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Criteria:

New Risk-Based Insurance Capital Model

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*(**Editor's Note:** This article, originally published on May 23, 2007, has been republished to include the section headed "Diversification" and replace Appendix 3, which previously did not include updated figures. In addition, data has been added to Appendix 1 for commercial mortgages tenor based. The article follows our Request For Comment on Nov. 21, 2006, which asked for feedback from interested parties on our new risk-based insurance capital model. Below, we provide the updated version of this model, which we have partially revised based on the feedback received.)*

Standard & Poor's Ratings Services has revised its risk-based capital (RBC) adequacy model, which is an integral and quantitative tool in analyzing the capital adequacy for life, property/casualty (P/C), health, and reinsurance companies worldwide. Insights drawn from this model are evaluated in conjunction with more qualitative factors—including composition of a company's capital structure (reliance on hybrid securities and debt to fund its operations), asset quality, reserve adequacy, contingent assets and liabilities, and level of reinsurance dependency to form a comprehensive opinion on the level of capitalization. Varying global accounting standards and complex legal entity structures present challenges in the analysis of insurance company capitalization, but we have taken a global approach noting regional exceptions throughout. The opinion will be expressed in terms of adjusted capital being either redundant or deficient across targeted levels of risk-adjusted capitalization consistent with the rating level.

The capital adequacy outcome from the model is only a starting point for judging capital adequacy. Qualitative and quantitative enhancements are applied as warranted to derive a more complete picture of an insurer's capital position. The analyst plays a critical role in adjusting the model to best assess risks that are unique to a company while maintaining a standard of comparability between companies.

Summary

The model seeks to determine the amount of capital that is necessary to cover losses at varying confidence intervals from disparate risks in excess of reserves over the expected life of a company's portfolio. In the new model, each risk variable is stressed using confidence levels that Standard & Poor's deems appropriate given the company's targeted rating category and our empirically observed cumulative five-year defaults across ratings. Although the impact of the stressed risk variables is measured over the expected lives of the assets and liabilities, the volatility used to create the stressed scenarios is based on potential movements expected over a one-year period.

In other words, we are seeking to capture the present value of expected economic losses (change in shareholder equity/policyholder surplus) experienced over an annual period, to a degree of certainty that is commensurate with the rating. The confidence levels establishing the degree of certainty for each individual risk will be: 97.2% for 'BBB', 99.4% for 'A', 99.7% for 'AA', and 99.9% for 'AAA'.

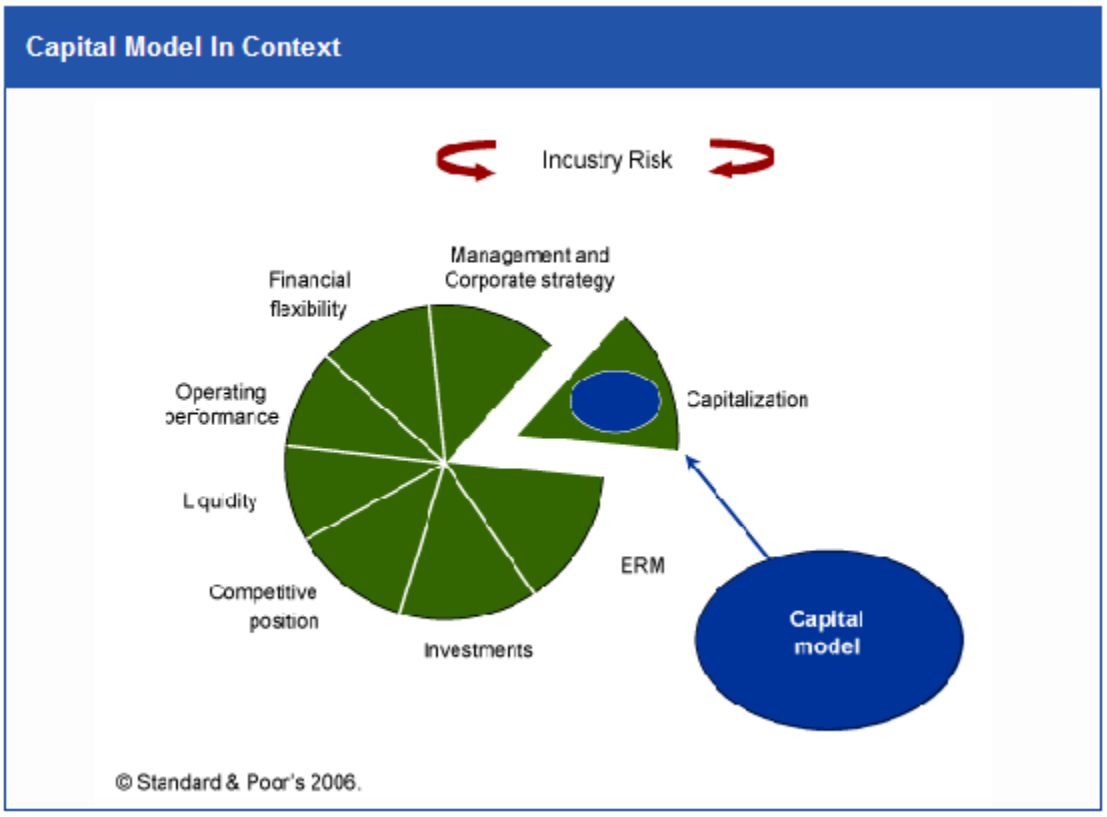
Standard & Poor's will give explicit credit for diversification within the capital model, albeit at more conservative levels than generally observed within the market.

The approach reflects our conservative view on correlations in the tail through correlation matrices specifically designed for this model. In addition, implicit diversification credit is embedded in many of the charges (e.g. equity,

mortality) where indices and industry level data are being used. The diversification credit calculated brings the sum of the capital requirement for each risk at the various rating levels to a level commensurate with the target rating. The conservatism in the diversification credit also reflects some implicit diversification in the chosen confidence intervals for each risk charge. These were generated from five-year default data that was deemed a more appropriate measure to calibrate each charge than a more onerous one-year horizon that we see applied in some regulatory regimes and where as a result a higher diversification credit is generated.

Capital Model In Context

Although considerable attention is focused on RBC adequacy, our assessment of capital adequacy is only one of many factors used in arriving at a company's credit rating. Our rating process will continue to be based on the belief that the results from the model are not a substitute for a broad-based analysis of an insurer's credit quality. Strength or weakness in other key areas, such as a company's market position, management and strategy, credit risk, liquidity risk, earnings performance, enterprise risk management (ERM), and financial flexibility can more than offset relative strength or weakness in capital adequacy. The areas of analysis are interconnected and their importance and influence on a rating will differ depending on company specific circumstances. This report does not explore the individual areas of analysis, but it is important to recognize the capital model, in itself, does not define a rating.



The model creates a consistent initial approach to measuring an insurer's capital adequacy. Still, results are primarily guideposts, not absolute benchmarks, by which to gauge capital adequacy. A vital part of the assessment of capital adequacy incorporates adjustments—both qualitative and quantitative—to the model. These adjustments may

consider:

- An insurer's ability to internally generate capital and self-fund growth through earnings. All else being equal, we view companies with long track records of consistently good earnings as having a stronger capacity for reliable capital development than companies with more volatile performance. We also consider an insurer's prospective growth plans in conjunction with management's commitment to maintaining or enhancing surplus adequacy or running a leaner capital structure.
- We consider potential calls on capital by affiliates that might look to the rated entity for future capital support, or by a parent's potentially increasingly aggressive appetite for dividends. Conversely, a parent's, subsidiary's, or affiliate's ability to provide future capital support may have a positive effect on how we view an institution's capital strength.
- Quality of asset/liability management techniques. Generally, Standard & Poor's views companies willing to accept incremental risk less favorably than those adhering to more prudent practices. A company's demonstrated understanding of the risks undertaken also influences the assessment.

In addition, Standard & Poor's introduced new criteria in 2005 that seek to assess the strength of ERM (see article: " Insurance Criteria: Evaluating The Enterprise Risk Management Practices Of Insurance Companies," published Oct. 17, 2005, on Ratings Direct) within a group. The insight this new tool provides into management techniques used to assess, quantify, and manage risk provides an important element of our analysis of capital adequacy. In particular the sophisticated risk models now employed by insurance groups as part of their ERM framework will complement the factor based approach of Standard & Poor's capital model. Although the factor-based model is less sophisticated, it benefits from simplicity and helps to cut through the myriad assumptions that drive the result in the more complex economic capital models. By assessing the output of both the Standard & Poor's capital model and the insurer's own model, Standard & Poor's expects to derive an informed opinion of capital adequacy.

Capital model framework

Standard & Poor's capital model is designed under a globally consistent framework. Regional factors are applied to reflect features unique to a local market. The factor-based model reflects observed volatility in the past 15-plus years.

The model improves the analytical value of our ratings process by more accurately linking expected capital adequacy to risk. It provides transparency to the marketplace as to the level of stress that is applied and clearly defines the risks encompassed. We believe the model parallels advances in risk management and measurement currently being made in the insurance industry, which will make it easier to apply the model in concert with internal (economic) capital modeling being developed. Consistent with the direction of the industry, the model applies a well-defined and consistent framework to measure exposure across all categories of risk (e.g. mortality risk, credit risk, financial market risk).

