

Global Insurance Rating Criteria

Contents

IFSR	2
Analytical Framework	4
Pillar 1: IISI	6
Pillar 2: ERM	11
Pillar 3: Capital Formation	17
Pillar 4: Capital Adequacy	22
Treatment of Reinsurers	27
Pillar Scores	28
Analytical Adjustments	29
Related Criteria and Research	30
Appendix 1: PENGYUAN CAR	31

Introduction

(Editor's Note: We originally published this criteria report on May 7, 2018. We have republished it following our periodic review completed on May 6, 2019. As a result of our review, we have updated paragraph 4 of the Introduction section, as well as Exhibits 4, 15 and 17 to provide more clarity for readers.)

This criteria report sets forth the general principles behind PENGYUAN's analytical framework for the global insurance industry. Due to the diversity, complexity, and evolving nature of the industry, the guidelines herein are by no means exhaustive. Instead, they represent the foundation upon which we form our credit opinions, which are intended to be forward-looking, consistent over market cycles, and comparable across geographies and industries.

The criteria in the report will apply to three broad insurance sectors globally, namely life and annuities, property and casualty ("P&C"), and reinsurance. This report may be supplemented by sector- and geography-specific criteria in the future that will further clarify analytical issues unique to individual market segments.

This report is intended to cover health insurers as well, which, depending on the products underwritten, may fall under either life insurance, P&C insurance or both. However, these criteria are not applicable to mortgage (re)insurers, credit and guarantee (re)insurers, and similar entities that we believe would be more appropriately analyzed as credit providers.

The anchor rating that we assign to each insurance company under coverage is the Long-term Issuer Credit Rating ("LTICR"), which represents our forward-looking opinion on an entity's creditworthiness and has the same definition as those assigned across all other industries. We consider the LTICR as an anchor rating in that it is the starting point from which all other issuer and issuance ratings for an entity are derived. Under some circumstances, a Short-term Issuer Credit Rating ("STICR") may also be assigned to insurers. (Please refer to our report "Rating Symbols and Definitions – May 7, 2018".)

The Insurer Financial Strength Rating ("IFSR") is a rating type specific to the insurance industry. Given that, in many jurisdictions, policyholders are effectively the most senior class of creditors, an insurer's IFSR is typically aligned with its LTICR and is often higher than its other Senior Unsecured Issuance Ratings. Where policyholder priority is not clearly stipulated by law, senior unsecured obligations would likely be rated on par with policyholder claims. All other junior debt obligations, such as subordinated debt, are rated according to their relative positions in the payment waterfall.

PENGYUAN may assign local-currency LTICR, STICR and IFSR and/or foreign-currency LTICR, STICR and IFSR to an insurer to provide more granularity on its ability and willingness to fulfill its financial obligations denominated in different currencies. For the purposes of this criteria paper, our references to LTICR, STICR and IFSR pertain to both local- and foreign-currency ratings. Rating Outlooks and Credit Watches for insurance companies carry the same definitions as those used by PENGYUAN across all other industries.

Contacts

Name	Stanley Tsai, CFA
Title	Managing Director
Direct	+852 3615 8340
E-mail	stanley.tsai@pyrating.com
Name	Tony Tang
Title	Chief Analytics Officer
Direct	+852 3615 8278
E-mail	tony.tang@pyrating.com

Insurer Financial Strength Rating (IFSR)

A. Definition

PENGYUAN's Insurer Financial Strength Rating is a globally comparable, forward-looking opinion on an insurance operating company's ability to repay its policyholder obligations on time and in full. Not only is the IFSR relevant to investors looking to assess an insurance company's financial status, but it is also of significant value to insurance clients, intermediaries and other credit counterparties.

That said, the IFSR is not a recommendation to purchase or discontinue insurance policies from any insurance provider. Furthermore, the IFSR does not address situations where the legitimacy of a specific insurance claim or group of insurance claims is under commercial, legal or regulatory dispute during the normal course of business.

B. Scope

The IFSR applies to insurance operating companies that engage in the following business lines:

- Life and annuities;
- Property and casualty ("P&C");
- Reinsurance; and
- Health insurance.

However, it does not apply to (re)insurers that principally operate in businesses such as:

- Mortgage (re)insurance;
- Credit and guarantee (re)insurance; and
- Other similar entities that we believe would be more appropriately analyzed as credit providers.

C. Rating Scale

The IFSR follows a rating scale from AAA to D. The IFSR rating scale and the characteristics commonly associated with insurers in each rating category are shown in Exhibit 1.

The AAA to BBB categories are assigned to insurance organizations that we expect to have an "Extremely Strong" to "Adequate" ability to honor their policyholder obligations on time and in full. These categories consist of AAA (Extremely Strong), AA (Very Strong), A (Strong) and BBB (Adequate). +/- modifiers may be added to the AA, A and BBB rating levels to further distinguish creditworthiness within a particular category.

The BB to CC categories are assigned to insurers that we deem to have a "Marginally Adequate" to "Extremely Weak" ability to repay their policyholder liabilities on time and in full. These categories consist of BB (Marginally Adequate), B (Weak), CCC (Very Weak) and CC (Extremely Weak). +/- modifiers may accompany the BB, B and CCC rating categories to provide more granularity on the credit quality within each category.

In addition, the RS designation is assigned to insurers that are currently under regulatory supervision due to their failure to meet the relevant authorities' solvency or other prudential requirements.

The D designation is assigned to insurance firms that have defaulted on their policyholder liabilities. We recognize that, as a normal part of their business procedures, insurers may sometimes take an extended period of time to conduct loss assessments after a claim has been reported by a policyholder. As such, we would only consider an insurer to be in default if policyholder obligations are not met in full after all the customary claim assessment procedures have been completed and beyond the payment timeframe that is stated in the relevant insurance contracts. These contract terms and conditions may vary by geographical and product market.

Exhibit 1: IFSR Rating Scale

Rating Category	Financial Strength	Description
AAA	Extremely Strong	Insurers with an IFSR in the 'AAA' category have an Extremely Strong ability to repay their policyholder obligations on time and in full. These companies are expected to consistently demonstrate superior performance across market cycles and maintain credit profiles that can withstand the most severe stress scenarios.
AA	Very Strong	Insurers with an IFSR in the 'AA' category have a Very Strong ability to repay their policyholder obligations on time and in full. These companies are expected to maintain resilient credit profiles across market cycles, but their ability to withstand the most severe stress scenarios may fall short of the requirements for a 'AAA' rating.
A	Strong	Insurers with an IFSR in the 'A' category have a Strong ability to repay their policyholder obligations on time and in full. These companies are expected to deliver strong performance across market cycles, but their credit profiles could exhibit more volatility compared to higher-rated peers.
BBB	Adequate	Insurers with an IFSR in the 'BBB' category have an Adequate ability to repay their policyholder obligations on time and in full. These companies are expected to have solid performance across market cycles, but their credit profiles could exhibit meaningfully more volatility compared to higher-rated peers.
BB	Marginally Adequate	Insurers with an IFSR in the 'BB' category have a Marginally Adequate ability to repay their policyholder obligations on time and in full. These companies are expected to have credit profiles that fluctuate widely across market cycles, and there is a relatively high degree of uncertainty with their balance sheet strength under stress scenarios.
B	Weak	Insurers with an IFSR in the 'B' category have a Weak ability to repay their policyholder obligations on time and in full. These companies are expected to have credit profiles that fluctuate significantly across market cycles, and there is a significant degree of uncertainty with their balance sheet strength under stress scenarios.
CCC	Very Weak	Insurers with an IFSR in the 'CCC' category have a Very Weak ability to repay their policyholder obligations on time and in full. These firms are expected to have credit profiles that are highly susceptible to market cycles, and any prolonged economic downturn could put the insurers' payment capacity at risk.
CC	Extremely Weak	Insurers with an IFSR in the 'CC' category have an Extremely Weak ability to repay their policyholder obligations on time and in full. These firms are expected to have credit profiles that are fully susceptible to market cycles, and any economic downturn could put the insurers' payment capacity at risk.
D	Default	The 'D' designation is assigned to insurers that have Defaulted on their policyholder obligations.
RS	Regulatory Supervision	The 'RS' designation is assigned to insurers that have been placed under Regulatory Supervision due to their failure to meet the relevant authorities' solvency or other prudential requirements.
NR	Not Rated	The 'NR' designation is assigned to insurers that are Not Rated.

Analytical Framework

Our global analytical framework for insurance companies follows a multi-step process that encompasses a wide range of qualitative and quantitative factors on a forward-looking basis. The basic building blocks of our rating methodology are summarized in Exhibit 2.

A. The Four Pillars, Analytical Factors and Pillar Scores

We adopt a principle- and risk-based approach in evaluating an insurer's credit characteristics. The myriad factors and sub-factors we analyze are grouped into four pillars, which form the basis of our risk evaluation. The four pillars are:

- **Pillar 1: Insurance Industry Stability Index (IISI)**, which is a tool developed by PENGYUAN to analyze the environment in which an entity operates. The index measures an insurance industry's market sophistication, growth sustainability, and the jurisdiction's banking system and capital markets, economic environment, and regulatory environment. The index levels and criteria are regularly reviewed and updated as required to address emerging issues in the marketplace.
- **Pillar 2: Enterprise Risk Management (ERM)**. In our view, the increasingly complex regulatory landscape globally calls for an enhanced focus on an insurer's ability to manage its risks across business functions. Our ERM review includes a scrutiny of a firm's strategic and risk framework, asset-liability management, product risk management, distribution risk management and operational risk management.
- **Pillar 3: Capital Formation**. We believe an insurer's ability to generate capital through retained earnings is the single most important source of its on-going financial strength. Internal capital formation is driven by a combination of underwriting, investment and peripheral earnings. We attempt to determine an insurer's sustainable return on capital by looking through risk pricing and capital market cycles. Shareholder dividend policy is also integral to our analysis.
- **Pillar 4: Capital Adequacy**. Prospective balance-sheet strength is a central factor in our analytical framework. We quantify an insurer's risk-based capital adequacy using our internally-developed benchmarks, regulatory solvency ratios, and management's future internal targets. This analysis is further supplemented by a deep-dive into the firm's asset quality, reserve adequacy, reinsurance utilization and financial flexibility.

Pillar 1 and 2 factors could be both qualitative and quantitative, and are scored individually to generate an **Enterprise Risk Score**, which reflects our assessment of an entity's ability to effectively respond to its external challenges via the use of a holistic management framework. By contrast, Pillars 3 and 4 are mainly quantitative by nature. Pillar 3 and 4 scores are combined to derive a **Capital Risk Score**, which is an indication of an insurer's capacity to drive premium and earnings growth, while maintaining an adequate risk-based capital level.

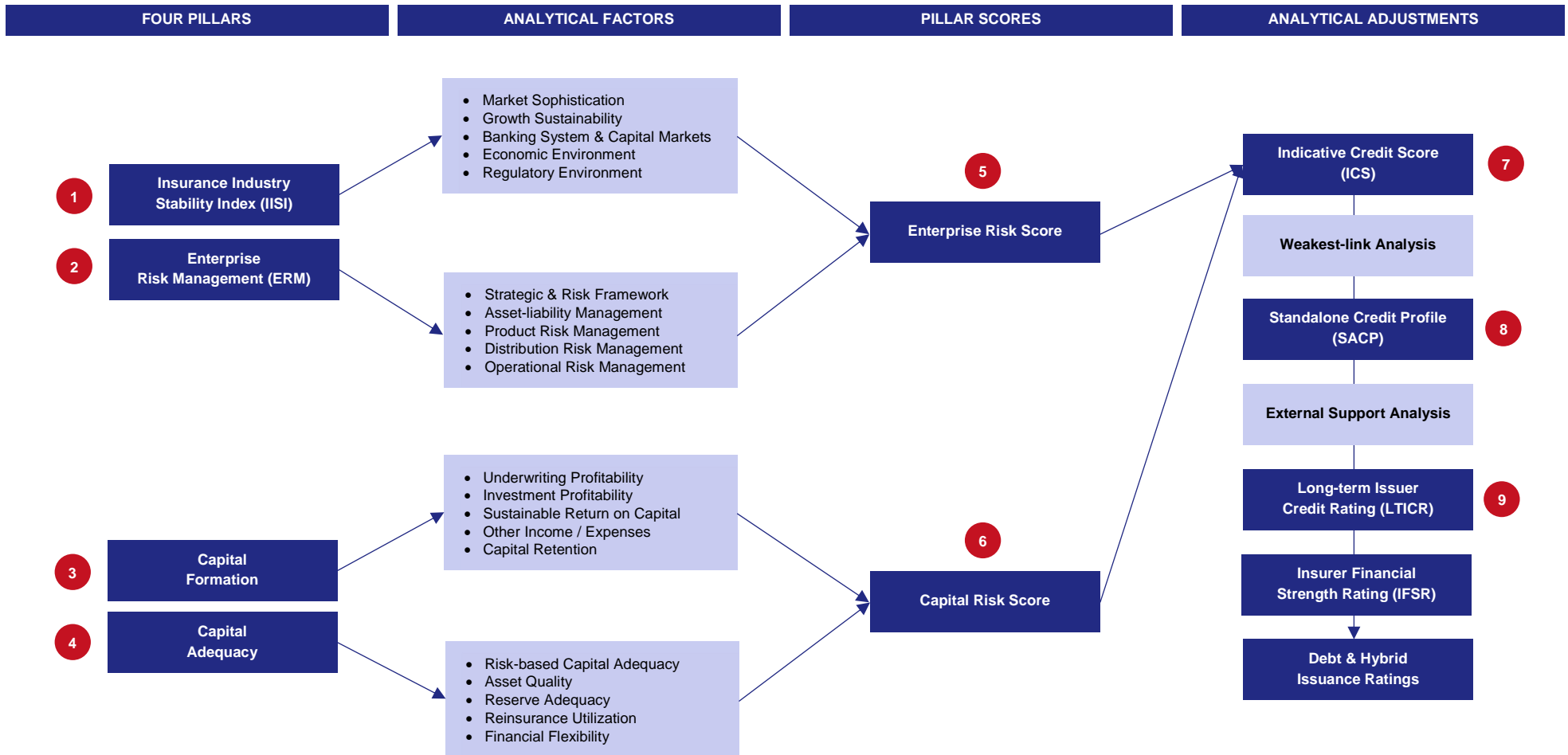
B. Analytical Adjustments

The Enterprise Risk Score and Capital Risk Score of a rated insurer are combined to derive an **Indicative Credit Score (ICS)**. The ICS is then adjusted based on the findings of our **Weakest-Link Analysis**, which seeks to stress-test the idiosyncratic risks a rated insurer faces. The result of that analysis would lead to a **Standalone Credit Profile (SACP)**, which reflects our assessment of an insurance company's overall risk profile, before considering the potential for extraordinary support from the organization's parent. Finally, an **External Support Analysis** is carried out to determine if an insurer's credit profile would benefit from its membership of a broader controlling parent organization. The parent could be either an insurance, financial services or corporate group, a government-related entity or the government itself. Our support analysis may lead to a potential upward or downward adjustment to a firm's SACP.

