all scenarios.[52] The tool is intended to capture the key risks insurers typically face, including risks related to interest rates, credit spreads, credit rating migrations, bond defaults, equities, real estate, foreign exchange, mortality, policy lapses, P&C reserving, P&C underwriting, reinsurance defaults, and natural catastrophes. MCT typically uses a combination of the company's public and non-public information. Where such information is lacking, we may make assumptions, for example, by estimating some inputs based on industry averages or using information about the insurer's peers, when similar. MCT's consideration of risk drivers is not exhaustive. For example, the tool does not explicitly incorporate operational risk.

MCT incorporates information about an insurer's business and financial profile including its geographic and product exposures and invested assets. The tool is different in this respect from the internal models developed by insurance companies because it does not contain the level of proprietary detail used by those models. For example, MCT's P&C segment does not require users to input premiums and reserves by line of business. Instead, the insurer's business risk may be described in the tool by entering the sub-factor scores for Product Focus and Diversification. MCT uses standard parameters that apply by product category in a country. Thus, MCT treats all products in the same category (e.g., participating savings products) in a given market (e.g., Italy) as having similar features. While such uniformity may not hold in practice, we find that for many markets, products within the same category are often similar across competitors. In some instances, products within the same category can be differentiated in the tool as "low risk" or "high risk."

In cases where particular liabilities are not stochastically simulated in MCT (e.g., because of data limitations or because MCT's simulation framework does not apply), the tool classifies these as "other" and applies a fixed capital charge.

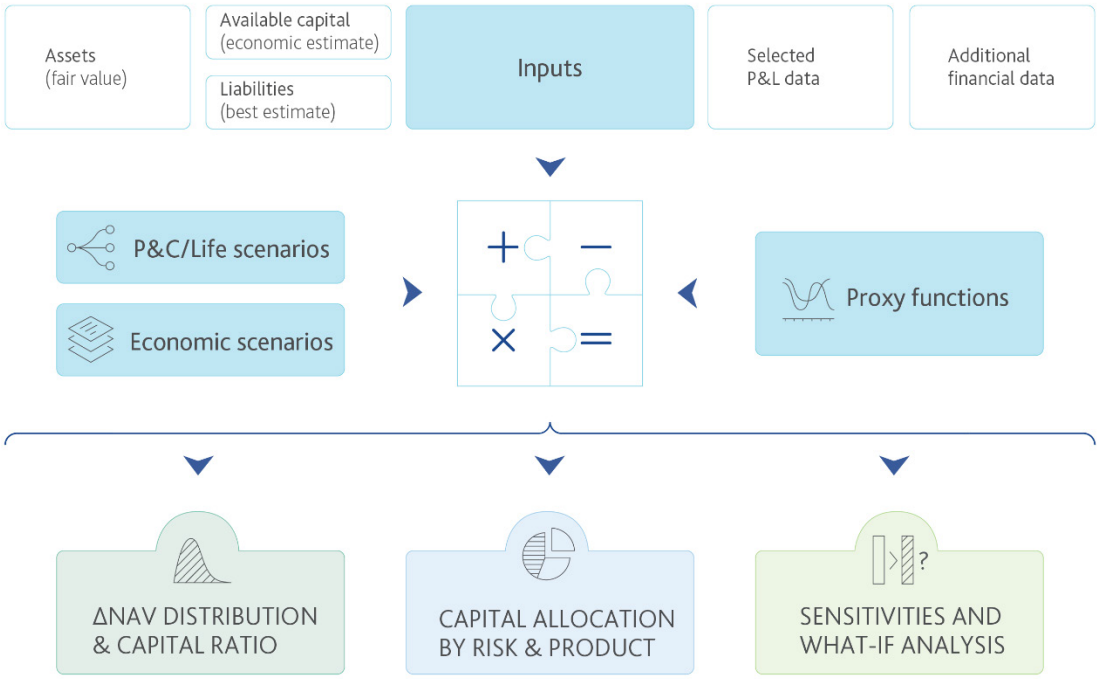
[49] The MCT model may be used for P&C insurers or life insurers.

[50] An insurer's NAV is the estimated difference between the economic value of its assets and the economic value of its liabilities.

[51] For clarity, available capital refers to an economic valuation of the insurer's reported shareholders' equity.