The model calculates a target level of RBC at each rating level, based on the company's specific risk profile. The target capital captures market, credit, and recoverability risks as well as insurance business-related risks of adequate pricing, interest rate movements relative to interest-rate sensitive products, mortality/morbidity, catastrophic risks, and adequate loss reserving.

An insurance company's total adjusted capital is compared with the level of target capital. For each rating level, a redundancy or deficiency can be quantified against the target capital.

Defining Capital: A Global Approach

Total adjusted capital–GAAP model

Standard & Poor's calculates total adjusted capital (TAC) on a globally consistent basis. In addition, economic capital available (ECA), is calculated globally.

TAC is the measure used for capital available to meet a company's capital requirements in Standard & Poor's capital adequacy model.

TAC is a narrower capital measure reflecting a nearer term view on the realization of assets. It reflects, for example, the ability to partly realize the off-balance sheet value of in force life insurance business through reinsurance or securitizations in a relatively short timeframe. It is also influenced more by the current regulatory views of capital rather than an economic view. TAC includes non-owner capital that can absorb losses such as hybrid capital and forms of policyholder capital such as discretionary funds backing participating life insurance policies that can be used to absorb risk across an organization.

ECA is a broader, more economic view of owner (shareholders, or policyholders in the case of mutuals) capital with a longer term view on crystallizing value. It reflects, for example, the ability to partly realize the value of goodwill over the long term through asset sales or enhanced earnings. ECA is used in Standard & Poor's leverage measures reflecting the more economic view of the way the capital needs of companies are funded.

Standard & Poor's provides ratings on companies in many parts of the world. In so doing, even with the advent of IFRS, we encounter many different accounting frameworks. One of the objectives of both TAC and ECA is to normalize the resulting measures of owner equity onto a more consistent basis.

GAAP or statutory?

For companies or groups producing financial statements in accordance with generally accepted accounting principles (GAAP such as U.S. GAAP, IFRS), TAC, and ECA should normally be drawn from information contained in those statements. However, some companies in certain countries (e.g., the U.S.) only produce financial statements in accordance with the local regulators' basis (statutory basis) of accounting. TAC and ECA may be drawn from information contained in the statutory basis financial statements if there are no GAAP financial statements or if the statutory basis financial statements provide greater depth and breadth of financial information.

Increasingly, many companies in jurisdictions that focus on statutory solvency have subsidiaries and affiliates that operate offshore--either as local companies conducting business in international jurisdictions or as offshore captive reinsurers. In those cases, a pure statutory analysis might lose sight of significant risks to the group. Therefore, Standard & Poor's will be expanding its use of GAAP capital models on a consolidated group basis. This analysis will not replace statutory analysis, which is still important to assure local statutory solvency. But the primary measure of group capital adequacy will focus on GAAP analysis to capture all group risks on a more appropriate economic basis.

Consolidated or unconsolidated?

Standard & Poor's insurance group rating methodology outlines criteria for evaluating insurance groups. This is founded initially on an analysis of a consolidated group, treating it as if it were a standalone company, and

determining a rating for the group (the notional group operating company rating—NGOR). Then, in assigning ratings to its insurance operating company subsidiaries, determinations are made as to whether each subsidiary is either core, strategically important, or nonstrategic to the group.

For determining the NGOR (which would normally be assigned to core members of a group) Standard & Poor's prefers to base its analysis on a group's consolidated financial statements because it captures better a group's capital profile (for example, by including all the operations of the group, eliminating the effect of double leverage and eliminating intra group transactions). The ratings of individual group subsidiaries are influenced in part by the company's individual financial statements (which may or may not be consolidated) and, where applicable, adjustments for double leverage may be made.

Components of TAC

TAC is reported statutory surplus or GAAP reported common shareholder equity adjusted for certain items that affect the quality of the surplus/equity.

Table 1

Components Of TAC

Reported shareholders equity/policyholder surplus	
Plus	**Equity minority interests***
Plus	Equalization / catastrophe reserves*
Plus	Prudential margins included in reserves
Minus	Proposed shareholder dividends not accrued
Minus	Standard & Poor's impairment of goodwill
Minus	Other intangible assets
Minus	On-balance sheet unrealized gains/(losses) on life bonds* ** (post tax***)
Plus	Off-balance sheet unrealized gains/(losses) on investments other than life bonds* (post tax***)
Minus	Off-balance sheet pension deficits (post tax***)
Minus	On-balance sheet pension surpluses (post tax***)
Plus	Up to 100% of off-balance sheet life value of in-force (post tax***)
Plus	Property/casualty loss reserve surpluses/(deficits) (post tax***)
Plus	Property/casualty loss reserve discount
Plus/Minus	Analyst adjustments
= ECA (economic capital available)	
Minus	Remaining goodwill after Standard & Poor's impairment
Minus	Investment in unconsolidated subsidiaries, associates, and other affiliates
Minus	Investments in own shares/treasury shares
Minus	50% deducted of off-balance sheet value of in-force (post tax)
Minus	50% deducted of life deferred acquisition costs (post tax)
Minus	100% deducted of property/casualty deferred acquisition costs
Minus	50% deducted of property/casualty loss reserve surpluses
Minus	33% deducted of property/casualty loss reserve discount
Plus	Policyholder capital available to absorb losses
Plus/Minus	Analyst adjustments

Table 1

Components Of TAC (cont.)	
= TAC before hybrid capital adjustments	
Plus	Hybrid capital (subject to tolerance limits)
Minus	Excess Over Hybrid Tolerance
= Total Adjusted Capital	

* Where not already included in shareholders' equity. ** Subject to fair value exception. *** Where tax effect not disclosed use effective tax rate.

For those jurisdictions where statutory accounting remains the primary basis for capital evaluation by Standard & Poor's, the statutory definitions of total adjusted capital will continue to be used.

Description Of TAC And ECA Adjustments

Equity minority interests

Equity minority interests will often already form part of shareholder equity, but if not, it will be added to TAC as it constitutes capital that is under the control of a group's management.

Equalization/catastrophe reserves

Equalization and catastrophe reserves are not permitted under U.S. GAAP or IFRS because they relate to future unexpected events. However, they still remain in some national GAAPs and statutory accounting. Standard & Poor's regards these reserves as equity.

Prudential margins included in reserves

In some countries, such as Australia, explicit margins are required as part of reported liabilities. A proportion of these margins are added back to equity for TAC and ECA purposes. That proportion varies depending on the margin of sufficiency included in the liabilities.

Proposed shareholder dividends not accrued

If the financial statements include a proposed level of shareholder dividend relating to the past financial year that is not accrued in the balance sheet, this should be deducted from shareholder equity in deriving TAC.

Goodwill

All goodwill is deducted from shareholder's equity to derive TAC.

Unrealized gains on investments

Treatment of unrealized gains will depend on the balance sheet treatment of liabilities. TAC may include full credit for the market value of investments, except for bond investments matched with nonlinked (or general account) life insurance liabilities. However, bond investment market values may be included in TAC and ECA if matching balance sheet liabilities are valued on a market consistent basis (i.e., where movements in interest rates affect both asset and liability values).

Accordingly, where unrealized gains/losses are on-balance sheet, gains/losses on bonds matched with nonlinked (or general account) life insurance liabilities should be removed from TAC and ECA. However, if liabilities are valued

on a market consistent basis, no adjustment is required.

Conversely, where unrealized gains/losses are off balance sheet, gains/losses on investments other than bonds matched with nonlinked (or general account) life insurance liabilities should be added to TAC and ECA.

For nonlife and shareholder, the market value of bonds will normally be added to TAC if off balance sheet.

Pensions

Defined benefit employee pension (or long-term health care) scheme deficits are increasingly deducted on balance sheets in arriving at shareholders' equity. Where such deficits are off balance sheet, they should be fully reflected in TAC. This includes off-balance-sheet deficits remaining where the corridor method is used.

All on-balance-sheet amounts related to defined benefit employee pension (or long-term health care) scheme surpluses should also be removed from TAC, given the lack of fungibility of such surpluses.

Where the capital adequacy models of subsidiaries are based on statutory basis financial statements, pension deficits are rarely capable of being allocated to those subsidiaries. Pension adjustments will only be made as part of the consolidated group's GAAP basis capital analysis.

To reflect the debt-like characteristics of pension deficits, leverage calculations are analyzed, including and excluding pension deficits. The predominant measure of leverage will depend on several factors including the company's proposed funding timetable for the deficit and any plans in place to renegotiate employees' benefits.

Value of in-force life insurance business and life deferred acquisition costs (GAAP model)

Balance sheets tend to understate the economic value of life insurance business globally, although the degree of understatement varies. Where available and audited, Standard & Poor's uses embedded value analysis to normalize its balance sheet analysis (and more importantly its earnings analysis) across the globe. Increasingly embedded values are disclosed in supplementary financial statements, but are generally not included in balance sheets shown in the primary financial statements. Standard & Poor's will credit up to 50% of value in force (VIF) in its calculation of TAC. Adjustments will be made to avoid any double counting of the credit given on balance sheet for VIF, deferred acquisition costs (DAC), value of business acquired (VOBA) and goodwill.