C. LTICR, IFSR and Issuance Ratings

Following the analytical adjustments above, we would assign a Long-term Issuer Credit Rating (LTICR) to an operating entity. The LTICR represents our forward-looking opinion on an entity's creditworthiness and has the same definition as those assigned across all other industries. The Insurer Financial Strength Rating ("IFSR") is a rating type specific to the insurance industry. Given that, in many jurisdictions, policyholders are effectively the most senior class of creditors, an insurer's IFSR is typically aligned with its LTICR. All other junior debt obligations, such as subordinated debt, are rated according to their relative positions in the payment waterfall.

Exhibit 2: PENGYUAN's Global Insurance Industry Analytical Framework



Pillar 1: Insurance Industry Stability Index (IISI)

In our assessment of insurance companies, we believe it is imperative that we conduct a thorough analysis of their operating environment. To that end, PENGYUAN has developed the IISI as the first of four pillars of our analytical framework. The IISI dissects global insurance markets along five dimensions, namely market sophistication, growth sustainability, banking and capital markets, economic environment, and regulatory environment. In our opinion, these five dimensions represent the essential elements of an insurer's external environment, although there may exist vast differences in industry characteristics across geographical regions.

The criteria for the IISI and the corresponding scoring guidelines are shown in Exhibits 3 and 5. As industry environments evolve, we will periodically review the index's structure to accurately present our views on a particular market's structural stability. As our criteria are intended to measure structural stability, we do not anticipate material movements in how we classify each jurisdiction over a 1- to 2-year horizon.

Exhibit 3: IISI Scorecard

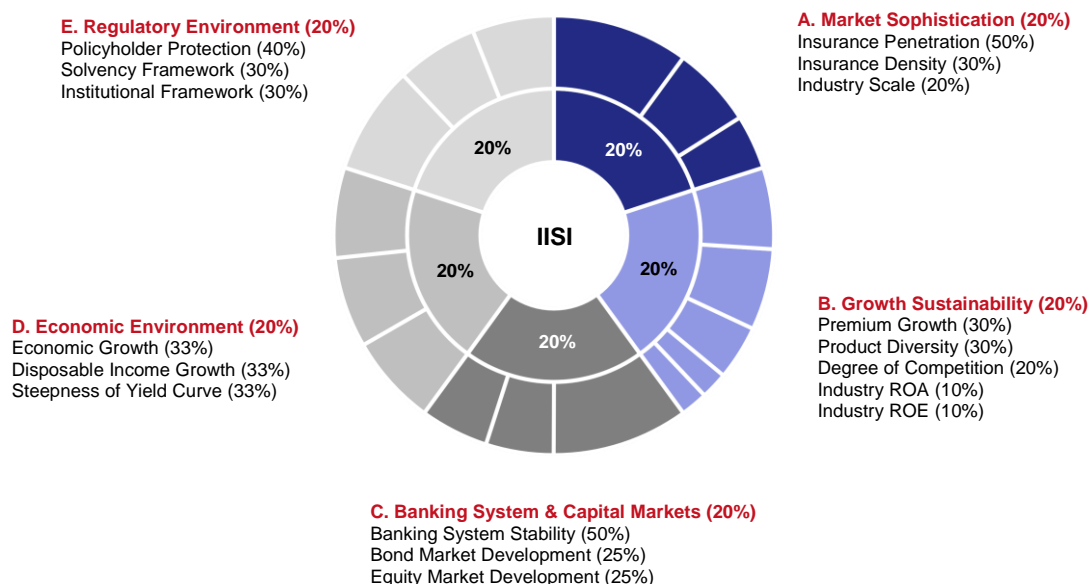
Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
IISI				
A. Market Sophistication	1 – 5		20.0%	
B. Growth Sustainability	1 – 5		20.0%	
C. Banking System & Capital Markets	1 – 5		20.0%	
D. Economic Environment	1 – 5		20.0%	
E. Regulatory Environment	1 – 5		20.0%	
A. Market Sophistication				
		100.0%	20.0%	
1. Insurance Penetration	1 – 5	50.0%	10.0%	Latest Year
2. Insurance Density	1 – 5	30.0%	6.0%	Latest Year
3. Industry Scale	1 – 5	20.0%	4.0%	Latest Year
B. Growth Sustainability				
		100.0%	20.0%	
1. Premium Growth	1 – 5	30.0%	6.0%	T-2 to T+2
2. Product Diversity	1 – 5	30.0%	6.0%	Trend
3. Degree of Competition	1 – 5	20.0%	4.0%	Trend
4. Industry Return on Assets	1 – 5	10.0%	2.0%	Trend
5. Industry Return on Equity	1 – 5	10.0%	2.0%	Trend
C. Banking System & Capital Markets				
		100.0%	20.0%	
1. Banking System Stability	1 – 5	50.0%	10.0%	Trend
2. Bond Market Development	1 – 5	25.0%	5.0%	Trend
3. Equity Market Development	1 – 5	25.0%	5.0%	Trend
D. Economic Environment				
		100.0%	20.0%	
1. Economic Growth	1 – 5	33.3%	6.7%	T-2 to T+2
2. Disposable Income Growth	1 – 5	33.3%	6.7%	T-2 to T+2
3. Steepness of Yield Curve	1 – 5	33.3%	6.7%	750-day Moving Average
E. Regulatory Environment				
		100.0%	20.0%	
1. Policyholder Protection	1 – 5	40.0%	8.0%	Trend
2. Solvency Framework	1 – 5	30.0%	6.0%	Trend
3. Institutional Framework	1 – 5	30.0%	6.0%	Trend

Based on the guidelines above, insurance markets are grouped into five categories: IISI-5 (High Structural Stability), IISI-4 (Above-average Structural Stability), IISI-3 (Average Structural Stability), IISI-2 (Below-average Structural Stability), and IISI-1 (Low Structural Stability) (Exhibit 4). As the industry dynamics of the P&C and life sectors within a particular country may differ significantly, we assess them separately in the majority of cases. For insurers that operate in more than one geographical or product market, the IISI scores are weighted by premium income, asset size or capital allocation, as we deem appropriate for each case.

Exhibit 4: IISI Classification

IISI Classification	Description	Score Range
IISI-5	High Structural Stability	> 4.5
IISI-4	Above-average Structural Stability	3.5 – 4.5
IISI-3	Average Structural Stability	2.5 – 3.5
IISI-2	Below-average Structural Stability	1.5 – 2.5
IISI-1	Low Structural Stability	< 1.5

Exhibit 5: IISI – Factors and Sub-factors



A. Market Sophistication

The first factor we consider in the IISI is a market's level of sophistication, as demonstrated by its scale, the supply of and demand for insurance coverage, and risk awareness among the general public. In this part of our assessment, we view a market's maturity in the context of its structural development, and not necessarily from the perspective of growth opportunities.

While developing and emerging markets with low insurance adoption rates may often be associated with higher growth potential, less intense price competition, and more attractive returns on capital in the long run, their industry participants may sometimes be less advanced in their underwriting risk management. Capital markets in these countries may also lack the breadth and depth required for prudent investment management.

Our criteria on market sophistication comprise:

- Insurance Penetration.** This indicator measures insurance premium income as a percentage of GDP. We regard relatively high levels of penetration as being indicative of a more mature and sophisticated market. We recognize that for some life insurance markets, the numerator of the ratio in question may be distorted by the prevalence of short-term deposit substitutes with minimal protection elements. Should we determine that such distortions are material, we may consider applying a haircut to reported premium income to allow for more suitable peer comparisons.
- Insurance Density.** This measures insurance spending per capita. Similar to measures of penetration, the average consumer's insurance expenditure is indicative of a market's stage of maturity. A supplementary consideration is the distribution of personal financial assets between bank deposits, equities, bonds, mutual funds, real estate and other forms of investments. Hefty household exposures to speculative assets such as equities may reflect higher risk tolerance due to persistently low real interest rates. This may, in turn, suggest a more challenging environment for insurers.
- Industry Scale.** The absolute size of an insurance industry is a simple yet often effective measure of the sophistication of its market infrastructure. As a case in point, a large insurance asset base may facilitate the development of the domestic bond market, particularly on the long end. This will, over time, enhance insurers' value as intermediaries between savers and borrowers. As the industry grows in size, ancillary service providers, such as independent financial planners, may also flourish, strengthening the insurers' product offerings, distribution channels and risk management.

Each of the sub-factors is scored from 1 (Least Favorable) to 5 (Most Favorable) according to the guidelines in Exhibit 6.

Exhibit 6: Market Sophistication – Scorecard

Factors	5 Most Favorable	4 Favorable	3 Average	2 Less Favorable	1 Least Favorable
P&C Insurance					
Insurance Premium / GDP	> 2.5%	2.0 – 2.5%	1.5 – 2.0%	1.0 – 1.5%	< 1.0%
Insurance Premium / Capita	> USD1,000	USD500 – 1,000	USD200 – 500	USD100 – 200	< USD100
Insurance Premium Scale	> USD100bn	USD25 – 100bn	USD10 – 25bn	USD2 – 10bn	< USD2bn
Life Insurance					
Insurance Premium / GDP	> 7.0%	5.0 – 7.0%	3.0 – 5.0%	1.5 – 3.0%	< 1.5%
Insurance Premium / Capita	> USD2,500	USD1,000 – 2,500	USD500 – 1,000	USD250 – 500	< USD250
Insurance Premium Scale	> USD200bn	USD100 – 200bn	USD50 – 100bn	USD15 – 50bn	< USD15bn

B. Growth Sustainability

In our view, the sustainability of an insurance market's growth is a core component of its structural stability. Short-term growth spurts fuelled by irrational pricing and product designs have proved to be detrimental to industry players in the past, leading to margin erosion and, eventually, an exit of capital. For the most part, sustainable growth is enabled by a diversification of products on the market and influenced by the degree of competition over pricing and investment cycles. These factors determine the industry's return on assets and return on capital over time. In our review of growth sustainability, we consider:

- **Premium Growth.** The increase in premium volumes drives earnings and capital expansion in the long run. Our emphasis is on secular trends, which may be a function of a market's socio-demographics, economic structure, financial market developments, and tax incentives. Cyclical factors – such as asset valuations, interest rates and risk pricing – may play a role in the short term, but, in our analysis, we may consider adjusting for temporary surges and declines in sales volumes, such as those brought about by capital flows from non-residents.
- **Product Diversity.** The availability of diverse insurance products in the marketplace allows for a more resilient industry, as it tends to smooth the growth and riskiness of the overall portfolio. For P&C insurers, such diversification may be achieved by balancing the risks they underwrite in catastrophe-exposed and non-property-related business lines. For life insurers, a mix of investment-linked and participating products may act as a buffer against capital market gyrations. The lack of product diversity is a notable feature of many emerging markets, which may be more exposed to risk accumulation.
- **Degree of Competition.** As with all other industries, the degree of competition has a direct impact on market participants' ability to generate an adequate return on capital. For P&C insurers, relaxed pricing and underwriting standards may pressure on-going profitability and hinder capital formation. For life insurers, the inadequacy of risk pricing may be evidenced by consistently above-trend or regional-average guarantee rates. Competition could also have a major impact on policy acquisition costs, mainly through commissions to agents and brokers.
- **Industry ROA.** Return on assets is a capital structure-neutral way of assessing a market's on-going profitability. Our analysis involves an identification of the key drivers of profits, which may be skewed towards underwriting / protection risks, or investment risks. In general, we view more favorably profit sources that are relatively immune to capital market movements. This may be achieved by product and channel diversification, the widespread use of hedging instruments, or increasing contributions from mortality or morbidity risk-based products, such as accident and health protection.
- **Industry ROE.** Our industry return on equity analysis seeks to augment our ROA analysis above by incorporating the impact of balance-sheet leverage. Our objective is to determine if an industry's overall ROE is driven mainly by sustainable capital creation or the use of excessive leverage, which may be in the form of debt leverage (bonds and hybrid instruments), underwriting leverage (more premiums per dollar of capital), or investment leverage (higher-yielding assets). In cases where aggregate data are unavailable, we may base our analysis on a representative sample of companies.