[52] Proxy functions serve as computational aids in MCT. They are developed and calibrated to efficiently approximate more complex models of risk. For example, using a proxy instead of a cash flow model enables rapid estimation of changes in assets or liabilities based on how they depend on economic and insurance-specific variables.

EXHIBIT 1
Moody's Capital Tool
Overview



Source: Moody's Investors Service

Evaluating P&C Insurance Risks

For P&C insurance analysis, MCT treats underwriting risk, reserving risk and catastrophe risk separately.

Underwriting Risk

MCT uses a modeling assumption that the change in NAV due to underwriting risk (also known as pricing risk) is predominantly explained by a company's specific product risk, its product diversification, the company's premium volume and general inflation.

Reserving Risk

MCT uses a modeling assumption that the change in NAV due to reserving risk is explained by the following: (i) a market-specific component, driven largely by the medical inflation rate; (ii) a company-specific component driven by product risk, product diversification and the company's reserve balance; and (iii) the risk that reserve strengthening may continue for several years (implemented in the tool using a serial correlation factor).

Catastrophe Risk

MCT stochastically simulates annual catastrophe losses using a company's estimated return-period curve for natural catastrophe losses. The user enters estimated catastrophe losses, both gross and net of any expected reinsurance recoveries, at various return periods (e.g., the once-in-a-100-years annual loss) and the tool estimates the return-period loss curve including for return periods between the user-specified return periods (using piecewise linear interpolation) and for return periods that extend beyond the most remote user-specified return period (using linear extrapolation).

MCT uses the gross and net catastrophe loss information to simulate losses ceded to reinsurers and thereby estimate an insurer's credit exposure risk to its catastrophe reinsurers. MCT estimates the impact of reinsurance default risk for balance sheet reinsurance recoverable (i.e., for catastrophes that have already occurred), separately. These are described in the "Asset Risk" section below.

MCT can simulate catastrophe losses in several regions simultaneously, if the corresponding regional catastrophe curves are available as inputs, or in the aggregate based on the company's global catastrophe curve. If the global curve is used, the tool will correlate simulated catastrophe losses with simulated equity markets shocks in the economy associated with the reporting currency of the insurer.[53]

Evaluating Life Insurance Risks

For each life insurance product that is modeled, a proxy function has been computed to estimate the change in the difference between the value of liabilities associated with the product and the value of the typical assets backing these liabilities. These proxy functions are not company-specific. Rather, they are intended to reflect the "average" product sold in a given market and reflect our view of how the products work. The modeling parameters used in these cash flow proxies incorporate market data or averages of cohorts of insurers operating in the market. Most of MCT's life insurance proxy functions have been built from underlying ad hoc cash flow models (for most life products in EMEA and in Asia-Pacific) or by using Moody's Analytics AXISTM actuarial system (for North American life products). MCT treats low-risk health and protection products that we expect generate recurring or stable earnings by adding the expected annual result for such products (as opposed to a simulated distribution of results) to the change in NAV in each scenario that is run for an insurer.

One or several of the following factors describe the risk drivers that typically relate to various life insurance products: the average guaranteed rate of in-force policies, the duration of these policies, the profit-sharing rules applicable to these products, modeling assumptions regarding the triggers of payments to policyholders or their beneficiaries (e.g., deaths, lapses and maturities), and the typical asset allocation we estimate would be used in a given market to support associated liabilities.

Variables used by the proxy function include the following: absolute change in the annual nominal government spot rate, absolute change in the government spot rate yield curve slope (i.e., between the 10-year spot rate and the one-year), absolute change in rate spread, change in credit rating migration (including defaults), equity market return, real estate return, relative change in mortality rate, relative change in insurance lapse rate and annual inflation.[54]

Asset Risks

As explained previously, most life proxy functions used in MCT estimate the change in the difference between the value of the liabilities and the value of the typical mix of assets backing these liabilities. In practice, however, an insurer's actual investment allocation will usually be different from the benchmark asset mix used for the construction of the proxy functions. Therefore, to incorporate an insurer's asset mix, MCT simulates the difference between the insurer's actual asset allocation and the typical asset allocation used in the tool.

MCT estimates asset risk by using the stochastic scenarios embedded in the tool. Equity and real estate assets are reevaluated in each scenario directly based on equity return index and real estate return index variables. The value of the insurer's sovereign bond portfolio is recalculated in each scenario as the risk-free rate evolves. MCT also models the default of sovereign bonds if exposures by country are available. MCT

[53] In practice, in most cases, the largest catastrophe exposure of a company is within the economy associated with the reported currency.