If embedded value information is not available, life DAC will be included up to 50% of its statement value assuming reasonableness of the DAC recoverability. Further adjustments to exclude more of the DAC could be applied if the company assumptions are not sufficiently conservative.

Property/casualty deferred acquisition costs

P/C DAC is deducted 100% in the calculation of TAC.

P/C loss reserve deficits/surpluses

Where Standard & Poor's determines that a company's loss reserves are either deficient or in surplus (by our own reserve analysis, external actuarial review or other means), we will adjust TAC accordingly. For the purposes of TAC, surpluses are normally haircut by 50%. There should be no double counting of credits for loss reserve surpluses and prudential margins in reserves.

For the purposes of calculating capital requirements for P/C loss reserves, and the discount calculation below,

reserves are adjusted to a level consistent with the TAC measurement. This avoids a disincentive that would otherwise exist for companies to reserve conservatively.

Discount on P/C loss reserves

TAC is adjusted to eliminate any explicit or implicit discount of P/C loss reserves. Standard & Poor's then calculates its own estimate of the time value of money based on the nonlife reserve duration and the relevant 10-year government bond yield (a weighted average for companies with reserves denominated in more than one currency).

The loss reserve discount is computed as:

Nonlife loss reserves (net of reinsurance) x (1-(1/(1+r)^n)) where

r = applicable long term government bond yield.

n = mean term of claim liabilities in years.

As a level of prudence, the above computation is haircut by 33%. The discount calculation is applied to loss reserves after any adjustments for deficits/surpluses referred to above.

Policyholder capital available to absorb losses

Certain forms of policyholder capital may be included in TAC to the extent that they are available to absorb losses (notably investment losses) across the organization. This could include the unallocated divisible surplus in the U.K. and free Rückstellung für Beitragsrückerstattung (RfB) in Germany. Policyholder capital is generally excluded from the hybrid equity ratio, with the notable exception of mutuals.

Deferred tax

No routine adjustments will be made for on-balance-sheet deferred tax assets and liabilities, although analysts may make adjustments where asset recoverability is questionable or distant. All adjustments to TAC that would result in a tax charge or credit should be adjusted for the tax impact. This typically applies to the value of off-balance-sheet life insurance in force, off-balance sheet pension adjustments, unrealized investments gains and deferred acquisition costs. In the absence of disclosed tax effects, adjustments should be made using the effective tax rate determined from the income statement.

Subsidiaries, associates, and other affiliates

Unconsolidated investments in subsidiaries are subject to a 100% capital charge. This recognizes that the asset and liability risks associated with such subsidiaries are not consolidated in the reported financials and, therefore, the capital model. The 100% capital charge assumes that the subsidiary has sufficient capital to meet its requirements. If the subsidiary is material, the company should either be consolidated into the group capital model or a standalone analysis should be performed. The 100% capital charge should then be adjusted up or down for any redundancy or deficiency of capital resources relative to requirements, with appropriate consideration of any capital fungibility constraints.

Standard & Poor's may give partial credit where the book value of listed affiliates is understated relative to their market value. Haircuts are applied to the excess of market over book value of Core or strategically important affiliates to recognize Standard & Poor's view that these holdings are unlikely to be fully realized and also the potential liquidity risks. Full value will be recognized for the excess of market over book value of listed nonstrategic

affiliates, subject to a standard 20% equity volatility charge. Analysts should make appropriate adjustments to the default charge of 20% if these investments are material or domiciled in higher risk equity markets. This adjustment can be made through additional asset risk charges.

Quality of capital

Standard & Poor's measures the quality of capital on its various dimensions such as debt leverage, hybrid leverage, reinsurance leverage, investment leverage, and the extent of intangibles, overdue receivables, asbestos reserves and deferred tax assets on the balance sheet. Within our investment analysis, the extent of unlisted equity investments, property investments, private equity investments, hedge funds, and junk bonds will also affect our view of the quality of capital.

Leverage calculations

Leverage is calculated globally as follows:

$$\frac{\text{Senior Debt + Excess Hybrid Debt and Preferred Stock}}{\text{ECA + Senior Debt + Hybrid Debt + Preferred Stock}}$$

Pension scheme deficits may also be included in the numerator and denominator (see Pensions segment).

Leverage Analysis

Hybrid capital

(For a thorough description of hybrid capital, please see the article " Financial Services Criteria: Equity Credit For Bank And Insurance Hybrid Capital, A Global Perspective," published Feb. 16, 2006, on RatingsDirect.)

Standard & Poor's employs a simple methodology for analyzing hybrid securities that parallels the regulatory approach, classifying hybrids into three categories, reflecting their relative degree of equity strength. We include hybrid capital in our published total capital measures up to limits established in relation to the following categories:

Table 2

Classification Of Hybrid Securities For Financial Services Companies

Category	Examples
Category 1: High Equity Content	
	Short-dated mandatory convertible securities (less than three years).
	High-quality hybrids with participating coupons.
Category 2: Intermediate Equity Content	
Category 2: Strong	
	Perpetual preferred shares.
	Most bank and insurer undated deferrable Tier 1 instruments.
	Insurance long-dated hybrid instruments (residual maturity of 20 years or more) with coupon deferability.
Category 2: Adequate	
	Most, but not all, bank Upper Tier 2 instruments.
	Limited life preferred shares (e.g. U.S. trust preferred).

Table 2

Classification Of Hybrid Securities For Financial Services Companies (cont.)	
	Eligible funded contingent capital for insurers.
Category 3: Minimal Equity Content	
	Dated hybrid instruments with a residual maturity of five years or less.
	Auction-preferred securities.
	Nondeferrable subordinated debt.
	Instruments with put options.

Table 2 summarizes the criteria for inclusion of hybrid capital securities in Standard & Poor's published total capital measures for insurance companies. The limits for inclusion by category broadly parallel the regulatory policy of capping the inclusion of hybrids in regulatory capital, and allow for global comparisons of capital measures.

Hybrid Capital/Double Leverage Tolerance

To better reflect the often significant regional variations in the nature of insurance regulation as well as the many local differences in the regulatory eligibility of diverse forms of capital, Standard & Poor's operates differentiated criteria in respect of its hybrid capital and double leverage tolerances.

The focus is on two analytic variables that are used to establish appropriate tolerances for hybrid capital and for the proceeds of ordinary debt-funded double leverage. The two analytic variables depend on the extent to which structural subordination is likely to be enforced by regulators on a company-by-company basis, and also the local regulatory tolerance of debt capital in eligible solvency.

The use of debt and hybrid capital to fund operating company capital is evaluated in the context of local regulation. Double leverage calculations are based on Standard & Poor's view of the local regulatory enforcement of structural subordination. In light of a growing trend by regulators to limit the use of debt and hybrid capital to fund insurance operating company capital, double leverage calculations are expressed as a percentage of group consolidated capital, which better captures these regulations. Where the level of structural subordination is high and regulators allow holding-company debt to fund operating company capital, Standard & Poor's double leverage tolerances will be greater. Where the level of structural subordination is low and regulators exclude holding company senior debt from group solvency capital, Standard & Poor's double leverage tolerances will be lower.

Table 3

Maximum Tolerances For Double Leverage And/Or Hybrid Equity Usage			
Cases where enforcement of structural subordination is high and regulators allow holding-company debt to fund operating-company capital (e.g., U.S. and Bermuda)		**Cases where enforcement of structural subordination is low and regulators exclude holding company senior debt from group solvency capital (e.g., Europe and Canada)**	
Category	**Maximum Tolerance**	**Category**	**Maximum Tolerance**
Total double leverage tolerance	Up to 45% of capital	Total double leverage tolerance	Up to 35% of capital
Debt-funded double leverage	Up to 20% of capital	Debt-funded double leverage	0%
'Category 1' hybrid tolerance (three-year mandatorily convertible)	Up to 25% of capital	'Category 1' hybrid tolerance (three-year mandatorily convertible)	Up to 35% of capital
Sublimit 'Category 2' hybrid equity	Up to 15% of capital	Sublimit 'Category 2' hybrid equity	Up to 25% of capital
Category 3	0% credit	Category 3	0% credit

Hybrid Ratios

U.S.

$$\frac{\text{Standard \& Poor's Qualifying Hybrid}}{\text{U.S. GAAP (consolidated) Capital + Total Hybrid + Total Senior Debt}}$$

Europe

$$\frac{\text{Standard \& Poor's Qualifying Hybrid}}{\text{Group Consolidated TAC (excluding hybrid) + Regulatory Qualifying Hybrid Capital*}}$$

Double Leverage

U.S.

$$\frac{\text{Standard \& Poor's Qualifying Hybrid + Total Senior Debt + Nonqualifying Hybrid}}{\text{US GAAP (Consolidated) Capital + Total Hybrid + Total Senior Debt}}$$

Europe

$$\frac{\text{Standard \& Poor's Qualifying Hybrid Capital}}{\text{Group Consolidated TAC (excluding hybrid) + Regulatory Qualifying Hybrid Capital}}$$

Note: In Europe, this is the same calculation as Hybrid leverage and reflects the ineligibility of senior debt in group solvency calculations.