Each of the sub-factors is scored from 1 (Least Favorable) to 5 (Most Favorable) according to the guidelines in Exhibit 7.

Exhibit 7: Growth Sustainability – Scorecard

Factors	5	4	3	2	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
P&C Insurance					
Premium Growth	> 10%	5 – 10%	3 – 5%	0 – 3%	< 0%
Product Diversity	Very Diverse	Diverse	Average	Concentrated	Very Concentrated
Degree of Competition	Significant Over-demand	Over-demand	Balanced	Over-supply	Significant Over-supply
Industry ROA	Very Strong	Strong	Average	Weak	Very Weak
Industry ROE	Very Strong	Strong	Average	Weak	Very Weak
Life Insurance					
Premium Growth	> 15%	10 – 15%	5 – 10%	3 – 5%	< 3%
Product Diversity	Very Diverse	Diverse	Average	Concentrated	Very Concentrated
Degree of Competition	Significant Over-demand	Over-demand	Balanced	Over-supply	Significant Over-supply
Industry ROA	Very Strong	Strong	Average	Weak	Very Weak
Industry ROE	Very Strong	Strong	Average	Weak	Very Weak

C. Banking System and Capital Markets

Banking system and capital market risks are a factor that we assess across most financial and corporate sectors as they form an essential part of the environment in which an entity operates. We believe the systematic risk associated with a country's banking industry and broader capital markets are of particular relevance to insurers. Below are some of the reasons why this may be the case:

- Insurers are important financial intermediaries between households, corporations and capital markets;
- Insurers are major depositors in a country's banking system;
- Insurers are among the largest institutional investors in a country's capital markets;
- Banks may be one of the most prominent distribution channels for insurance companies; and
- An insurer's credit profile is highly exposed to fluctuations in interest rates and financial asset prices.

Our analysis considers the structural stability of a jurisdiction's banking system, and the breadth and depth of its fixed income and equity markets. These three sub-factors are individually scored from 1 (Least Favorable) to 5 (Most Favorable) according to the guidelines in Exhibit 8.

- **Banking System Stability.** We consider factors such as the banking sector's capital adequacy, asset quality, management, earnings and liquidity. The dispersion of credit quality may also be instructive in identifying the potential concentration of risks within the system. In addition, we may consider the scale, growth and vulnerability of a market's shadow banking ecosystem, which encompasses intermediaries that are subject to less stringent regulations. Such off-balance sheet exposures may include securitization structures, wealth management products and other similar schemes.
- **Bond Market Development.** Our bond market review aims to address the credit, interest-rate and liquidity risks associated with an insurer's investment portfolio. To the extent that the insurance industry relies on the fixed-income market for financing, capital market stability may also be critical to the resilience of its funding structure. In our review, we may assess the scale of a country's bond market relative to GDP, the availability of new issuances, the diversification of issuers, as well as liquidity conditions as reflected in bid-ask spreads and secondary market trading volumes.
- **Equity Market Development.** Similarly, we analyze a country's publicly-traded equity market with the objective of identifying potential investment and funding risks facing its insurers. We evaluate factors such as the size of the public market relative to GDP, ease of funding access, issuer diversification, secondary market turnover, and its regulatory framework. The development of the secondary market is viewed in conjunction with the availability of hedging instruments, low-cost index products and other asset management alternatives that may strengthen the insurers' risk control.

Exhibit 8: Banking System and Capital Markets – Scorecard

Factors	5	4	3	2	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Banking System Stability	Highly Stable	Stable	Average	Less Stable	Least Stable
Bond Market Development	Highly Developed	Developed	Average	Less Developed	Least Developed
Equity Market Development	Highly Developed	Developed	Average	Less Developed	Least Developed

D. Economic Environment

Our assessment of a country's economic environment is motivated by the need to identify and quantify the macro factors that have the most profound impact on the insurance industry's growth, earning capacity and balance sheet. These external factors are: economic growth (which drives earnings), disposable income growth (which drives premium volume growth), and the steepness of the yield curve (which affects both sales and investments).

- **Economic Growth (Real GDP Growth).** While cyclical factors such as interest rates may impact insurance sales in the near term, economic growth is an indicator of structural growth opportunities for the industry. As economic activity increases, so will the demand for protection on capital goods, personal assets, and future living standards etc. Economic growth dynamics would also impact insurers' investments, which are primarily allocated to bank deposits, government and corporate bonds, publicly-traded equities and real estate in the domestic market.
- **Disposable Income Growth.** Average household income levels complement real GDP growth as an indicator of an insurance industry's structural growth potential. The wealthier the average consumer, the more likely he or she will purchase insurance coverage to protect the assets he or she has acquired through wealth accumulation. The need for accident and health protection and savings and retirement solutions will also stimulate life insurance sales over time. A supplementary indicator we may look at is the size and growth of the middle-class population.
- **Steepness of Yield Curve.** For life insurers, the shape of the yield curve may affect the attractiveness of the products on the market as well as the industry's investment return. In general, a steeper yield curve would be more beneficial to a life insurer's capital profile. P&C insurers would be affected to the extent that their funding from longer-tail businesses and shareholders' funds may be more appropriately duration-hedged. We measure yield curve steepness by calculating the 750-day moving average of the differential between domestic 10-year and 1-year government bond yields.

These macro indicators are scored from 1 (Least Favorable) to 5 (Most Favorable) according to the guidelines in Exhibit 9.

Exhibit 9: Economic Environment – Scorecard

Factors	5 Most Favorable	4 Favorable	3 Average	2 Less Favorable	1 Least Favorable
Real GDP Growth	> 5%	3 – 5%	2 – 3%	1 – 2%	< 1%
Disposable Income Growth	> 6%	4 – 6%	3 – 4%	2 – 3%	< 2%
Steepness of Yield Curve*	> 100bps	75 – 100bps	50 – 75bps	25 – 50bps	< 25bps

* 750-day moving average of the differential between domestic 10-year and 1-year government bond yields

E. Regulatory Environment

Globally, insurance is a highly regulated industry, although the level of supervision and protection afforded to policyholders and creditors could differ widely among regions and individual countries. Regulations also tend to be either rule-based or principle-based, with very few, if any, systems proving to be fully effective even under the most adverse financial scenarios. The three aspects of regulations which are the most pertinent to our analysis are:

- **Policyholder Protection.** In the majority of jurisdictions, insurance policyholders rank ahead of other senior unsecured creditors in a bankruptcy scenario. There are, however, notable exceptions, particularly when it comes to the P&C and reinsurance sectors, where policyholders are often corporates and institutions and afforded less protection by regulation. Other factors that we may evaluate include the implementation of know-your-client, anti-money laundering and anti-corruption regulations.
- **Solvency Framework:** The two types of solvency capital requirements that are the most commonly found are solvency margin and risk-based capital. The former is sometimes referred to as Solvency I requirement and typically calculates required solvency as a percentage of net premiums for P&C companies and a percentage of reserves and net sums-at-risk for life insurers. In our opinion, the latter framework is significantly more sophisticated, as it calculates required capital by considering risks on a holistic basis.

Ideally, solvency requirements should factor in underwriting, reserving, investment, asset-liability matching, and operational risks, among others. They should also be prudently calibrated so as to ensure a sufficiently conservative safety margin in materially adverse scenarios. In addition, we may consider the regulator's track record of enforcing solvency requirements, especially its ability and willingness to facilitate orderly exits of firms that have consistently failed to meet the minimum capital requirements.

- **Institutional Framework.** Institutional framework refers to the collective body of people, organizations, policies and processes that form a jurisdiction’s insurance regulatory environment. We assess institutional effectiveness by reviewing the regulator’s objectives, supervisory authority, quality of disclosures, accounting requirements, and level of risk management and corporate governance oversight. We may also assess the regulator’s interactions with other financial authorities, such as a country’s banking and securities regulators to gain insight into its policy priorities.

Each of the sub-factors is scored from 1 (Least Favorable) to 5 (Most Favorable) according to the guidelines in Exhibit 10.

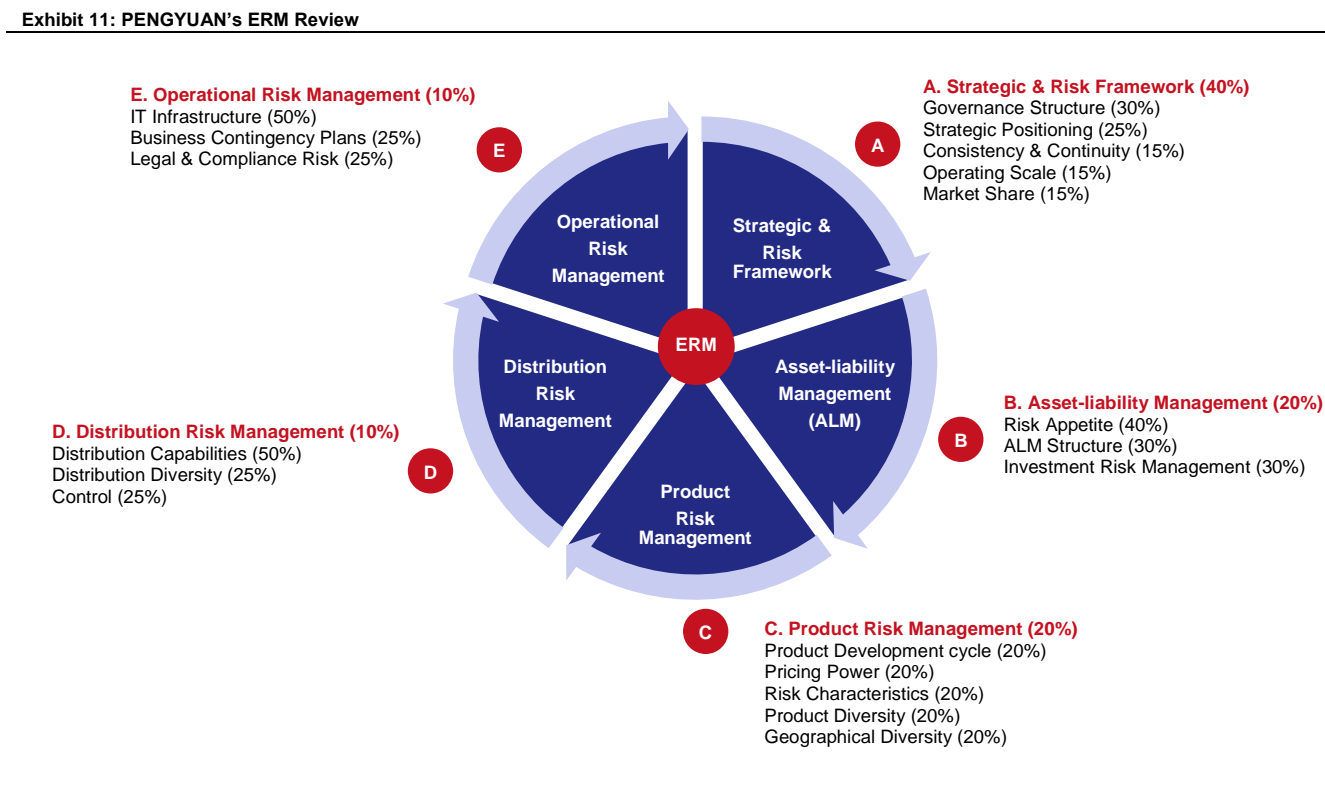
Exhibit 10: Regulatory Environment – Scorecard

Factors	5	4	3	2	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Policyholder Protection	Global Best Practice	Global Standard	Average	Below Average	Inadequate
Solvency Framework	Global Best Practice	Global Standard	Average	Below Average	Inadequate
Institutional Framework	Global Best Practice	Global Standard	Average	Below Average	Inadequate

Pillar 2: Enterprise Risk Management (ERM)

In view of the increasingly complex global regulatory environment, we adopt a principle- and risk-based approach in evaluating the insurance industry’s overall credit profile, of which enterprise risk management (ERM) serves as the foundation. In Pillar 2 of our analytical framework, we assess an insurance company’s ability to respond to internal and external risks through the interaction of its management, strategy, governance structure, and policies and procedures. The identification, quantification and mitigation of risk factors, along with the linkages between business functions are central to this analysis.

Our ERM review comprises an evaluation of an insurance organization’s strategic and risk framework, asset-liability management, product risk management, distribution risk management, and operational risk management, as outlined in Exhibit 11. These broad guidelines enable us to analyze a firm’s ERM framework in a systematic manner.



The factors and sub-factors we consider, and their respective weights in our analysis are presented in Exhibit 12.