[54] For clarity, we use two points on the risk-free yield curve to estimate changes in levels of rates and the slope of the curve. For spread risk, we use one specific variable available in Moody's Analytics Economic Scenario Generator tool to calculate changes in spreads in the scenarios. Similarly, we use one specific variable for credit rating migration risk.

simulates non-sovereign bonds by partitioning an insurer's portfolio according to five rating categories, namely, Aaa, Aa, A, Baa, and Ba and below.[55] The value of corporate bonds in each category is recalculated in each stochastic scenario according to simulations of the risk-free rate, bond yields, rating-specific spreads, defaults, and credit ratings migration.

If the duration of bonds is not available, the tool uses a default value for P&C companies and a default value for life companies. Similarly, if the breakdown by rating of certain asset classes is missing, the tool applies default breakdown by rating category.

MCT's default assumption is that there is no currency risk in insurers' balance sheets. This assumption reflects our view that most insurers typically currency-match assets and liabilities. However, where an insurer invests a significant part of its portfolio in currencies that are different from its liability currency, a user can include this information in MCT to estimate the corresponding currency risk.

MCT also estimates the required capital associated with P&C reinsurance recoverables. The tools treats reinsurance recoverables using the same approach it uses for non-sovereign bonds, including rating category distribution.[56] The default rate of reinsurance recoverables varies by the severity of the catastrophe event simulated. In case of a sizable natural catastrophe event, the default risk of reinsurers is exacerbated in the tool.

Model Outputs

MCT provides two types of output:

» Specific quantile of the change-in-NAV distribution, compared with the insurer's economic level of available capital.

» Drivers of the change in NAV at the chosen quantile by risk category and by line of business, before and after diversification.

Change-in-NAV Distribution Quantiles and Use of the Tool

MCT's change-in-NAV distribution for a company can be used to estimate the capital required for the company to fully absorb losses up to specified quantile of the distribution. The 99.5% quantile is a commonly used required capital level in the insurance industry.

The required capital at a given quantile, typically 99.5%, is compared to insurer's available capital. To estimate an insurer's available capital, MCT makes economic valuation adjustments to certain asset and liability accounts based on user inputs related to the company's accounting regime. These accounts also typically include the standard adjustments that apply based on our cross-sector methodology on financial statement adjustments for financial institutions.[57] Thus, the tool's estimate of the company's available capital reflects the combined effect of these adjustments on the company's reported shareholders' equity.

[55] MCT treats unrated bonds by placing them in the Ba and below category.

[56] The tool treats reinsurance recoverables for losses that the insurer has paid as well as for loss reserves ceded to reinsurers.

[57] A link to a list of our sector and cross-sector credit rating methodologies can be found in the "Moody's Related Publications" section.

The main adjustments include:

- An adjustment that deducts the value of goodwill and other non-insurance related intangibles.
- An adjustment to reflect the difference between the fair value of assets and the book value of assets.
- An adjustment to reflect the difference between the best estimate liabilities and the book value of liabilities.

With respect to P&C insurers, the third adjustment incorporates the difference between accounting P&C claims reserves and P&C economic best-estimate reserves, approximated by using reported reserve releases in the last five years within the tool. Some adjustments are also specific to some accounting regimes or to some products.

We may also consider the required capital at a given quantile in comparison to other capital measures, for example, an available capital amount that includes the full amount of hybrid debt.

Drivers of the Change in NAV at the Chosen Quantile

For a chosen quantile, the tool provides a breakdown of the required capital by risk category and by product. This information contributes to understanding the capital ratio generated by the tool by identifying the main sources of risks (and main sources of required capital) for a given company. This can also help in comparing the capital adequacy of different insurers by identifying, for example, whether a lower capital ratio is driven by higher asset risks or higher insurance risks.

This feature can also be leveraged to complement the analysis of an insurer's risk profile and to compare the risk profile of different insurers.

What-If Features

The tool also allow the user to perform what-if scenario analysis by recalculating required capital and available capital, and the allocation of required capital by line of business and by risk category, based on hypothetical scenarios (e.g., changes in financial markets, shock in insurance markets, or changes in the risk profile of the insurer following an acquisition or a divestment).

Moody's Related Publications

Credit ratings are primarily determined by sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. An index of sector and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to *Rating Symbols and Definitions*, which is available here.

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