*The European hybrid ratio has an amended definition of qualifying hybrid in the denominator. This now reflects Regulatory Qualifying Hybrid; previously this was based on Standard & Poor's Qualifying Hybrid. The amendment achieves greater parity in treatment between the U.S. and European hybrid ratios.

For capital models that are based on operating company statutory balance sheets, the excess over the double leverage tolerances are deducted from TAC. For capital models that are based on consolidated GAAP balance sheets, qualifying hybrid capital is added to TAC, subject to the tolerances referred to in Table 3. However, any hybrid capital issuance in excess of 15% is included in the numerator of our leverage calculations.

Diversification

There is limited data to credibly model and project tail correlations. Study of company and industry level correlation matrices has highlighted numerous methodologies and factors being employed, and these have led to significant variation in the amount of diversification credit being assumed by companies in their models.

Standard & Poor's has taken a more conservative view on how to project correlations in the tail than that generally observed within the market. The matrices have been specifically designed for this model. This credit is in addition to the implicit diversification credit embedded in many of the charges (e.g., equity, mortality) where indices and industry level data are being used. The diversification credit calculated brings the sum of the capital requirement for each risk at the various rating levels back to a level commensurate with the target rating. No explicit credit is currently given for the geographic spread of business.

The conservatism in the explicit diversification credit also reflects some implicit diversification in the chosen confidence intervals for each risk charge. These were generated from five-year default data that was deemed a more appropriate measure to calibrate each charge than a more onerous one-year horizon that we see applied in some regulatory regimes where higher diversification credit is permitted.

There are four simple matrices applied in the model:

- P/C captures correlation between different lines of business. These have been clustered into six main product groupings.
- Life matrix looks through product types and captures the underlying risks e.g. mortality, morbidity. These have been categorized into four risk types.
- The third matrix looks to provide credit for the high level diversification derived from writing Life and P/C risks.
- Asset risk correlation matrix focuses on the three core investment classes.

Given the uncertainties around tail correlations, a 50% haircut is applied to the resulting diversification credit.

Standard & Poor's will continue to study the effects of diversification as part of its evolving analysis of economic capital models and ERM.

Table 4

Property/Casualty Correlation Matrix

	Accident and health	Motor	MAT	Property	Liability	Credit
Accident and health	1	0.5	0.5	0.25	0.5	0.75
Motor	0.5	1	0.75	0.75	0.5	0.5
Marine, aviation, and transportation	0.5	0.75	1	0.75	0.75	0.5
Property	0.25	0.75	0.75	1	0.5	0.25
Liability	0.5	0.5	0.75	0.5	1	0.75
Credit	0.75	0.5	0.5	0.25	0.75	1

Life correlation matrix

	Mortality	Morbidity	Longevity	Other Life Risks
Mortality	1	0.5	0.25	0.75
Morbidity	0.5	1	0.25	0.75
Longevity	0.25	0.25	1	0.75
Other Life Risks	0.75	0.75	0.75	1

Risk type correlation matrix

	Life	P/C
Life	1	0.25
P/C	0.25	1

Asset risk correlation matrix

	Equities	Real Estate	Bonds
Equities	1	0.75	0.75
Real estate	0.75	1	0.75
Bonds	0.75	0.75	1

Diversification haircut 50%

Asset-Related Risks

Credit risk charges

Losses relating to credit are largely a result of credit defaults and changes in value resulting from ratings transitions, and systemic credit spread movements. The sources of these credit risks at insurance companies can include fixed-income assets, credit derivatives, commercial mortgages, and counterparty credit exposure relating to reinsurance contracts, deposits, and OTC derivative contracts.

In the past, our factors for credit risk were largely applied to target exposure to potential credit losses on fixed-income securities, but we will now apply the factors to all the major sources of credit default risk, including credit default swaps and OTC counterparty credit exposure, where significant. Because losses on risk relating to systemic credit spread movements are largely related to asset-liability risks, exposure to this risk will be captured in the factors for risk relating to asset-liability mismatches (refer to asset/liability management section). Based on our research on the potential economic impact of ratings transitions on insurance company portfolios, Standard & Poor's decided the magnitude of this risk did not warrant separate specific risk factors.

In calculating the expected capital adequacy for credit default risk, Standard & Poor's applies a default charge relevant to the tenor and rating of the security.

Methodology for computing default factors.

Standard & Poor's has tracked and studied default rates on each annual pool of ratings since 1981. Cumulative default statistics are published annually based on data taken from S&P CreditPro. These cumulative default studies were used to compute the annual marginal default rate for each rating and tenor.

The marginal default rates were discounted—using a spot curve based on term structure of $US interest rate swaps plus 200 basis points (bps)—and then the discounted marginal default rates occurring on or before each tenor for each rating were aggregated for each separate pool to derive the discounted cumulative default rates. Standard & Poor's computed the average and standard deviation of the discounted cumulative default rates across each pool. To create the credit risk factors, we selected the mean of the discounted cumulative defaults experienced across the pools and added a standard deviation movement based on an established confidence level commensurate with the targeted capital level. Recoveries were applied to the stressed discounted cumulative default rates, which varied based on credit quality of the exposure.

Fixed-income securities

Credit risk factors for fixed-income securities were formulated for each rating level and for five tenor groupings: (one year and less, one–five years, five–10 years, 10–20 years, more than 20 years.). In the U.S., filing conventions require assets to be grouped according to NAIC (National Assoc. of Insurance Commissioners) classifications. To determine which rating(s) to assume for the stressed cumulative default factors applied to each NAIC bucket, Standard & Poor's researched the fixed-income holdings across a spectrum of U.S. insurance companies and analyzed the breakdown of ratings in each NAIC category. From this review, we weighted the ratings within the NAIC classification band. Standard & Poor's assumes NAIC 6 assets are impaired and the company has experienced a commensurate reduction in capital. Therefore, a charge of 30% on assets categorized as NAIC 6 across all tenors largely reflects a further potential impairment on the residual value.

Unaffiliated preferred shares

In deriving the credit default factors for preferred shares, the same methodology was used as described in the Fixed-Income Securities section with the exception that a lower recovery rate (10%) was used across all rating classes.

Based on available reporting, the factor Standard & Poor's will apply to holdings of preferred shares of U.S. life insurance companies will be based on NAIC classification and an assumed tenor of 10 years. The factor Standard & Poor's will apply to holdings of preferred shares of U.S. nonlife insurance companies, where the reporting convention does not require preferred holdings broken out by NAIC classification, will be based on an assumed ratings spectrum and a tenor of 25 years. A similar approach will be followed outside of the U.S.

Because Standard & Poor's assigns a preferred stock rating one-notch lower than senior debt to account for subordination in recovery when determining ratings on preferred shares, for the purposes of creating the factors, we raised the ratings on our assumed holdings by one notch to more closely align it with the probability of default.

Sovereign debt and government agencies and government-sponsored enterprises

Credit default risk factors will not be applied to direct sovereign debt that has been rated 'AAA' by Standard & Poor's. For all other direct sovereign debt, we will apply the same default factors that we apply to corporate obligations (default probabilities and recoveries will be assumed equivalent to the pools of corporate debt).

Federal agencies of the U.S. government and other sovereigns that are rated 'AAA' by Standard & Poor's that are direct obligations of the national government, such as obligations of GNMA, will be treated in a manner consistent with Sovereign debt of the country. Government sponsored enterprises (GSE's) of national agencies, such as Fannie Mae and FHMLC, which have an implied, but not direct guarantee of the U.S. government, will be treated like corporate debt for purposes of modeling capital adequacy for credit risk (GSE issued transactions that are securitizing mortgages will be treated differently from corporate debt in our credit concentration risk model).

OTC derivative counterparties

In situations where Standard & Poor's determines that the counterparty credit exposure relating to OTC derivative contracts for an insurance company is material, we will calculate expected capital adequacy relating to such exposure. The determination of materiality will be based on the company analyst's discretion. To determine the expected capital adequacy relating to such exposure, Standard & Poor's will apply the stressed discounted cumulative default factors described earlier based on the average tenor of the exposure and the rating of the counterparty to the related unrealized gains of the insurance company. The analyst has the discretion to apply credit for counterparty netting and risk mitigation techniques, such as collateralization provisions, where applicable.

Credit default swaps

Also, in situations where Standard & Poor's determines that the credit exposure relating to credit default swaps held by an insurance company are material, we will calculate expected capital adequacy relating to such exposure. To determine the level of exposure when the company has "long" credit exposure, Standard & Poor's will apply the stressed discounted cumulative default factors described previously based on the tenor of the swap and the rating of the referenced party to the notional amount of the swap. Exposure to counterparties resulting from "short" positions (purchased protection), will be analyzed in the same fashion as previously described for OTC counterparties. In cases where companies purchase credit default swaps to mitigate other credit exposures, the

analyst has the discretion to factor this into the capital modeling.

Commercial mortgage loans (U.S.)

Methodology for computing default factors.