Exhibit 12: ERM Scorecard

Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
ERM				
A. Strategic & Risk Framework	1 – 7		40.0%	
B. Asset-liability Management	1 – 7		20.0%	
C. Product Risk Management	1 – 7		20.0%	
D. Distribution Risk Management	1 – 7		10.0%	
E. Operational Risk Management	1 – 7		10.0%	
A. Strategic & Risk Framework				
		100.0%	40.0%	
1. Governance Structure	1 – 7	30.0%	12.0%	Trend
2. Strategic Positioning	1 – 7	25.0%	10.0%	Trend
3. Consistency & Continuity	1 – 7	15.0%	6.0%	Trend
4. Operating Scale	1 – 7	15.0%	6.0%	3-Year Historical Average
5. Market Share	1 – 7	15.0%	6.0%	3-Year Historical Average
B. Asset-liability Management (ALM)				
		100.0%	20.0%	
1. Risk Appetite	1 – 7	40.0%	8.0%	Trend
2. ALM Structure	1 – 7	30.0%	6.0%	Trend
3. Investment Risk Management	1 – 7	30.0%	6.0%	Trend
C. Product Risk Management				
		100.0%	20%	
1. Product Development Cycle	1 – 7	20.0%	4.0%	Trend
2. Pricing Power	1 – 7	20.0%	4.0%	Trend
3. Risk Characteristics	1 – 7	20.0%	4.0%	Latest Year
4. Product Diversity	1 – 7	20.0%	4.0%	3-Year Historical Average
5. Geographical Diversity	1 – 7	20.0%	4.0%	3-Year Historical Average
D. Distribution Risk Management				
		100.0%	10.0%	
1. Distribution Capabilities	1 – 7	50.0%	5.0%	Trend
2. Distribution Diversity	1 – 7	25.0%	2.5%	3-Year Historical Average
3. Control	1 – 7	25.0%	2.5%	3-Year Historical Average
E. Operational Risk Management				
		100.0%	10.0%	
1. IT Infrastructure	1 – 7	50.0%	5.0%	Trend
2. Business Contingency Plans	1 – 7	25.0%	2.5%	Trend
3. Legal & Compliance Risks	1 – 7	25.0%	2.5%	Trend

A. Strategic and Risk Framework

Our assessment of an insurer's ERM begins with a review of its strategic and risk framework, which comprises its governance structure, strategic positioning, management's consistency and continuity, and the firm's operating scale and market share. This assessment may require interactions with a firm's senior and middle management to allow for a comprehensive understanding of the organization's ERM strengths and weaknesses. We may also review publicly available information, such as regulatory and exchange filings to ascertain the firm's compliance with established external requirements.

- **Governance Structure.** An insurer's governance structure refers to the people, internal risk oversight functions, and policies and processes that are involved in designing, monitoring and revising its overall strategic and risk framework. In many cases, compliance with existing regulatory requirements is a necessary but insufficient condition to ensure an adequate governance structure. Depending on the complexities of a firm's business, its adoption of risk-based management may involve systems and procedures that are unique to its needs.
- **Strategic Positioning.** In response to its competitive landscape, an insurer may decide to adopt a strategy that aims to increase market share, maximize profitability or preserve capital. An understanding of management's strategic positioning may shed light on a firm's risk tolerance. While, in many markets, we may treat market share as a useful indicator of economies of scale and pricing power, we believe an overly aggressive growth strategy may put excessive strain on an insurer's balance sheet. The negative impact may be further magnified if pricing is the main basis of a firm's strategy.
- **Consistency and Continuity.** This represents our subjective view on management's ability to execute its long-term strategies as set forth by the board of directors and within the confines of the relevant regulatory framework. We may take into account factors such as senior management's qualifications and experience in the insurance industry, continuity and international exposure. Firms with a limited track record, an unproven strategy, an unseasoned book of business, or high turnovers in senior executives may signal potential risks in their strategic and risk framework.
- **Operating Scale.** Although a firm's absolute scale does not necessarily speak to the quality of its strategy and risk management, we believe, in general, larger firms tend to be subject to higher stakeholder scrutiny over a wider spectrum

of its operations. Size is also often a determinant of its economies of scale and pricing power, and allows us to compare its market position relative to insurers globally. Our analysis allows for exceptional cases where specialist firms are small in scale but have a strategy and risk framework that is tailored to a well-defined product niche.

- **Market Share.** The size of an insurer relative to its peers in its domestic market may be a useful indicator of its competitiveness and track record in operating under a suitable strategy and risk framework. For instance, larger market shares may be indicative of the breadth and depth of a firm's product offerings and distribution capabilities, as well as its brand recognition. Nonetheless, we generally view firms that adopt overly aggressive growth strategies more unfavorably and may adjust our score on strategic positioning downwards if that is the case.

As shown in Exhibit 13, the governance structure, strategic positioning, and consistency and continuity sub-factors are qualitative assessments, while the operating scale and market share sub-factors are quantitative.

Exhibit 13: Strategic and Risk Framework – Scorecard

	7	6	5	4	3	2	1
Factors	Most Favorable	More Favorable	Favorable	Average	Less Favorable	Significantly Less Favorable	Least Favorable
Governance Structure	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Strategic Positioning	Risk Minimization	Low Risk	Moderately Low Risk	Average Risk-taker	Moderately High Risk	High Risk	Risk Maximization
Consistency & Continuity	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Operating Scale							
P&C Gross Premiums	> USD30bn	USD20 – 30bn	USD10 – 20bn	USD5 – 10bn	USD2 – 5bn	USD1 – 2bn	< USD1bn
Life Gross Premiums	> USD30bn	USD20 – 30bn	USD10 – 20bn	USD5 – 10bn	USD2 – 5bn	USD1 – 2bn	< USD1bn
Market Share							
P&C Gross Premiums	> 20%	15 – 20%	10 – 15%	5 – 10%	3 – 5%	1 – 3%	< 1%
Life Gross Premiums	> 20%	15 – 20%	10 – 15%	5 – 10%	3 – 5%	1 – 3%	< 1%

B. Asset-liability Management (ALM)

ALM is the process by which an insurer manages the interplay between its credit, market, interest-rate, foreign-exchange and other asset risks on the one hand and its policyholder and other obligations on the other. A properly implemented ALM process involves a clear definition of a firm's investment and product risk appetite and its ALM structure. An integral part of an insurer's ALM process is the way investments are dynamically managed with a liability-driven mandate. For smaller companies that outsource a considerable portion of their ALM process, we may also review the service provider's quality and suitability.

- **Risk Appetite.** While the strategic positioning assessment in the previous section covers the risk of a firm's overall strategy, we consider the specific product and investment risks it undertakes here. An insurer's risk appetite may be reflected in its behaviour over pricing and capital market cycles. For instance, a company that over-expands its premium base in periods of high investment returns by undercutting its competitors may be viewed less favourably compared to peers that maintain a consistent underwriting philosophy over time.
- **ALM Structure.** In our review of a firm's ALM structure, we assess the regular interactions between its product development and investment management functions. An independent and effective ALM function or risk management committee may facilitate such interactions and enable a systematic exchange of insurance and capital market information between key internal stakeholders. In particular, we would look for checks and balances that prevent the launch of riskier product types, should there be a lack of appropriate assets in the market that can match their cash-flow characteristics.
- **Investment Risk Management.** Having analyzed the firm's overall ALM structure, we would pay close attention to its investment risk management process. This process would typically begin with a clearly stated liability-driven investment mandate, followed by strategic and tactical asset allocation decisions that are frequently monitored and adjusted as market conditions dictate. Detailed cash-flow projections and stress test scenarios would ideally be performed regularly and disseminated among internal stakeholders to ensure firm-wide awareness.

The scoring guidelines for each of these components are summarized in Exhibit 14.

Exhibit 14: Asset-liability Management – Scorecard

	7	6	5	4	3	2	1
Factors	Most Favorable	More Favorable	Favorable	Average	Less Favorable	Significantly Less Favorable	Least Favorable
Risk Appetite	Risk Minimization	Low Risk	Moderately Low Risk	Average Risk-taker	Moderately High Risk	High Risk	Risk Maximization
ALM Structure	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Investment Risk Management	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate

C. Product Risk Management

Insurance is a unique industry in that its production cycle is inverted: an underwriter may not know its true margin until years after a policy is sold. Product risk management is the systematic process by which an insurer defines a particular offering's risk and reward profile. Throughout this process, an insurer may consider factors such as a product's projected internal rate of return, the trade-off between volumes and margins, the need for reinsurance support, and the potential for tail loss events. We assess a firm's product development cycle, pricing power, product characteristics and risk diversification.

- **Product Development Cycle.** In assessing an insurer's product development process, we look for properly defined systems and processes, a comprehensive identification of underwriting risks, an effective pricing mechanism, and strong linkages with its investment management function. Additionally, we would assess a firm's underwriting standards throughout risk pricing cycles to determine if it consistently adheres to its stated ERM policies. Feedback from the claims and investment functions also play an important secondary function in strengthening an insurer's product capabilities.
- **Pricing Power.** Pricing is a key source of risk for insurers, as the ultimate costs of claims may not be ascertained until months or years after a product is sold. Life insurance product risks are exacerbated by the fact that benefit payments may not emerge until well into the future and that most life products do not allow for risk re-pricing over their duration. Long-tail P&C products, such as product liability or professional indemnity, may also share some of these risk characteristics. If pricing becomes the only basis of competition, the firm's credit profile may be at significantly higher risk.
- **Risk Characteristics.** Unless material mitigants exist, there are certain product lines that have proved to produce highly volatile underwriting results over time. For P&C insurance, this may include long-tail products (such as general liability, directors' and officers', and workers' compensation), as well as concentrated property exposures to catastrophe-prone geographies. For life insurance, examples of riskier products may include life policies with high guarantees, variable annuities with minimum death benefits, and long-term care.
- **Product Diversity.** We believe a diversification in product offerings would generally lower the underwriting risk of an insurer's book of business. While "product lines" could sometimes be difficult to define owing to differences in market conventions, our focus is on the correlation between risk exposures. Whereas homeowners' and commercial property risks may be equally exposed to catastrophe risks in some markets, they may be less correlated in others due to the standard exclusion of earthquake and/or flood coverage.
- **Geographical Diversity.** In a similar manner, diversification by geography could lower an insurer's product risk profile. This may be the most apparent with geographical markets that have distinctly different socio-demographics, regulatory regimes, macro environments, capital markets, levels of consumer sophistication, and exposures to natural catastrophes. Sizable markets with meaningful regional differences may offer similar benefits. Our analysis also allows for exceptions where aggressive M&A strategies may introduce significant execution and integration risks.

These sub-factors are scored according to the guidelines in Exhibit 15.

Exhibit 15: Product Risk Management – Scorecard

	7	6	5	4	3	2	1
Factors	Most Favorable	More Favorable	Favorable	Average	Less Favorable	Significantly Less Favorable	Least Favorable
Product Development Cycle	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Pricing Power	Very High Product Differentiation	High Product Differentiation	Some Product Differentiation	Average Products and Pricing	Occasional Price Cutter	Aggressive Price Cutter	Disruptive Price Cutter
Risk Characteristics (1)							
P&C	< 5%	5 – 10%	10 – 20%	20 – 30%	30 – 40%	40 – 50%	> 50%
Life	< 5%	5 – 10%	10 – 20%	20 – 30%	30 – 40%	40 – 50%	> 50%
Product Diversity (2)							
P&C	< 33%	33 – 40%	40 – 50%	50 – 55%	55 – 60%	60 – 70%	> 70%
Life	< 33%	33 – 40%	40 – 50%	50 – 55%	55 – 60%	60 – 70%	> 70%
Geographical Diversity (3)							
P&C	< 33%	33 – 40%	40 – 50%	50 – 55%	55 – 60%	60 – 70%	> 70%
Life	< 33%	33 – 40%	40 – 50%	50 – 55%	55 – 60%	60 – 70%	> 70%

(1) High-risk reserves as a % of total in the most recent year

(2) Largest product line as a % of total gross premiums or reserves (simple average in the last three years)

(3) Largest market as a % of total gross premiums or reserves (simple average in the last three years)

D. Distribution Risk Management

From traditional tied agents to third-party online platforms, the distribution channels for insurance products continue to evolve rapidly. From a regulatory standpoint, there is a growing awareness among industry players that each point of sale could become a compliance risk. From a balance-sheet perspective, the ability to source suitable clients for a firm's product offerings may have major implications on its franchise, cash flows and ALM. Our analysis of distribution risk management is motivated primarily by three concerns: capabilities, diversity and control.