Standard & Poor's has tracked and studied default rates on the more than 30,000 commercial mortgage loans that were originated in the U.S. since 1993 and pooled for Standard & Poor's rated CMBS. We've tracked and recorded the occurrences of default relative to passage of time (loan age) since the vintage year (i.e. year of origination). We have also studied the loss severity (recovery) relating to this pool of loans. Unlike the individual credits in the pools previously described relating to our cumulative default studies, it is important to note that Standard & Poor's has not assigned a rating to the individual commercial loans, but instead assigns a rating to the structured security that securitizes the pool of commercial mortgages (i.e., CMBS).

For practical reasons, Standard & Poor's assumed that the percentage of commercial loans for each sector-type (ex. Office buildings, industrial space and retail) in the insurance company portfolio is identical to that observed in the Standard & Poor's studies referenced earlier. This is a conservative view, as we believe that insurance companies are actually more concentrated in the sectors experiencing the lower defaults. Although conservative, it is lower than the capital charge used for financial institutions where deterioration in value has warranted higher charges.

Marginal default rates for commercial mortgage loans.

Expected losses for defaults on commercial mortgage loans were computed by using the cumulative default rates to derive the marginal default rates. A series of marginal default rates were derived for each vintage year. Once the marginal default rates were determined for each of the vintage years across the various loan ages, they were discounted using the tenor appropriate discount rate. For each loan age (tenor), the average and standard deviation of the discounted cumulative default rates was calculated across the vintage pools. Standard & Poor's took the mean of the discounted cumulative defaults experienced across the vintage pools and added a standard deviation movement based on confidence intervals for the rating level. The same technique (referenced tenors) described earlier was used to derive the confidence levels. As in the case of other risks, higher rated companies will be expected to hold more capital for a given level of exposure to commercial mortgage loans. A recovery assumption of 70% was applied across all tenors.

Capital charges for performing commercial mortgage loans.

For insurance companies, where reporting by mortgage tenor is available, five factors based on tenor buckets have been established for performing commercial mortgage loans. Standard & Poor's will apply the same factor to all the loans within each tenor bucket.

For insurance companies, where reporting by mortgage tenor is not available, Standard & Poor's will apply a single factor to holdings of performing commercial mortgage loans. The single factor is based on the discounted net cumulative default factors that coincide with the assumed individual tenors used above and are weighted in accordance with the notional amounts described above, which results in a weighted tenor of roughly 10 years.

Capital charges for nonperforming commercial mortgage loans.

Standard & Poor's will define nonperforming loans, as defaulted loans that are at least 90 days late in payment and that have not been resolved. Standard & Poor's research has determined that an average loss of roughly 30% has been experienced on the CMBS related-loans. Consequently, a capital charge factor of 30% on all nonperforming

commercial mortgage loans for all target capital levels (without regard to company rating) will be applied. (In other words, unlike other types of charges, RBC adequacy for nonperforming loans will be the same regardless of the rating on the insurance company that owns the loans.)

Mortgages (Europe)

Standard & Poor's recognises that the capital risk to an insurer holding a mortgage asset depends on the degree to which that mortgage is backed by collateral. Since 2003, our capital model for Germany, Switzerland, and Austria has differentiated its charges on mortgages, based on their loan to value (LTV) ratio. We are now applying this approach to all European markets. The charges will still be distinguished between performing and nonperforming loans, however, at this time no distinction is being drawn between commercial and residential mortgages in the model.

Other Asset Credit Risk Charges

Reinsurance receivables plus reinsurance recoveries, less reinsurance deposits and LOCs

The risk inherent in reinsurance recoverables is often the largest asset based risk for P/C companies; particularly those writing longer tailed lines of business. In that case, the primary company will estimate and record a reserve for notified outstanding claims and incurred but not reported claims and will offset any reinsurance arrangement that it believes will bear a portion of those claims. However the reinsurer will not settle these potential obligations until the insurers have settled the gross claim, which may be a lengthy period. For this reason, Standard & Poor's selected a single tenor of 10 years for nonlife insurance companies in computing the credit default factor. In the U.S., because this lag phenomenon in the life insurance sector is substantially reduced, a single tenor of one year was applied for life insurance companies.

Methodology for computing default factors.

A single tenor of 10 years across the rating range for nonlife insurers and one year across the rating range for life insurers was selected. The factor applied to the recoverables from reinsurers will be subject to the specific reinsurer rating. To the extent that letters of credit from a financially secure financial institution or suitable trust assets are available to offset the recoverability risk, credit for up to 100% of the collateral could be used to offset the reinsurance recoverable credit risk charge.

A surcharge of 20% on reinsurance recoverable balances related to asbestos and environmental pollution losses will be computed to reflect the prospective impact on capital due to disputed coverage. This surcharge will not apply to intragroup reinsurance recoverables where the reinsurer is highly rated.

Capital charge for fixed assets, including home office real estate

The charge applied against owner occupied property will reflect a 5% liquidity premium at 'BBB' (and then scaled up at higher ratings) over the real estate charge for the specific market in which the property is held.

No capital charge is assigned to investment income due and accrued interest because experience shows that this is not a material risk.

Deposits with credit institutions

Standard & Poor's will apply a charge to cash and bank deposits to reflect the counterparty risk associated with these assets. In most developed markets, a standard flat rate charge will be applied. This charge is derived from

Standard & Poor's corporate default studies and is consistent with the methodology for deriving credit risk charges on corporate bonds. As bank deposits are short-term assets, Standard & Poor's has assumed a duration of less than one year for these assets. Recovery assumptions, however, are higher than for corporate bonds. This reflects the potential support of the sovereign for depositors with financial institutions, owing to the importance of confidence in the banking system for financial stability.

In less developed markets where the local currency sovereign rating is lower than 'A-', the charge applied to bank deposits will be higher to reflect the additional credit risk. The sovereign rating will be used as a proxy for the credit risk associated with bank deposits.

Standard & Poor's will also apply a concentration charge to bank deposits, in line with the approach for other asset classes.

Loans

For unsecured loans, Standard & Poor's has again looked to its default statistics. The assumed rating for loans is 'B+', with an assumed outstanding duration of five years. If loans represent a material asset on the balance sheet, Standard & Poor's will conduct additional analysis to refine the charge.

Policy loans are usually secured against an underlying policy liability, so no charge is applied to these assets. Any provisions for bad debts or recoveries should be offset against any loan balance.

Unit-linked assets

Standard & Poor's does not apply an explicit charge to unit-linked assets. Expense risk, lapse risk, operational risk, and risks associated with embedded options in the contract (e.g. guarantees) are captured through liability-based reserve charges.

Other assets

Other assets not explicitly mentioned, or captured in the calculation of TAC, are subject to a 5% other-asset charge for 'BBB' which is scaled using the same confidence levels previously described.

Volatility Risk

Unaffiliated common stock

Methodology for computing volatility risk factors.

Equity charges in the revised capital model have been derived for each market using a log-normal regime-switching approach. The base model was taken from work carried out at the University of Toronto and the Society of Actuaries in the U.S. Monthly price data were then taken from the local Morgan Stanley Capital International (MSCI) indices for each country for the past 30 years (or the longest possible period, if less). The model was then parameterized to these data and the tail returns were estimated over 40,000 simulations to each of our defined confidence levels.

Historically, a common assumption in equity price models was that equity prices followed a geometric Brownian motion. This is equivalent to the assumption that price changes follow the lognormal distribution and continuously compounded returns follow the normal distribution. This commonly came with the additional assumption that volatility was a constant. These days, the limitations of this simple model, particularly in the tail, are more widely appreciated. The regime-switching model is one way to incorporate the observed fat tails and negative skew implied

by the historical data, and also allows for nonconstant volatility to be assumed, providing a closer fit to observed returns.

The regime-switching model chosen by Standard & Poor's assumes two distinct periods (regimes), generally a stable period, characterized by a relatively higher mean return and relatively lower volatility, and a less stable period, characterized by a relatively lower mean return and relatively higher volatility. Within each regime, returns are assumed to follow a lognormal distribution with regime-specific parameters. Given that the process is in either regime at any one time, there exists an associated probability of transitioning between regimes. The transition process is assumed to be Markovian, in that the probability of transition depends only on the current state, and not on previous states. The process randomly switches between the two lognormal processes, with the probabilities of switching regimes given by the estimated transition probabilities. This process not only produces the desired fatter tails, but also captures stochastic volatility in a simple, yet effective, manner.

For each country under consideration, the model was parameterized to 30 years of monthly returns data (where possible) from the respective MSCI index for the country. The parameters estimated were the mean return for each regime, the volatility for each regime, and the two transition probabilities of switching between regimes. The parameters were estimated using maximum likelihood estimation. Ten thousand monthly equity returns paths were then simulated, making use of the estimated parameters and a high-quality random number generator. For each target rating, the associated confidence levels were mapped to percentiles of the one-year returns distribution of the 10,000 simulated paths to produce the capital charges. The average of the resulting charges from four 10,000-path simulations was calculated and constituted the final charge.

The simulation technique involved the generation of monthly returns paths. For each path, the initial regime was selected using the unconditional probabilities pi1 and pi2. Once the initial regime was chosen, the algorithm simulated monthly returns by randomly drawing from the regime-specific estimated distribution. After the return value for the month was drawn, the algorithm compared a random draw from the uniform distribution with the appropriate transition probability to select the regime assumed for the following month. Analyst adjustments were applied to the final charges to group countries displaying similar characteristics into seven distinct charging buckets. (For further information on this method, please see Standard & Poor's article entitled, "Revised Insurance Risk-Based Capital Model Charge Methodology For Common Equities," published Nov. 21, 2006, on RatingsDirect.)

Diversification within cross-border equity portfolios has been recognized through applying this method to regional equity indices. Again, monthly data were taken from the MSCI, and insurers that can demonstrate that they maintain a broadly based portfolio will be able to apply the index charge to that portfolio, rather than the individual country-specific charges. Some judgment will be required in deciding whether a portfolio is sufficiently well balanced to justify the regional charge. As an example, the MSCI Europe index has about 50% of its weight over two countries (U.K., France) and about 75% of its weight over five countries (plus Germany, Switzerland, Spain). An equity portfolio would need to broadly mirror the proportions and geographic split to warrant the regional index charge.

Real estate

Standard & Poor's has assumed that property prices follow a lognormal distribution (i.e., that compound returns follow the normal distribution) and that volatility of prices is constant over time.

For selected countries, the model was parameterized with reference to quarterly or annual capital value data over

periods of 10, 20, and 30 years. The primary data sources were publicly available data published by Investment Property Databank and various local indices. Given the lack of reliable data available for most countries, Standard & Poor's took the view that it would apply one property investment charge for all countries, based on its multiperiod analysis of several selected countries. The exceptions to this were Germany, for which there were sufficient data available to support Standard & Poor's long-held view that domestic property prices were somewhat less volatile than in other European countries and the Netherlands.

The final charge for each rating level was then determined using the appropriate confidence levels for the parameterized model.

Schedule BA invested assets, including bond, mortgages, real estate, and common stock- U.S.

For companies filing U.S. statutory financial statements and reporting invested assets in Schedule BA, Standard & Poor's will—at the discretion of the analyst—apply a higher capital charge. Because these assets are usually of a higher risk or a less liquid secondary market, the range of the charge will likely be 20%–50%. For companies that employ a hedge fund-of-fund investment strategy, Standard & Poor's acknowledges that the default capital charge (20%-50%) might not reflect the reduced volatility of a fund-of-fund investment strategy. As an alternative to the general capital charge, Standard & Poor's has developed a tailored analytical approach for forecasting the likely volatility for any hedge fund-of-fund investment strategy. For the fund-of-fund investment strategies that are analyzed under this enhanced analytical approach, Standard & Poor's will use a volatility charge that reflects the risk-mitigating techniques employed by the fund manager, at a 'BBB' level of confidence using a one-year time horizon.

Invested asset concentration risk

This adjustment is for single issuer concentrations of more than 10% of TAC. Assets associated with a single issuer that exceed the applicable concentration are assessed a graded charge based on the size of the concentration.

All assets of a single-issuer are aggregated for this assessment. Therefore, the total of all equity, bond, loan and derivative exposures to a single counterparty should be combined, together with any direct property investments, to assess the top 10 exposures. Any exposure greater than 10% of TAC will be subject to a concentration risk charge based on a sliding scale as follows:

Table 5

Invested Asset Concentration Charge

Exposure relative to TAC (%)	Concentration charge (%)
10-25	20
25-50	40
50-75	60
75-100	80
>100	100

The following example illustrates how the concentration charge is applied in practice. An exposure equal to 100% of TAC would be subject to a concentration charge of 48% [15%*20% + 25%*40% + 25%*60% + 25%*80%] of the exposure, on top of any applicable credit or market risk charges.

Note that concentration charges will not be applied to sovereign debt (or debt issued by sovereign-sponsored entities that are deemed to carry a guarantee from the sovereign). Investment in sovereign debt by companies domiciled in a

different sovereign jurisdiction will apply the concentration charges on the same basis as any other issuer.

Size factor

A size factor is incorporated in the asset risk charges. This incorporates the risk associated with the size of a company's portfolio, i.e., the larger the portfolio, the more likely it is diversified and will withstand various risks. The factor is based on total invested assets and is multiplied by the total asset risk charge for the insurer, subject to a minimum of 1x. This means the largest insurer would still be subject to the full asset charges determined in the model, but would not be subject to a surcharge related to lack of portfolio diversification.

Liability Related Risks P/C (Nonlife) Charges

Evaluation of U.S. P/C (nonlife) underwriting and reserve risks

The fundamental risk associated with underwriting and reserving is that in setting both the premium and reserve levels, the emergence of a claim and its actual cost will vary from the expected cost by line of business. The risk exists not only on all present and future business but also on past business not already settled. Although internal frequency and severity estimations account for a large part of the variability, changes in economic, legal, and social conditions can add further variability to claim costs.

The underwriting risk is that the company's business will be unprofitable and that underwriting losses will need to be covered by capital.

Methodology for computing risk charge factors.

Standard & Poor's methodology is adapted from the NAIC methodology that was first applied by U.S. regulators in the early 1990's for their RBC model. This is the same approach that we used in our previous model, though some modifications have been made. The first change was the addition of 10 more years of data from 1994 to 2003. Because our previous premium risk charges were based on 10 years of earlier industry experience, the updated charges now reflect 20 years of experience covering at least two full underwriting cycles.

Premium risk

To gauge premium risk for primary and proportional reinsurance, Standard & Poor's first analyzed Schedule P data from 1994-2003 (10 years). This information is filed with the U.S. regulators and offers line-of-business accident and calendar year loss data. The risk associated with business written but not yet earned was not charged in the model, as the equity in the unearned premium reserve was judged to be sufficient to cover the risk.

Accident year loss data was captured from individual companies that constituted 90% or more of the U.S. market share for each line of business. The second-highest observed accident year loss ratio (1994-2003) was selected. Investment income resulting from the time lag between premium collection and loss payment is an important consideration in insurer profitability.

An average expense ratio for all years by business line was then selected. By adding the accident year loss ratio with the selected expense ratio, a combined ratio (CR) was computed. The underwriting risk factor (representing observed volatility from 1994-2003) was computed by subtracting 100% from the CR%.

The final premium factor (reflecting volatility over a 20 year period—both hard and soft underwriting cycles) was computed by taking a simple average of the current (existing) and newly developed factor for each line of business. This factor is applied to the net written premium for each line of business. The factor was scaled to ratings higher

than 'BBB' according to the confidence levels established in the default work on fixed-income securities.

The charges for proportional reinsurance continue to reflect the underlying primary insurance charges. The data on nonproportional reinsurance is less meaningful because the information is aggregated into just three groupings: short-tailed lines of business (property); long-tailed lines of business (casualty); and financial lines referred in the U.S. statutory filings as Reinsurance A, B, and C, respectively. To provide some granularity, Standard & Poor's has chosen to base its charges on the primary charges with a surcharge for the non-proportional longer-tailed lines. The incremental charge was deemed prudent as experience has shown that reinsurers in excess of loss positions sufficiently above the working layer covers of proportional and primary business are not as aware of the unexpected emerging volatility and have less time to change pricing and terms and conditions. No surcharge is applied to property lines as the period of uncertainty is greatly reduced and a separate property-catastrophe charge is applied.

We also did our analysis on a net of reinsurance basis. Because reinsurance can reduce underwriting volatility and risk, we compared net and gross worst accident year results for all lines of business and did not find a meaningful distinction.

With respect to the workers' compensation line, Standard & Poor's was concerned that there may be a downward bias in our data since some workers' compensation funds might not be part of the data set. A separate analysis was performed and our calculated factors were modestly increased.

Reserve risk

Reserve risk is the risk that balance sheet loss reserves will become deficient due to unexpected variability in estimating frequency and severity trends as well as changes in economic, legal, and social conditions that can add further variability to claim costs. The reserve risk charge does not attempt to measure the adequacy of current loss reserves. This is done elsewhere in the financial strength analysis and any adjustment to set the reserves at an adequate level is done in TAC.

The reserve risk charge measures only the variability a company would expect to encounter in its reserve levels given its lines of business and ensures that capital is sufficient to cover this expected variability at different levels of confidence.

Methodology for computing risk charge factors.

Standard & Poor's used a loss development metric (LDM) methodology, where the LDM measures changes in ultimate incurred loss from one calendar year date to the next by line and accident year. The LDM measures the magnitude of adverse or favorable loss reserve development over time. The LDM was developed from Standard & Poor's database containing 20 years (1984-2003) of loss data. Volatility in LDM ratios by lag is an indicator of reserve volatility. An LDM greater than one indicates adverse reserve development from one period to the next and an LDM less than one indicates favorable reserve development.

Data triangles of LDM ratios (current accident year ultimate net loss divided by ultimate accident year net loss in the prior annual time periods) were created for each company group using Schedule P lines of business. These LDM ratios, for all lines of business, were discounted using one of three LIBOR discount factors that varied with the expected line of business duration.