- **Distribution Capabilities.** In our evaluation, we assess the scale, effectiveness and efficiency of an insurer's sales network. For P&C insurers, the metrics we may consider include the scale of their direct sales operations, the reach of their third-party distribution and other affinity channels, and their average commission rates relative to industry averages. For life companies, we may consider the size of a firm's tied agency network, agent productivity levels, agent turnover, and the effectiveness of alternative channels such as direct marketing.
- **Distribution Diversity.** Having a multi-channel distribution network has a number of advantages. First, it allows insurers to tap into different customer segments and tailor-make its products and services. Second, it reduces a company's reliance on any single channel that may potentially be disrupted by staff and agent turnover, technological and regulatory changes and shifts in third-party distributor incentives. Finally, distribution diversification may provide management with flexibility to conduct cross-selling activities that may be complementary to its existing product offerings.
- **Control.** The level of direct control over its distribution network may be one of the indicators of channel effectiveness and efficiency. A P&C insurer that has a well-established online sales presence may be able to offer more competitive products by removing fees to intermediaries. Conversely, a life insurer that relies exclusively on third-party bancassurance distribution may be subject to intense price competition, both in terms of returns offered to customers and commission rates. Broadly speaking, we would rank the most common distribution methods according to the guidelines in Exhibit 16.

Exhibit 16: Level of Distribution Control – Approximate Guidelines

Level of Control	Distribution Channel
High	Direct (Online, Telemarketing, Mail Marketing)
	Salaried Staff / Financial Planners
Medium	Exclusive or Tied Agents
	Exclusive Long-term Bancassurance Arrangements (with Original Term of 7 Years or More)
Low	Independent Agents
	Non-exclusive or Short-term Exclusive Bancassurance Arrangements
	Brokers Ancillary Channels (e.g. Travel Agents, Car Dealerships etc.)

Our scorecard for distribution risk management is shown in Exhibit 17.

Exhibit 17: Distribution Risk Management – Scorecard

	7	6	5	4	3	2	1
Factors	Most Favorable	More Favorable	Favorable	Average	Less Favorable	Significantly Less Favorable	Least Favorable
Distribution Capabilities	Global Leader	Globally Competitive	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Distribution Diversity (1)							
P&C	< 30%	30 – 40%	40 – 50%	50 – 60%	60 – 70%	70 – 80%	> 80%
Life	< 30%	30 – 40%	40 – 50%	50 – 60%	60 – 70%	70 – 80%	> 80%
Control (2)							
P&C	< 10%	10 – 20%	20 – 30%	30 – 40%	40 – 50%	50 – 60%	> 60%
Life	< 10%	10 – 20%	20 – 30%	30 – 40%	40 – 50%	50 – 60%	> 60%

(1) Largest channel as a % of total gross premiums (simple average in the last three years)
(2) Channel with “low control” as a % of total gross premiums (simple average in the last three years)

E. Operational Risk Management

The last factor in our Pillar 2 analysis is operational risk management, which encompasses risks that may be difficult to identify and quantify. These risks may originate from an insurer’s IT infrastructure, the lack of a business contingency plan, and legal and compliance functions. Deficiencies in these areas of an insurer’s operations may have an immaterial impact on capital adequacy ratios and other supervisory benchmarks, but they may pose serious threats to the organization’s very existence. For instance, a failure to address cybersecurity issues may affect consumer confidence and lead to significant reputation risks.

- **IT Infrastructure.** In today’s operating environment, IT infrastructure has become a required core competency for insurers globally. The adequacy of a firm’s IT capabilities may have far-reaching impacts from underwriting, claims management and policy administration to investment and liquidity management. The protection of customer privacy has also become a regulatory priority in the majority of jurisdictions. Among other factors, we gauge an organization’s IT infrastructure quality by reviewing its system designs, data control processes, scalability and recoverability.
- **Business Contingency Plans.** As part of our evaluation, we review a firm’s contingency plans in the worst case scenarios that may involve disruptions to its physical and online infrastructure, core business functions, and management continuity. Should we determine key-man risk to be material, we may assess management’s succession plans and temporary measures during periods of management transition. In some cases, our analysis may extend to the containment of franchise contagion risks arising from a firm’s affiliation with a wider financial or corporate group.
- **Legal and Compliance Risks.** Globally, the most common forms of legal and compliance risks facing the industry may be associated with mis-selling (know-your-client rules), sourcing of business (anti-money-laundering rules), appropriation of policyholder funds (asset management and corporate governance rules), and stakeholder relationships (anti-corruption rules). Publicly-traded companies may also be subject to increased scrutiny over fund raising, secondary-market trading and insider dealing. Our analysis may involve a review of a firm’s compliance track record, manuals and processes.

The scoring guidelines are summarized in Exhibit 18.

Exhibit 18: Operational Risk Management – Scorecard

	7	6	5	4	3	2	1
Factors	Most Favorable	More Favorable	Favorable	Average	Less Favorable	Significantly Less Favorable	Least Favorable
IT Infrastructure	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Business Contingency Plans	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate
Legal & Compliance Risks	Global Leader	Global Best Practice	Globally Acceptable	Locally Acceptable	Below Local Average	Inadequate	Significantly Inadequate

Pillar 3: Capital Formation

Compared to our Pillar 1 and 2 assessments, our analysis of capital formation is primarily quantitative. Many of our analytical guidelines differ between P&C and life firms, due to the distinctions in their earnings drivers, assets and liabilities. For reinsurers, either the P&C or the life guidelines or a combination of the two will apply. Our analysis may also be subject to our analysts' discretion, as there may be material discrepancies in data availability and reporting standards across countries and entities. Whenever possible, our quantitative analysis is intended to reflect the economic reality of an insurer's operations.

Despite the fact that P&C companies generate insurance float which can be invested, we regard their investment activities as being secondary to their core underwriting business. In our opinion, a P&C insurer that maintains a strong underwriting discipline would be much less reliant on investment income, over which it may have limited control when markets are volatile. Additionally, P&C underwriters tend to have short-tail liability exposures, necessitating that they invest principally in shorter-duration assets.

By contrast, life insurers in many parts of the world rely on spread income, and margins are largely dependent on investment market conditions. Although we view more favorably sources of non-investment earnings, such as mortality and morbidity profits, such streams may be limited in scale for many industry players. Accordingly, the weighting on investment earnings is higher than that for P&C companies. Our scorecard for capital formation for P&C and life insurers are presented in Exhibits 19 and 20.

Exhibit 19: Capital Formation Scorecard – P&C

Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
Capital Formation – P&C				
A. Underwriting Profitability	1 – 9		35.0%	
B. Investment Profitability	1 – 9		25.0%	
C. Sustainable Return on Capital	1 – 9		20.0%	
D. Other Income / Expenses	1 – 9		10.0%	
E. Capital Retention	1 – 9		10.0%	
A. Underwriting Profitability				
		100.0%	35.0%	
1. Underwriting Margin	1 – 9	50.0%	17.5%	5-Year Weighted Average (T-2 to T+2)*
2. Claims Volatility	1 – 9	25.0%	8.8%	Minimum 8 Years (T-5 to T+2)
3. Commission Rates	1 – 9	15.0%	5.3%	5-Year Weighted Average (T-2 to T+2)*
4. Underwriting Expenses	1 – 9	10.0%	3.5%	5-Year Weighted Average (T-2 to T+2)*
B. Investment Profitability				
		100.0%	25.0%	
1. Recurring Yield	1 – 9	50.0%	12.5%	5-Year Weighted Average (T-2 to T+2)*
2. Total Portfolio Return	1 – 9	25.0%	6.3%	5-Year Weighted Average (T-2 to T+2)*
3. Sharpe Ratio	1 – 9	25.0%	6.3%	Minimum 8 Years (T-5 to T+2)
C. Sustainable Return on Capital				
		100.0%	20.0%	
1. Return on Equity	1 – 9	50.0%	10.0%	5-Year Weighted Average (T-2 to T+2)*
2. Return on Assets	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
3. Target Return on Equity	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
D. Other Income / Expenses				
		100.0%	10.0%	
1. Non-core Income Sources	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
2. Other Expenses	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
E. Capital Retention				
		100.0%	10.0%	
1. Dividend Payout Ratio	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
2. Long-term Target	1 – 9	50.0%	5.0%	Trend

* Weightings: T-2 (10%), T-1 (20%), T (35%), T+1 (25%), T+2 (10%), subject to analyst adjustments on a case-by-case basis

Exhibit 20: Capital Formation Scorecard – Life

Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
Capital Formation – Life				
A. Underwriting Profitability	1 – 9		25.0%	
B. Investment Profitability	1 – 9		35.0%	
C. Sustainable Return on Capital	1 – 9		20.0%	
D. Other Income / Expenses	1 – 9		10.0%	
E. Capital Retention	1 – 9		10.0%	
A. Underwriting Profitability		100.0%	25.0%	
1. Product Pricing	1 – 9	75.0%	18.8%	5-Year Weighted Average (T-2 to T+2)*
2. Commission Rates	1 – 9	15.0%	3.8%	5-Year Weighted Average (T-2 to T+2)*
3. Underwriting Expenses	1 – 9	10.0%	2.5%	5-Year Weighted Average (T-2 to T+2)*
B. Investment Profitability		100.0%	35.0%	
1. Recurring Yield	1 – 9	50.0%	17.5%	5-Year Weighted Average (T-2 to T+2)*
2. Total Portfolio Return	1 – 9	25.0%	8.8%	5-Year Weighted Average (T-2 to T+2)*
3. Sharpe Ratio	1 – 9	25.0%	8.8%	Minimum 8 Years (T-5 to T+2)
C. Sustainable Return on Capital		100.0%	20.0%	
1. Return on Equity	1 – 9	50.0%	10.0%	5-Year Weighted Average (T-2 to T+2)*
2. Return on Assets	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
3. Target Return on Equity	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
D. Other Income / Expenses		100.0%	10.0%	
1. Non-core Income Sources	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
2. Other Expenses	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
E. Capital Retention		100.0%	10.0%	
1. Dividend Payout Ratio	1 – 9	50.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
2. Long-term Target	1 – 9	50.0%	5.0%	Trend

* Weightings: T-2 (10%), T-1 (20%), T (35%), T+1 (25%), T+2 (10%), subject to analyst adjustments on a case-by-case basis

A. Underwriting Profitability

P&C Insurers

When we evaluate a P&C firm's underwriting operations, we attempt to decompose its combined ratio, which measures overall underwriting profitability. Specifically, we analyze the ratios below over underwriting cycles:

- Combined Ratio = Loss Ratio + Net Commission Expense Ratio + Underwriting Expense Ratio;
- Loss Ratio = Net Claims Incurred / Net Premiums Earned;
- Net Commission Expense Ratio = (Gross Commission Expenses – Reinsurance Commission Income) / Net Premiums Earned;
- Underwriting Expense Ratio = Underwriting Expenses / Net Premiums Earned.

We review these ratios in the following contexts:

- **Underwriting Margin / Claims Volatility:** In many geographies, P&C markets follow distinct underwriting cycles and risk pricing exhibits mean-reversion tendencies. Our first objective is to identify the structural (e.g. detariffication) and cyclical (e.g. rate hikes following poor industry results) trends behind its loss ratio. Second, we seek to understand the competitive (dis)advantages of a firm's underwriting operations. These (dis)advantages are often found in the areas of product differentiation, claims databases, loss adjustment capabilities and information technology.

We would study the tail of a company's portfolio and ascertain whether a particular year's reported results are mainly attributable to current-year performance or prior-year reserve developments. To the extent possible, we would look at as long an underwriting experience track record as possible. At the minimum, we would review the number of time periods stated in the scorecard in Exhibit 19. We may consider assigning a score of "1" to insurers that have less than 3 years of underwriting track record, unless strong mitigants exist (e.g. prudent reinsurance arrangements).

- **Commission Rates:** Commission levels may vary widely across geographies and product types, with more sophisticated business lines typically being costlier to sell. We view distribution cost advantages as a significant positive rating factor and these advantages should support our findings in the distribution risk management section of our Pillar 2 ERM review. Distribution cost efficiency is an increasingly important consideration, as technology transforms the industry landscape and makes direct marketing more appealing as a sales channel.
- **Underwriting Expenses:** Operating and administrative expenses constitute the final component of our analysis of a P&C insurer's underwriting profitability. These items would generally cover expenses related to back office infrastructure, IT systems, customer service, underwriting staff etc., but would exclude loss adjustment expenses, which we view as part of a company's loss ratio. Underwriting expenses could be an important rating factor for start-ups and fledgling insurers that may, for the time being, lack the necessary scale to compete effectively with larger industry incumbents.

Life Insurers

Underwriting profitability is somewhat more difficult to define for life insurers as investment, mortality and morbidity pricing is typically bundled. Where possible, we try to dissect a company's earnings into investment, protection and other earnings to gain insight into the main capital formation drivers. An additional reference point we may use is a life firm's embedded value (EV), which is the sum of its adjusted net worth and value of in-force business. We may review a life business's new business margins, operating return on EV, and its EV assumptions and sensitivities.

- **Product Pricing.** We measure a life book's pricing mainly by its expected internal rate of return (IRR). IRRs that are consistently below or close to a firm's cost of capital may indicate aggressive competitive behavior that may lead to material capital erosion as the portfolio seasons. IRR analysis may also shed light on a firm's product development cycle and risk appetite, and reinforce our findings in our ERM review. A supplementary measure is a portfolio's new business margin, defined as the value of new business / annual premium equivalent.
- **Commission Rates.** Commission rates may be a significant cost item for firms that employ a tied agency model. We assess a firm's commission rates relative to its competitors' and historical trends. We may also review a firm's commission structure to determine if distributors are appropriately incentivized to deliver the best value to shareholders and customers. New agent recruitment and poaching efforts may also incur up-front costs that may not be recouped in the future.
- **Underwriting Expenses.** At its core, life insurance is an asset accumulation business and economies of scale act as a major barrier to entry. In order to stay competitive, sub-scale life insurers may often price their products below the ongoing costs of running its operations, leading to expense overruns that may account for a substantial portion of their earnings and value of in-force business. The costs associated with IT infrastructure may also be considerable for new businesses and may be a drain on capital resources for start-ups.