The discounted LDM ratios were calculated by line of business, company, and accident year and a percentile distribution was established to measure adverse scenario loss development. Higher percentiles indicate more adverse scenarios. The risk charge is produced by taking a company's indicated adverse scenario ultimate incurred loss

minus the carried ultimate incurred loss.

The LDM factors at the 75th percentile were selected for all lines except workers' compensation, medical malpractice claims made, passenger auto liability, and homeowners'/farm owners'. Although the individual lines could be more volatile relative to other lines of business, all were stable in its volatility at the 75th percentile. The noted volatility rose more quickly and/or more steeply for some lines of business. To capture this risk, a higher percentile (ranging from 80th to 90th percentile) was used on a selected basis.

The factor was scaled to the rating levels higher than 'BBB' according to the confidence levels established in the default work on fixed-income securities. The factors are the same for all primary, proportional, and non-proportional covers. Standard & Poor's will be seeking further breakdown of the Reinsurance A-C into comparable lines of business reported on proportional reinsurance.

Premium and reserve charges outside the U.S.

Premium and reserve charges outside the U.S. are adapted for relevant regional markets and conditions. However, in view of the dearth of public information outside the U.S., the U.S. charges, suitably mapped to regional definitions of lines of business, provide significant input to setting regional charges. Other influencing factors are:

- Perceptions of volatility relative to the U.S. (particularly for liability lines of business where non-U.S. experience has been significantly better).
- Public domain regulatory charges.
- The charges embedded in insurers' own capital models.
- The observations derived from rating insurance securitizations.

For reinsurers, U.S. exposed business will be captured using U.S. statutory lines of business and associated charges. Non-U.S. business will be captured using European accounting classes and associated charges.

Exposure-driven property catastrophe charge

Standard & Poor's will be incorporating a tax-adjusted net aggregate 1-in-250-year property-line-only probable maximum loss catastrophe capital charge. For both primary and reinsurance companies, the 1-in-250-year probable maximum loss is based on the assumption of higher frequency and severity—specifically, the short-term catalog of events. This probable maximum loss must include demand surge, fire following (attached to earthquake and fire policies), sprinkler leakage, storm surge, and secondary uncertainty losses. The capital charge covers catastrophe exposures on a global basis: hurricanes (wind), flood, earthquake, tornadoes, and hail.

There are two premium adjustments. Standard & Poor's will remove the catastrophe load premium embedded in the premium risk charge so as not to double-count required capital. In the absence of catastrophe loading computed by the insurer, a 5% premium adjustment will be made. The second adjustment is to reduce the net aggregate 1-in-250-year modeled loss by 70% of the associated net written premiums given the short-tail nature of property catastrophe risk.

This charge will also be net of any applicable tax relief. Standard & Poor's believes that this charge represents an extreme event risk and if it occurs, those that are taxpayers would receive this benefit and it would absorb some of the surplus impact. The charge is not scaled up for higher target rating levels, i.e. given its materiality, the 1-in-250 year standard will be applied to all insurers and reinsurers.

Liability Related Risks Life Charges

A fundamental risk in pricing life insurance products is that the mortality/longevity, expense, and persistency assumptions built into the products are not sufficient.

Methodology for mortality risk charge

Standard & Poor's measured the volatility of actual to expected ratios for the top 100 U.S. life companies. In this review, some adjustments were made to remove outliers; typically related to merger and acquisition activity. A standard deviation of actual to expected ratios was calculated and translated into a percentage of the net amount of insurance at risk. Relative factors were computed by using the confidence levels. The factors are applied to several net amount at-risk groupings: less than $1 billion, $1 billion-$5 billion, $5 billion-$10 billion, $10 billion–$50 billion, $50 billion–$100 billion, more than $100 billion. The in-force bands were created to provide credit for higher levels of diversification. Credit for catastrophic reinsurance, assuming no significant risks are excluded (nuclear, biological, and chemical) will be permitted up to 20% of the base charge. These factors would be applied for products sold in the highly developed life insurance markets: (defined as Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Italy, Japan, Republic of Korea, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Swiss Confederation, Taiwan [Republic of China], U.K., and the U.S.). The mortality factors applied in highly developed markets would be increased by 25% for those in medium developed life insurance markets: (defined as Remainder of the EU, Argentina, Brazil, Chile, Israel, Malaysia, Mexico, and South Africa). The mortality factors would be increased by 50% for all other nations where a less developed life insurance market is anticipated.

A relatively new product offering in many markets is critical illness coverages. Because actual loss experience is still too much in its infancy to be meaningful, Standard & Poor's used a multiple of 3x the mortality risk charges across the same band of in-force groupings denoted previously. As the data develops, it is our intention to re-evaluate the risk and assign a capital risk charge that is more reflective of the underlying volatility. In many cases critical illness cover is offered as a rider to a base life insurance policy. In these cases, only the critical illness charge is to be applied, as it is the dominant risk, and should incorporate the mortality-related volatility.

Methodology for longevity risk charge

The longevity charge was derived by measuring the actual life expectancy data and its development for each major European market in the past 10, 15, and 20 years. The volatility of change in life expectancy around the mean trend was then calculated and assumed to be normally distributed around that trend. The implied charge at each rating level was then calculated using the defined confidence intervals.

Some additional assumptions underlie the setting of this charge. The first is that however prudent an insurer's longevity assumptions are currently, that level of prudence will be maintained in the event of a change in underlying life expectancy. The same charge is applied to an insurer that has large margins in its assumptions as to one that uses small margins, the differences in prudence of reserving will be captured elsewhere in the rating analysis. The second is that reserves for longevity are not, in practice, adjusted every year, as it typically takes several years for a trend to be distinguished from random fluctuations. Standard & Poor's observes such reserve additions occurring at approximately five-year intervals. Consequently, the longevity charge in the capital model reflects our opinion of the likely reserve strengthening that would be carried out in the coming year, rather than the actual incremental cost of one year's improvement in mortality.

Life reserve risks-other

Standard & Poor's also applies a life reserve charge to pick up residual risks within product types. Expense risk, lapse risk, operational risk, and risks associated with embedded options in a contract (e.g. guarantees) are captured through liability-based reserve charges.

ALM

Evaluating asset/liability mismatch ALM risk – U.S.

Standard & Poor's has developed factors that address the increasing complexity of traditional life products. These asset/liability management (ALM) factors will be applied to insurance products, where spread income is generated between the cost of funding and the yield on assets including traditional participating business, fixed annuities, indexed annuities, funding agreements, guaranteed investment contracts (GICs), medium-term notes (MTNs), and structured settlements.

Each of the ALM factors will consist of an aggregation of various subfactors that capture the different types of risks embedded in each type of liability.

All of the ALM factors will consider mismatch risk, systemic spread volatility risk, and guarantees and options. The factors for ALM risk will be applied to the statement value of liabilities. Although foreign exchange risk will not be directly addressed in the model, the analyst may make adjustments to the ALM factors to account for such risk, if applicable.

Methodology for computing asset/liability mismatch factors in the U.S.

The ALM factors consider expected capital requirement for durational mismatch risk, which is calculated comprising two components: an assumed durational mismatch and an applied interest rate movement (interest rate volatility).

The simple durational mismatch Standard & Poor's assumes provides a proxy for the net percentage change in market value, between the combined assets, liabilities and hedge instruments, given a 100 bps change in rates (sometimes known as modified duration). Standard & Poor's also makes an assumption for the applied interest rate movements (volatility), which are stressed according to a confidence level that is commensurate with the rating's spectrum.

Standard & Poor's designates a financial instrument in each international locality to act as a proxy benchmark to use when determining volatility based on empirical data. The proxies are chosen based on tenor and other characteristics, which Standard & Poor's feels best link the interest rate volatility to our assessment of company data and practices.

Once the proxy benchmark asset is chosen, we determine the annualized standard deviation of monthly percentage movements (change in yield divided by previous yield) in rates observed over a representative time period, which would typically not be less than five years. The standard deviation is then multiplied by the year-end yield on the proxy benchmark asset to equate the standard deviation to an applied basis point shift.

Standard & Poor's rationale for deriving standard deviations based on percentage movements, rather than actual basis point movements, and then converting back to basis points, is to allow us to take observed volatility under different rate scenarios and calibrate it to current rate levels.

The ALM factors also consider capital required to support systemic spread volatility risk, which is also calculated comprising two components: an assumed spread duration mismatch and an applied proxy for spread movement (spread volatility).

Standard & Poor's assumes each of the nonindexed funding type liabilities in a given international jurisdiction will be exposed to the same amount of systemic spread volatility risk for a given targeted rating category. Our factor for determining systemic spread volatility risk is designed to capture the amount of capital adequacy that is required to cover the impact of asset spreads widening relative to that of the liability or hedge instrument in cases where assets are longer than the liabilities (or market value [MV] sensitivity of assets is greater than MV sensitivity of liabilities) and spreads tightening in cases where assets are shorter than the liabilities (or MV sensitivity of assets is less than MV sensitivity of liabilities). In both cases, we seek to determine capital requirement for such losses only over the period of time where a mismatch exists and make the determination that the mismatch can be due to either case. Standard & Poor's uses the same assumed durational mismatch as developed for mismatch risk.