Underwriting profitability is scored based on the guidelines in Exhibit 21.

Exhibit 21: Underwriting Profitability – Scorecard

Factors	9	7	5	3	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
P&C Insurers					
Underwriting Margin (1)	< 95.0%	95.0 – 97.0%	97.0 – 100.0%	100.0 – 105.0%	> 105.0%
Claims Volatility (2)	< 1.0%	1.0 – 1.5%	1.5 – 2.5%	2.5 – 3.5%	> 3.5%
Commission Rates (3)	< 7.5%	7.5 – 10.0%	10.0 – 15.0%	15.0 – 25.0%	> 25.0%
Underwriting Expenses (4)	< 15%	15 – 20%	20 – 25%	25 – 35%	> 35%
Life Insurers					
Product Pricing (5)	> 20.0%	15.0 – 20.0%	12.5 – 15.0%	10.0 – 12.5%	< 10.0%
Commission Rates (6)	< 25.0%	25.0 – 30.0%	30.0 – 40.0%	40.0 – 50.0%	> 50.0%
Underwriting Expenses (7)	< 7.5%	7.5 – 10.0%	10.0 – 15.0%	15.0 – 20.0%	> 20.0%
(1) Combined Ratio					
(2) Standard Deviation of Loss Ratio					
(3) Net Commission Expenses / Net Premiums Earned					
(4) Underwriting Expenses / Net Premiums Earned					
(5) IRR on New Products					
(6) Commission Expenses / Annual Premium Equivalent					
(7) Underwriting Expenses / Total Weighted Premium Income					

B. Investment Profitability

We view an insurer's investment profitability relative to its risk tolerance. We consider more favorably insurers that generate a stable recurring yield that closely matches the variability of the cost of funding on its insurance float. This may be achieved through duration matching, diversification across the risk spectrum, and the use of derivative instruments. Companies that book one-off capital gains during market rallies may benefit in the short run, but they may be equally exposed when capital market conditions change directions. To the extent possible, we also seek to eliminate distortions created by accounting treatments.

- **Recurring Yield.** This is calculated as (Interest Income + Dividend Income + Rental Income + Other Recurring Investment Income) / Average Invested Assets. We view this metric on an absolute basis and relative to an insurer's cost of funding. P&C insurers that operate on wide underwriting margins and life insurers that pay predominantly floating rates to their customers may have higher tolerances in a persistently low-interest rate environment. As secondary benchmarks, we may also consider a firm's running asset yield relative to market indices with similar duration characteristics.
- **Total Portfolio Return.** This is calculated as (Recurring Investment Income + Realized Capital Gains / Losses + Unrealized Gains / Losses) / Averaged Invested Assets. An insurer's total portfolio return is the most comprehensive measure of its portfolio performance, although the impact of marked-to-market losses on long-term bonds may be moderated by matching liabilities of long durations. Insurers with large short-term trading positions may warrant closer scrutiny, as they may reflect an investment strategy that deviates from the firms' ALM philosophy.
- **Sharpe Ratio.** In assessing a company's investment profitability, we place a particular emphasis on the portfolio's risk-adjusted return (i.e. Sharpe Ratio). The Sharpe ratio is the average return on an insurer's portfolio above the risk-free rate per unit of volatility. A consistently above-average Sharpe ratio may indicate that asset management is one of the firm's core competencies and may allow management to offer more attractive products to its customers. Conversely, a below-average Sharpe ratio may be a reflection of inadequate investment risk management.

These sub-factors are scored based on Exhibit 22.

Factors	9	7	5	3	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Recurring Yield (1)	> 5.0%	4.5 – 5.0%	3.5 – 4.5%	3.0 – 3.5%	< 3.0%
Total Portfolio Return (2)	> 6.0%	5.5 – 6.0%	4.5 – 5.5%	4.0 – 4.5%	< 4.0%
Sharpe Ratio (3)	> 1.5	1.0 – 1.5	0.5 – 1.0	0.0 – 0.5	< 0.0

(1) (Interest Income + Dividend Income + Rental Income + Other Recurring Investment Income) / Average Invested Assets
 (2) (Recurring Investment Income + Realized Capital Gains / Losses + Unrealized Gains / Losses) / Averaged Invested Assets
 (3) (Average Portfolio Return – Risk-free Rate) / Standard Deviation

C. Sustainable Return on Capital

The sustainable return on capital component of our review combines our analyses on underwriting and investment performance and seeks to quantify the firm's overall ability to drive internal capital growth. The concept of earnings sustainability is critical to our assessment, as we attempt to look through risk pricing and capital market cycles. We also pay close attention to a firm's target level of capital, as return on capital measures may be affected by current over/under-capitalization. Specifically, we would look at a firm's:

- **Return on Equity (ROE).** This is defined as (Net Profit After Tax – Non-recurring Items) / Average Shareholders' Equity. Non-recurring items may include one-off events such as the sale of subsidiaries and affiliates, and significant changes in accounting standards and tax codes. Where (un)realized capital gains / losses exhibit unusual volatilities as a result of accounting treatment, we may also consider normalizing them in our calculations with the objective of ensuring consistency over time and across rated entities. For life insurers, we may consider return on EV as a supplementary measure.
- **Return on Assets (ROA).** While return on equity factors in a firm's capital level, return on assets is financial leverage-neutral. Return on assets is defined as (Net Profit After Tax – Non-recurring Items) / Average Assets. We would typically include Reinsurers' Share of Policyholder Liabilities when we measure Total Assets, to fully account for the company's asset scale. In cases where peer comparisons highlight material discrepancies between a firm's ROE and ROA rankings, we may further investigate the degree to which it is over/under-capitalized.

- **Target Return on Equity.** With this metric, our objective is to adjust for current over/under-capitalization and arrive at a sustainable return on equity figure that more closely approximates management's expectations in the long run. Firms with temporarily depressed ROEs, a growing book of business and a robust risk-based capital level may fundamentally have much stronger capital formation capabilities than current return measures indicate. In these situations, we may assess the time until the firm's book of business matures and its earnings potential is unlocked.

These sub-factors are scored according to the guidelines in Exhibit 23.

Exhibit 23: Sustainable Return on Capital – Scorecard

	9	7	5	3	1
Factors	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
ROE	> 15.0%	12.5 – 15.0%	10.0 – 12.5%	7.5 – 10.0%	< 7.5%
ROA	> 2.0%	1.5 – 2.0%	1.0 – 1.5%	0.5 – 1.0%	< 0.5%
Target ROE	> 15.0%	12.5 – 15.0%	10.0 – 12.5%	7.5 – 10.0%	< 7.5%

D. Other Income / Expenses

This part of our evaluation includes non-underwriting / investment factors, such as contributions from ancillary businesses and overhead costs that have been allocated to a firm's holding company or sister entities. Ancillary businesses, as defined here, exclude core or strategic subsidiaries and affiliates, which if material, are typically analyzed separately on a standalone basis. Ancillary businesses may include fee income from cross-selling bank products such as credit cards and the provision of third-party asset management services.

Exhibit 24 shows how we score these sub-factors. We may consider removing these criteria if they are not applicable to a particular insurer. The remaining weightings will be proportionally allocated to the other factors under Pillar 3.

Exhibit 24: Other Income / Expenses – Scorecard

	9	7	5	3	1
Factors	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
ROE on Ancillary Businesses	> 15.0%	12.5 – 15.0%	10.0 – 12.5%	7.5 – 10.0%	< 7.5%
Unallocated Expenses % Total	< 5%	5 – 10%	10 – 15%	15 – 20%	> 20%

E. Capital Retention

To quantify a firm's capital retention, we measure its dividend payout ratio, as defined as (Shareholder Dividends Attributable to the Current Year) / Net Profits After Tax. This measure reflects the trade-off between the build-up of capital buffer and cash returns to shareholders. We may consider the flexibility of a firm's dividend policy and shareholder expectations in constructing stress scenarios. Furthermore, our analysis aims to ascertain management's long-term target throughout market cycles, as outlined in Exhibit 25.

Exhibit 25: Capital Retention – Scorecard

	9	7	5	3	1
Factors	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Dividend Payout Ratio	< 10%	10 – 20%	20 – 33%	33 – 50%	> 50%
Long-term Target	< 10%	10 – 20%	20 – 33%	33 – 50%	> 50%

Pillar 4: Capital Adequacy

Pillar 4 of our framework addresses an insurance company's risk-based capital adequacy, which takes into account the organization's underwriting, investment (credit, market, interest rates, foreign exchange, etc.), reserving, reinsurance and refinancing risks. While there is no universally adopted measure of capital strength, our framework aims to systematically identify and quantify the most important sources of risk facing an insurance organization. As with other quantitative measures, many of the inputs require analytical judgement and adjustments.

Despite the fact that insurers are subject to stringent regulatory supervision – and such supervision is increasing in intensity across many jurisdictions – meeting regulatory solvency requirements alone is generally insufficient to achieve an issuer credit rating or insurer financial strength rating in the higher categories. This is especially true for companies that operate in emerging markets with a developing regulatory framework. The lack of underwriting history, long-term fixed income assets and appropriate hedging instruments may render local regulations in emerging markets more lax than would otherwise be the case.

It is noteworthy that the weightings on certain factors are different for P&C and life insurers, with asset quality constituting a larger portion of the latter's overall capital adequacy score. For composite insurers or holding companies that are engaged in both life and non-life businesses, we view capital adequacy both on a consolidated and standalone basis, mindful of the potential capital fungibility across group member or the lack thereof. Reinsurers that underwrite both P&C and life risks are subject to both sets of criteria, subject to relative weightings by premiums, assets or capital as we deem appropriate.

The scorecards for P&C and life firms are shown in Exhibits 26 and 27, respectively.

Exhibit 26: Capital Adequacy Scorecard – P&C

Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
Capital Adequacy – P&C				
A. Risk-based Capital	1 – 9		35.0%	
B. Asset Quality	1 – 9		20.0%	
C. Reserving	1 – 9		15.0%	
D. Reinsurance	1 – 9		15.0%	
E. Financial Flexibility	1 – 9		15.0%	
A. Risk-based Capital				
1. PENGYUAN CAR	1 – 9	50.0%	17.5%	5-Year Weighted Average (T-2 to T+2)*
2. Regulatory Solvency Ratio	1 – 9	30.0%	10.5%	5-Year Weighted Average (T-2 to T+2)*
3. Internal Benchmark	1 – 9	20.0%	7.0%	Trend
B. Asset Quality				
1. Equity Market Exposure	1 – 9	50.0%	10.0%	5-Year Weighted Average (T-2 to T+2)*
2. Credit Exposure	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
3. Other Risky Asset Exposure	1 – 9	25.0%	5.0%	5-Year Weighted Average (T-2 to T+2)*
C. Reserve Adequacy				
1. Reserve Buffer	1 – 9	50.0%	7.5%	Latest Year
2. Premium Leverage	1 – 9	25.0%	3.8%	5-Year Weighted Average (T-2 to T+2)*
3. Reserve Leverage	1 – 9	25.0%	3.8%	5-Year Weighted Average (T-2 to T+2)*
D. Reinsurance Utilization				
1. Net Catastrophe Exposure	1 – 9	75.0%	11.3%	Latest Year
2. Reinsurance Counterparty Risk	1 – 9	25.0%	3.8%	Latest Year
E. Financial Flexibility				
1. Financial Leverage	1 – 9	50.0%	7.5%	5-Year Weighted Average (T-2 to T+2)*
2. Liquidity	1 – 9	25.0%	3.8%	5-Year Weighted Average (T-2 to T+2)*
3. Access to Funding	1 – 9	25.0%	3.8%	Trend

* Weightings: T-2 (10%), T-1 (20%), T (35%), T+1 (25%), T+2 (10%), subject to analyst adjustments on a case-by-case basis

Exhibit 27: Capital Adequacy Scorecard – Life

Factors and Sub-factors	Score Range	Sub-factor Weighting	Factor Weighting	Analytical Horizon
Capital Adequacy – Life				
A. Risk-based Capital	1 – 9		35.0%	
B. Asset Quality	1 – 9		30.0%	
C. Reserving	1 – 9		15.0%	
D. Reinsurance	1 – 9		5.0%	
E. Financial Flexibility	1 – 9		15.0%	
A. Risk-based Capital		100.0%	35.0%	
1. PENGYUAN CAR	1 – 9	50.0%	17.5%	5-Year Weighted Average (T-2 to T+2)*
2. Regulatory Solvency Ratio	1 – 9	30.0%	10.5%	5-Year Weighted Average (T-2 to T+2)*
3. Internal Benchmark	1 – 9	20.0%	7.0%	Trend
B. Asset Quality		100.0%	30.0%	
1. Equity Market Exposure	1 – 9	50.0%	15.0%	5-Year Weighted Average (T-2 to T+2)*
2. Credit Exposure	1 – 9	25.0%	7.5%	5-Year Weighted Average (T-2 to T+2)*
3. Other Risky Asset Exposure	1 – 9	25.0%	7.5%	5-Year Weighted Average (T-2 to T+2)*
C. Reserve Adequacy		100.0%	15.0%	
1. Interest-rate Sensitivity	1 – 9	75.0%	11.3%	Latest Year
2. Mortality & Morbidity Sensitivity	1 – 9	15.0%	2.3%	Latest Year
3. Lapse Rate Sensitivity	1 – 9	10.0%	1.5%	Latest Year
D. Reinsurance Utilization		100.0%	5.0%	
1. Net Catastrophe Exposure	1 – 9	75.0%	3.8%	Latest Year
2. Reinsurance Counterparty Risk	1 – 9	25.0%	1.3%	Latest Year
E. Financial Flexibility		100.0%	15.0%	
1. Financial Leverage	1 – 9	50.0%	7.5%	5-Year Weighted Average (T-2 to T+2)*
2. Liquidity	1 – 9	25.0%	3.8%	5-Year Weighted Average (T-2 to T+2)*
3. Access to Funding	1 – 9	25.0%	3.8%	Trend

* Weightings: T-2 (10%), T-1 (20%), T (35%), T+1 (25%), T+2 (10%), subject to analyst adjustments on a case-by-case basis

A. Risk-based Capital

Across many jurisdictions, regulators have implemented risk-based capital frameworks or are in the process of doing so. Examples in Asia include China, Japan, Korea, Singapore and Malaysia. Notwithstanding their myriad shortcomings and spurious accuracy under some circumstances, risk-based capital models are a useful tool for internal and external stakeholders alike. As part of our evaluation, we assess a firm's capital strength based on our proprietary guidelines, the regulators' requirements and management's internal benchmarks.

- **PENGYUAN CAR.** We have developed a set of guidelines to measure a firm's capital adequacy ratio (CAR), based on references to global regulatory standards and our observations across developed and emerging markets. We emphasize that these guidelines, shown in Appendix 1, are not intended to be absolute benchmarks for a certain rating level, but rather one of the many inputs in our overall assessment of capital adequacy. These guidelines will be reviewed and updated regularly as market conditions dictate. From these preliminary assumptions, we may adjust the factors upwards or downwards, depending on a particular insurer's actual risk profile.
- **Regulatory Solvency Ratio.** Regulatory solvency ratios matter to our assessment to the extent that they govern the minimum levels below which an insurer must cease writing new business and be subject to additional regulatory constraints. We are cognizant of the fact that regulatory requirements vary widely and will exercise caution when we compare supervisory ratios across firms and jurisdictions. We will also review trends in solvency regulations and factor in potential impacts on rated insurers.
- **Internal Benchmark.** When we analyze insurance companies as going concerns, perhaps a more revealing indicator is management's internal benchmarks, whether they be based on regulatory requirements, internal models or rating agency guidelines. These internal benchmarks, when fully implemented throughout the organization, drive management decisions in a wide range of business functions. Understanding these capital targets may shed light on management's priorities and risk appetite going forward.

The scorecard for risk-based capital is shown in Exhibit 28.

Exhibit 28: Risk-based Capital – Scorecard

Factors	9 Most Favorable	7 Favorable	5 Average	3 Less Favorable	1 Least Favorable
PENGYUAN CAR	> 200%	175 – 200%	150 – 175%	125 – 150%	< 125%
Regulatory Solvency Ratio	> 200%	175 – 200%	150 – 175%	125 – 150%	< 125%
Internal Benchmark	Global Leader	Global Standards	Local Standards	Inadequate	Significantly Inadequate

B. Asset Quality

Overall, we view an insurer's investment quality in the context of its asset-liability management framework. In light of the P&C sector's relatively short-term policyholder liabilities, as a general rule, we view more favorably insurers that invest in liquid, cash-generating assets. These may include term deposits, high-quality short-term bonds and dividend-paying equities. Life insurers with longer-term reserves and firms with strong capital buffers may have higher tolerance for less liquid instruments as long as durations are closely matched.

- **Equity Market Exposure.** An insurer's equity risk tolerance is largely predicated on the nature of its policyholder liabilities and capital buffer. In theory, equities have no maturities and are therefore most suitable for permanent funding sources, such as shareholder funds and perpetual preferred shares, or very long-term policyholder obligations, such as whole-life participating plans. For P&C insurers, consistently profitable underwriting operations may enhance their equity risk tolerance, whereas the fixed / floating-rate nature of a life insurer's obligations is a key determinant.
- **Credit Exposure.** Fixed-income instruments are, by far, the most important asset class for insurance companies' asset-liability management. Credit exposure encompasses the risk of default, potential recoveries, and marked-to-market losses due to rating transitions and credit-spread movements. The lack of breadth and depth in emerging fixed-income markets and the paucity of historical default data may mean that insurers could face an elevated level of credit exposure that may not be readily quantifiable.
- **Other Risky Asset Exposure.** Other risky assets, such as real estate, hedge funds, private-equity funds, and structured credit instruments, may have a role to play in insurers' asset allocation strategies. Their risk characteristics may, in some markets, expand the insurance industry's efficient frontier, enabling participants to achieve more optimal risk-reward profiles. Having said that, these assets often lack secondary market liquidity, making periodic asset valuations difficult. We also seek to identify issuer and sector concentrations, particularly those arising from an insurer's parent or affiliates.

The scorecard for these sub-factors are presented in Exhibit 29.

Exhibit 29: Asset Quality – Scorecard

Factors	9 Most Favorable	7 Favorable	5 Average	3 Less Favorable	1 Least Favorable
Equity Market Exposure (1)	< 1.0x	1.0 – 1.5x	1.5 – 2.0x	2.0 – 2.5x	> 2.5x
Credit Exposure (2)	< 1.0x	1.0 – 1.5x	1.5 – 2.0x	2.0 – 2.5x	> 2.5x
Other Risky Asset Exposure (3)	< 0.5x	0.5 – 0.7x	0.7 – 1.0x	1.0 – 1.5x	> 1.5x

(1) Equity Investments as a % of Total Equity

(2) High-yield Investments as a % of Total Equity

(3) Other Risky Investments as a % of Total Equity

C. Reserve Adequacy

Policyholder reserves represent one of the greatest uncertainties on an insurer's balance sheet, due to the fact that claims may not occur until years after a policy is sold and the ultimate timing and quantum of the cash outlays can only be estimated using historical data and management's expectations. P&C firms that underwrite long-tail business lines such as liability and long-term health may be subject to greater risk. For life companies, policyholder obligations may extend well into the future, and interest rates, mortality, morbidity and other policyholder behavior may deviate significantly from expectations.

- **P&C Insurers.** For non-life risks, we attempt to gauge the adequacy of loss reserves, particularly incurred but not reported claims, using findings from actuarial reports supplied by management or external consultants. We also review an insurer's loss development table, which tracks the changes in estimated claims by underwriting year, to ascertain the degree to which it is over/under-reserved. Secondary measures include premium and reserve leverage. The former measures a company's exposure to pricing errors and the latter reserve estimate shortfalls.
- **Life Insurers.** For life insurers, the assumptions used to estimate future policyholder obligations are largely dependent on management's experience, industry norms and regulatory guidelines. Although reserve adequacy is subject to third-party audits, we conduct a thorough analysis of its key drivers, including interest rates, mortality and morbidity experience, and lapse and surrender ratios (i.e. early policy terminations). Sensitivities of an insurer's capital to these inputs provide a useful estimate of its vulnerability to adverse portfolio experience.

These sub-factors are scored according to Exhibit 30.

Exhibit 30: Reserve Adequacy – Scorecard

Factors	9	7	5	3	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
P&C					
Reserve Buffer (1)	> 20%	10 – 20%	0 – 10%	-10 – 0%	< -10%
Premium Leverage (2)	< 1.0x	1.0 – 1.5x	1.5 – 2.0x	2.0 – 2.5x	> 2.5x
Reserve Leverage (3)	< 1.0x	1.0 – 1.5x	1.5 – 2.0x	2.0 – 2.5x	> 2.5x
Life					
Interest-rate Sensitivity (4)	< 5%	5 – 10%	10 – 15%	15 – 20%	> 20%
Mortality & Morbidity Sensitivity (5)	< 1%	1 – 3%	3 – 5%	5 – 10%	> 10%
Lapse Rate Sensitivity (6)	< 1%	1 – 3%	3 – 5%	5 – 10%	> 10%

(1) Estimated Reserve Redundancies / Shortfalls as a % of Total Equity

(2) Net Premiums Written / Total Equity

(3) Net Loss Reserves / Total Equity

(4) Impact of a 25bp Δ in Interest Rates on Total Equity (%)

(5) Impact of a 10% Δ in Mortality & Morbidity on Total Equity (%)

(6) Impact of a 10% Δ in Lapse Rates on Total Equity (%)

D. Reinsurance Utilization

Reinsurance is the most commonly used form of risk transfer mechanism. As reinsurance is essentially a global industry, the supply of capital fluctuates across market cycles, leading to volatilities in the pricing and availability of risk coverage. In our analysis, we focus primarily on an insurer's exposure to catastrophe events net of reinsurance recoveries. Where an insurer relies extensively on catastrophe modelling by external parties, we may review such information to gain insight into the firm's risk accumulation. As part of the assessment, we also review the credit quality of the reinsurers providing coverage.

The scorecard for reinsurance utilization is presented in Exhibit 31.

Exhibit 31: Reinsurance Utilization – Scorecard

Factors	9	7	5	3	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Catastrophe Exposure (1)	< 3%	3 – 5%	5 – 10%	10 – 20%	> 20%
Reinsurance Counterparty (2)	AAA	AA	A	BBB	< BBB

(1) Aggregate Exposure to a 1/200-year Catastrophe Net of Reinsurance Recoveries as a % of Total Equity

(2) Average Credit Rating of Reinsurers Providing Coverage

E. Financial Leverage

Financial leverage represents the gearing of an insurer's balance sheet through the issuance of debt or hybrid instruments. This form of leverage is in addition to the insurance float that a company has already acquired via the underwriting of risks and may introduce an additional layer of uncertainty to its balance sheet. Having said that, certain forms of hybrid instruments have equity-like features and we may consider their permanence, convertibility into common shares, loss absorption, callability, and regulatory and structural subordination in assigning equity to these types of supplementary capital.

Liquidity is another factor we analyze, as defined by an insurer's to repay its short-term policyholder and debt obligations. While insurers that engage in "cash-flow underwriting" may be able to continue operating in the near term, the excessive reliance on new premium flows may cause cash shortages when market conditions deteriorate. In the absence of effective duration matching, the liquidity of investment assets is critical to ensuring that temporary market dislocations will not affect a company's short-term repayment capacity.

Finally, we assess a firm's access to funding, which may be from the public markets or its controlling shareholder. Entities that operate as part of broader financial or corporate groups may or may not be able to obtain intra-group financing in times of stress, depending on the fungibility of capital among group members. While we may not consider short-term liquidity sources, such as letters of credit or short-term bank facilities, as supplementary capital, these channels may be integral to an organization's treasury function and may provide interim relief when a firm faces unexpected liquidity strains.

The metrics we assess, along with their respective weightings are shown in Exhibit 32.

Exhibit 32: Financial Leverage – Scorecard

Factors	9	7	5	3	1
	Most Favorable	Favorable	Average	Less Favorable	Least Favorable
Financial Leverage (1)	< 10%	10 – 15%	15 – 25%	25 – 35%	> 35%
Liquidity (2)	> 2.0x	1.5 – 2.0x	1.0 – 1.5x	0.5 – 1.0x	< 0.5x
Access to Funding (3)	> 30%	20 – 30%	10 – 20%	5 – 10%	< 5%

(1) (Debt + Debt Portion of Hybrids) / Total Capital
 (2) Liquid Assets as a % of Short-term Policy Obligations and Debt Payments
 (3) Readily Accessible External Funds as a % Shareholders' Equity

Treatment of Reinsurers

Throughout this report, we have emphasized that the criteria apply equally to P&C and life reinsurers. While we recognize that reinsurers differ from direct insurers in many aspects of their business, we believe our criteria have been calibrated such that these differences have been properly accounted for.

The ways in which reinsurers differ from direct underwriters include the following:

- Reinsurance is a global business. The supply of reinsurance tends to be across borders, making pricing more susceptible to capital and underwriting conditions outside of a reinsurer's domestic market (addressed in Pillar 1);
- Reinsurers have a high degree of reliance on their clients' underwriting and claims management capabilities (addressed in Pillar 2);
- Underwriting and pricing cycles tend to be much more pronounced than in direct markets (addressed in Pillar 3);
- Reinsurance is a significantly more credit rating- and balance sheet-sensitive business (addressed in Pillar 4);
- Reinsurers may have a higher degree of catastrophe exposure. As such, catastrophe risk management may be more important (addressed in Pillars 2 and 4).

In cases where a reinsurer underwrites both P&C and life reinsurance, a combination of the P&C and life scoring guidelines applies.

Pillar Scores

A. Enterprise Risk Score (ERS)

The Pillar 1 (IISI) and 2 (ERM) scores are combined in the matrix in Exhibit 33 to arrive at an Enterprise Risk Score (ERS).

Exhibit 33: ERS

		IISI				
		5	4	3	2	1
ERM	7	ERS-7	ERS-6	ERS-5	ERS-4	ERS-2
	6	ERS-6	ERS-6	ERS-5	ERS-4	ERS-2
	5	ERS-5	ERS-5	ERS-4	ERS-3	ERS-2
	4	ERS-4	ERS-4	ERS-3	ERS-2	ERS-1
	3	ERS-4	ERS-3	ERS-3	ERS-2	ERS-1
	2	ERS-3	ERS-2	ERS-2	ERS-1	ERS-1
	1	ERS-2	ERS-1	ERS-1	ERS-1	ERS-1

B. Capital Risk Score (CRS)

The Pillar 3 (Capital Formation) and 4 (Capital Adequacy) are weighted 35%/65% to derive a Credit Risk Score (CRS). The CRS is scored according to Exhibit 34.

Exhibit 34: CRS Scoring Guidelines

Weighted Average of Pillar 3 and 4 Scores	CRS Score
> 8.5	9
7.5 – 8.5	8
6.5 – 7.5	7
5.5 – 6.5	6
4.5 – 5.5	5
3.5 – 4.5	4
2.5 – 3.5	3
1.5 – 2.5	2
< 1.5	1

C. Indicative Credit Score (ICS)

The ERS and CRS are combined in the matrix in Exhibit 35 to arrive at an Indicative Credit Score (ICS).

Exhibit 35: ICS

		ERS						
		7	6	5	4	3	2	1
CRS	9	aaa	aa+	a+	a	a-	bbb-	bb-
	8	aa+ / aa	aa / aa-	a+	a	a-	bbb-	bb-
	7	aa- / a+	a+ / a	a	a-	bbb+	bbb-	bb-
	6	a	a-	a-	bbb+	bbb	bb+	b+
	5	a-	bbb+	bbb+	bbb	bbb-	bb+	b+
	4	bbb+	bbb	bbb	bbb-	bb+	bb	b
	3	bbb / bbb-	bbb-	bbb-	bb+	bb	bb-	b- or below
2	bb+ / bb	bb+ / bb	bb	bb	bb-	b+	b- or below	
1	bb- or below	bb- or below	bb- or below	bb- or below	b+ or below	b or below	b- or below	

In cases where the ICS ends up in a cell that contains two options (for instance, an ERS of 7 and a CRS of 8), the CRS becomes the dominant factor and an insurer would be scored at the higher / lower option depending on whether its CRS is at the high or low end of the range.

Analytical Adjustments

A. Weakest-link Analysis and Standalone Credit Profile (SACP)

While we have strived to capture an insurance organization's core sources of risks throughout our four-pillar framework, the diversity of entities in the space warrants an additional layer of analysis on its key vulnerabilities which may be unique to its geographical or product market, or its operating profile. We consider these vulnerabilities the weakest links in a firm's overall credit characteristics and these factors may not have been adequately reflected in the weightings assigned to the four pillars. Our weakest-link analysis may also allow us to better differentiate credits that have similar indicative credit scores, but may not be equally resilient in the face of specific stresses.

Examples of weakest links that are unique to certain insurers may include:

- **Franchise Contagion Risk.** The risk of an insurer's parent or affiliates suffering reputational or financial impairments due to unforeseen events is first considered in our ERM assessment. However, in weaker regulatory environments, the ring-fencing of an insurer's capital may not be as strictly observed, resulting in the risk (or perceived risk) of its credit profile being adversely affected. Should such risks be deemed material, we may assess the firm's parent or affiliates' standalone profiles, with particular emphasis on risk spillovers in the form of capital repatriation, asset leakage or the potential for a widespread loss of consumer confidence and a "run on the bank" scenario.
- **Catastrophe Coverage.** Insurers that rely extensively on reinsurance for catastrophe coverage may face substantial credit risks if events in other parts of the world lead to a deterioration of their coverage providers' balance sheets. Reinsurance providers that are rated in the borderline investment-grade category may face further pressure if their ratings are downgraded. Reinsurance credit risk is analyzed under our capital adequacy pillar, but should such credit risk concentration be considered substantial, we may re-assess the rated insurer's ability to withstand catastrophe losses, assuming all, or a significant portion, of these claims are not ultimately recovered.
- **Management Turnover.** Key-man risk is assessed in our ERM framework, but in situations where an insurance's franchise value or distribution capabilities are concentrated in a handful of senior executives, we may evaluate the potential for significant disruptions to a firm's business. This analysis may involve a thorough review of the key executives' compensation structure, contractual terms and conditions, and the market for management talents. The assessment may extend to middle management as well, especially in the sales and marketing function, where agent turnover may have severe consequences for a firm's sales and customers' withdrawal patterns.

In the majority of cases, we do not envisage that our weakest-link analysis will cause a downward adjustment of more than 2 notches from an insurer's indicative credit score. Once these adjustments are made, we will arrive at a Standalone Credit Profile (SACP) for a rated entity.

B. External Support Analysis and Issuer Credit Rating (ICR)

The last step in our analytical framework is to determine if a rated insurer's credit profile would benefit or suffer from its position in a broader group structure. Factors we may consider in assessing the potential for support include:

- The sharing of a common brand identity;
- The sharing of management, directors, and key business functions;
- The entity's contribution to the group in terms of earnings, assets and capital;
- The difference between the rated entity and the group's credit profiles; and
- The existence of explicit support agreements or comfort letters.

We adopt both a top-down and a bottom-up approach in our assessment and the highest uplift an insurer can achieve is the Issuer Credit Rating (ICR) of the support provider. After these adjustments are made, we would arrive at a rated entity's ICR, which would typically be aligned with its Insurer Financial Strength Rating (IFSR).

Related Criteria and Research

- Rating Symbols and Definitions, 7 May 2018
- General Principles of Credit Ratings, 21 November 2017

Appendix 1: PENGYUAN CAR Guidelines

Appendix 1A: Definition of Economic Capital – Starting Point

SHAREHOLDERS' EQUITY
(+) Minority Interests
= TOTAL EQUITY
(-) Up to 100% of Goodwill
(-) Up to 100% of Deferred Acquisition Costs
(-) Deferred Tax Assets
(-) Pre-paid Expenses
(-) Other Intangibles
(-) Proposed Shareholder Dividends not on Balance Sheet
(-) Off-balance Sheet Defined-Benefit Pension Deficits
(-) Contingent Liabilities
= NET TANGIBLE ASSETS
MARK-TO-MARKET ADJUSTMENTS
(+) After-tax Unrealized Gains (Losses) Off-Balance Sheet
(-) After-tax Unrealized Gains (Losses) on Bonds Backing Life Obligations
P&C ADJUSTMENTS
(+) Catastrophe / Equalization Reserve
(+) Up to 50% of Loss Reserve Redundancy
(-) Loss Reserve Deficiency
(-) Loss Reserve Time Value Discount
LIFE ADJUSTMENTS
(+) Up to 50% of Value of in-force Business (VIF)
(+) Up to 50% of After-tax Participating Fund Surplus Available to Shareholders
+/- OTHER ANALYST ADJUSTMENTS
(+) Intra-group Fungible Capital
(+) Other
= CORE ECONOMIC CAPITAL
HYBRID CAPITAL ADJUSTMENTS
(+) Hybrids with 100% Equity Credit
(+) Hybrids with 50% Equity Credit
* Subject to a 25% cap on hybrid capital % Total Economic Capital
+/- OTHER ANALYST ADJUSTMENTS
= TOTAL ECONOMIC CAPITAL

Appendix 1B: Asset Risk Factors – Starting Point

CREDIT / SPREAD RISK	
Cash and Deposits	0.05% - 0.15%
Fixed Income	
AAA	
< 1 Year	0.05% - 0.15%
1 – 5 Years	0.15% - 0.25%
5 – 10 Years	0.45% - 0.55%
> 10 Years	0.70% - 0.80%
AA	
< 1 Year	0.10% - 0.20%
1 – 5 Years	0.20% - 0.30%
5 – 10 Years	0.75% - 1.25%
> 10 Years	1.00% - 1.50%
A	
< 1 Year	0.15% - 0.25%
1 – 5 Years	0.30% - 0.70%
5 – 10 Years	1.00% - 1.50%
> 10 Years	1.50% - 2.00%
BBB	
< 1 Year	0.40% - 0.60%
1 – 5 Years	1.75% - 2.25%
5 – 10 Years	3.75% - 4.75%
> 10 Years	4.75% - 5.75%
BB	
< 1 Year	2.00% - 3.00%
1 – 5 Years	7.50% - 12.50%
5 – 10 Years	15.00% - 20.00%
> 10 Years	17.5% - 22.50%
B	
< 1 Year	7.50% - 12.50%
1 – 5 Years	20.00% - 30.00%
5 – 10 Years	25.00% - 35.00%
> 10 Years	30.00% - 40.00%
≤ CCC / NR	
< 1 Year	30.00% - 40.00%
1 – 5 Years	40.00% - 60.00%
5 – 10 Years	50.00% - 70.00%
> 10 Years	55.00% - 75.00%
Loans and Other Credit Assets	5.00% - 15.00%
Receivables and Others	2.50% - 7.50%
Policyholder Loans	0.00%
Unit-linked Assets	0.00%
MARKET RISK	
Listed Equities	40.00% - 60.00%
Equity Funds	35.00% - 55.00%
Fixed Income Funds	5.00% - 10.00%
Balanced Funds	20.00% - 30.00%
Money Market Funds	0.25% - 0.75%
Unlisted Equities	50.00% - 100.00%
Unlisted Affiliates	50.00% - 100.00%
Preferred Shares	25.00% - 35.00%
Real Estate	15.00% - 25.00%
Infrastructure	10.00% - 20.00%
Alternative Investments	15.00% - 25.00%
Fixed Assets	5.00% - 15.00%
Other Assets	2.50% - 7.50%
ALM RISK	
Adverse Interest-rate Movement	50 – 200bps
Adverse Exchange-rate Movement	20.00 – 30.00%
REINSURANCE COUNTERPARTY RISK	
Reinsurance Recoverables (Net of Collaterals)	
AAA	0.75% - 1.25%
AA	1.00% - 1.50%
A	1.25% - 1.75%
BBB	2.50% - 7.50%
BB	20.00% - 30.00%
B	40.00% - 60.00%
≤ CCC / NR	50.00% - 100.00%

Appendix 1C: Underwriting Risk Factors – Starting Point

P&C UNDERWRITING RISK		
PRICING RISK – NET PREMIUMS WRITTEN		
Auto		10.00% - 20.00%
Property & Engineering		25.00% - 35.00%
Marine, Aviation & Transit		25.00% - 35.00%
Liability		20.00% - 30.00%
Accident & Health		15.00% - 25.00%
Credit		40.00% - 60.00%
Other		20.00% - 50.00%
RESERVING RISK – NET LOSS RESERVES		
Auto		10.00% - 20.00%
Property & Engineering		10.00% - 20.00%
Marine, Aviation & Transit		20.00% - 30.00%
Liability		20.00% - 40.00%
Accident & Health		20.00% - 30.00%
Credit		20.00% - 30.00%
Other		20.00% - 40.00%
CATASTROPHE RISK		
Net Probable Maximum Loss on a 1/200-year Event		100.00%
LIFE UNDERWRITING RISK		
NET RESERVE RISK		
Participating / Universal (Low Guarantees)		1.75% - 2.25%
Participating / Universal (High Guarantees)		2.25% - 2.75%
Non-participating (Low Guarantees)		1.25% - 1.75%
Non-participating (High Guarantees)		2.75% - 3.25%
Unit-linked		0.50% - 1.00%
Life Reinsurance		0.25% - 0.75%

Appendix 1D: Diversification Benefits – Correlation between Risk Factors
Total Diversification Benefits Capped at 25% of Gross Target Capital

Asset Risk				
	Fixed Income	Equities	Real Estate	Other
Fixed Income	1.00	0.75	0.75	0.75
Equities	0.75	1.00	0.75	0.75
Real Estate	0.75	0.75	1.00	0.75
Other	0.75	0.75	0.75	1.00

P&C Risk							
	Auto	Property	Marine / Aviation	Liability	Accident & Health	Credit	Other
Auto	1.00	0.75	0.75	0.50	0.50	0.50	0.50
Property	0.75	1.00	0.75	0.75	0.25	0.25	0.50
Marine / Aviation	0.75	0.75	1.00	0.75	0.50	0.50	0.50
Liability	0.50	0.75	0.75	1.00	0.50	0.75	0.50
Accident & Health	0.50	0.25	0.50	0.50	1.00	0.75	0.50
Credit	0.50	0.25	0.50	0.75	0.75	1.00	0.50
Other	0.50	0.50	0.50	0.50	0.50	0.50	1.00

Life Risk				
	Participating	Non-par	Unit-linked	Life Reinsurance
Participating	1.00	0.75	0.75	0.75
Non-participating	0.75	1.00	0.75	0.75
Unit-linked	0.75	0.75	1.00	0.75
Life Reinsurance	0.75	0.75	0.75	1.00

Overall Risk			
	Asset Risk	P&C Risk	Life Risk
Asset Risk	1.00	0.50	0.50
P&C Risk	0.50	1.00	0.50
Life Risk	0.50	0.50	1.00

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