To develop an applied proxy for spread movement, Standard & Poor's compared the empirically observed monthly spread differential between a $US 'A' rated bond index created with a constant 10-year maturity and the 10-year constant maturity $US swap index, over a representative time period. The spread differentials were separated by observation month to create 12 different sets of data (e.g. spread differential observed in January of each year over the entire observed period). For each set of data, Standard & Poor's calculated the change in spread observed over each of the annual periods and divided it by initial yield at the start of each year to derive the annual percentage change in spread relative to the asset yield. The standard deviation of the percentage change in spread was calculated for each of the 12 sets of data (a one-year period coincides with our targeted period for expected capital sufficiency). To calibrate the percentage change to current markets and convert to basis points, the product of the percentage change in spread and the current rate on the bond index was used as the applied standard deviation.

Although Standard & Poor's is aware that various sectors (e.g. ABS, MBS), ratings, and tenors will produce varying statistical spread relationships, we are comfortable that this methodology provides reasonable estimates of expected spread volatility given the targeted confidence levels.

The last risk the ALM factors consider is the structural features embedded in insurance company investment products, such as payout schedules based on mortality, book value surrenders upon death, minimum guarantees, and benefit responsive withdrawals. When present, Standard & Poor's will view these risks as additive, and we have developed incremental risk factors for each of the major types of structural features that have the potential to create adverse economic losses. The appropriate incremental risk factors will be aggregated with the mismatch and spread volatility risk factors to compute a single risk factor for each product.

In most cases, Standard & Poor's has made reasonable industry-wide assumptions based on the extensive data available, but we realize that each company varies in its practices, and additional analytic services can be provided to refine company specific assumptions.

Variable annuity guarantees

Standard & Poor's has revised its capital charges for variable annuities where some fixed or indexed guaranteed living or death benefit exists on underlying equity funds. The criteria responds to product developments which increase the risk of these benefits in varying market conditions over a long period of time and the relatively new regulatory requirements (the C-3 Phase II requirement implemented in the U.S. for year-end 2005 statutory reporting) which assesses these long-term risks to insurers through sophisticated stochastic modeling.

The C-3 Phase II regulatory requirement provides a stochastic approach to modeling the risk in variable annuity guarantees. Standard & Poor's will review the stochastic results provided by companies and will apply the stochastically generated capital charges where the results are considered reasonable. The capital required will be based on the difference of the total assets required (TAR) at various conditional tail expectations (CTE) levels minus the reserves held, and it allows 50% credit for the value of hedging. The CTE-based data should be based on the American Academy of Actuaries prepackaged scenarios to ensure reasonably comparable results. As a result, CTE(90), CTE(95), CTE(97), and CTE (99) correlate with 'BBB', 'A', 'AA', and 'AAA' capital requirements, respectively. For companies with demonstrated robust hedging programs, Standard & Poor's may eventually give a higher level of credit for hedging.

In cases where a company's stochastic modeling is not as robust, capital charges will be assessed through static charges applied to the related account balances associated with variable annuities with death or living benefit riders. These charges were developed using a series of more than 150 stress tests applied to a typical portfolio for each benefit type at the same confidence levels. Charges on this basis at the 'AA' level range from 0.56% for a simple return-of-premium death benefit to 3.46% for a guaranteed withdrawal benefit.

ALM: Europe

Life

The ALM charge in Standard & Poor's capital model consists of two elements.

The first is an estimate of the percentage divergence between asset and liability values, assuming that they are mismatched by one year, for interest rate and spread movements associated with each confidence level (BBB, A, AA, AAA). For further information on the method for deriving this charge, please refer to the Dec. 7, 2006, article entitled, "Measuring capital adequacy for asset-liability risk". In the GAAP version of the model, this element of the charge is based on GBP and EUR data, rather than swap curves and credit spreads of the USD market.

The second element is an assumed durational mismatch between assets and liabilities.

For life insurance, this ranges between one and four years, depending on the market and the structural features within it. For traditional life insurance business, where bonuses are paid on top of guaranteed benefits, credit has been given to the flexibility inherent in these discretionary benefits.

Example: Germany. The modified durations of assets and guaranteed benefits typically differ by about seven years (market average). However, the current yield on those assets is greater than the current average guarantee on the matching liabilities, and therefore bonuses are being paid. If interest rates were to fall by a small amount, then the value of the guaranteed benefits would increase by more than the value of the assets, but the impact of this would be borne almost exclusively by the policyholders, in the form of lower bonuses. Only in the event of an interest rate shock greater than the current margin of asset yield over average guarantee would the insurer's capital suffer. Standard & Poor's has made assumptions about the typical spread between yields on assets and average guarantees and compared them with the assumed interest rate shocks at different rating levels. For simplicity in the model, the impact of this loss absorbing cushion is translated into an effective reduction in the assumed mismatch for the market. In the case of Germany, the effect has been to turn the seven-year observed mismatch into an implied three-year mismatch, on average.

Nonlife

For nonlife insurance, the ALM charge is still applied, to reflect the risk to capital from movements in yields and spreads on the market value of bonds and the potential reinvestment risk associated with a mismatch between asset and liability durations. Although Standard & Poor's gives partial credit for discounting of loss reserves in its definition of capital, changes in the market value of bonds is unlikely to be offset by an equivalent change in the value of liabilities.

Standard & Poor's has used the same underlying methodology to derive capital requirements for shareholder and non-life bond volatility risk as that used to derive equivalent charges on bonds backing life insurance business, however, there is no possibility of credit for discretionary benefits.

Although the underlying methodology to determine interest rate and spread volatility was the same, the approach to the assumed mismatch was different. Investments in long-term bonds are subject to additional risk for nonlife insurers, recognizing the greater uncertainty around liability cash flows, particularly for long-tail lines of business. To simplify the analysis and information requirements, Standard & Poor's has decided to use the same duration buckets for bonds backing nonlife insurance liabilities as that used to assess credit risk. Recognizing that the weighted average duration of fixed-income securities in each bucket is likely to be less than the midpoint of the range—and the challenges associated with matching nonlife liabilities—Standard & Poor's has assumed the duration mismatch is 50% of the midpoint of each bond duration bucket.

As an example, the assumed duration mismatch on bonds with one-five years until maturity is 50% of the midpoint of the range (three years), or 1.5 years. In other words, the cash flow from the asset (maturity proceeds) are assumed to emerge in three years, whereas the liability cash flows are assumed to emerge between 1.5 and 4.5 years, reflecting uncertainty around the timing of claims settlement. The longer the liability duration (and, therefore, the longer the duration of the assumed matching asset), the greater the potential mismatch and exposure to changing yields and spreads. Consequently, capital requirements are set at a higher level for longer duration assets.

Shareholder

The assumed duration mismatch for bonds backing shareholders' equity is the outstanding duration of the fixed-income security, as changes in yields and spreads will directly affect net assets.

Like all charges in the capital model, analyst adjustments will be made to the extent that Standard & Poor's determines that the capital requirements for nonlife and shareholder bond volatility are inappropriate for a particular business line or country. For example, in certain jurisdictions, accident and health and motor third-party liability reserves can have very long tails. This often reflects the structure of claims settlements which are more akin to a payout annuity than an uncertain future lump sum. Where the reserves relate to annuity-type liabilities and Standard & Poor's determines that the risks are similar to equivalent life reserves, the charges will be adjusted accordingly.

However, the revised capital model recognises that the impact of an interest rate shock on a portfolio where assets are shorter than liabilities has the opposite effect to the same interest rate shock on a portfolio where the assets are longer than the liabilities. Consequently, the revised model tests the aggregate impact of a downward shock on life, nonlife and shareholder bonds and also the aggregate effect of an upward interest rate shock. The capital charge for ALM is then the greater of these two tests.

Capital charges for participating business

For life insurers, the mismatch between assets and liabilities is a key risk factor. It is also a risk that can be difficult to accurately measure based on public information. For participating business, the mismatch can be even more challenging to assess owing to the structure of liabilities and impact of management actions. Moreover, in some jurisdictions, participating business is written in separate funds placing certain restrictions on the movement of surplus assets around companies and groups. Consequently, Standard & Poor's approach to assessing capital adequacy for group's writing participating business will vary by market and corporate structure, to reflect the different regulatory, product and legal issues at play.

In general, public disclosure of information to accurately quantify the risks on participating business is limited. One exception to this is the U.K., which has introduced the concept of realistic balance sheets to more accurately value the complexity of risks (i.e. cost of options and guarantees) faced by insurers. In this example, Standard & Poor's will adjust the information provided under the realistic reporting framework, to derive an appropriate capital charge within the model.

In those markets where a robust assessment of the risks associated with participating business is not publicly available, Standard & Poor's will apply its standard charges. These capital requirements may, however, be subject to analyst adjustments to recognize any additional flexibility a company may have to adjust its liabilities in a stress scenario.

U.S. Accident And Health Charges

Evaluation of accident and health insurance risks

In light of several structural changes that had taken place in the health insurance sector, a review of historical loss ratios demonstrates that volatility has been effectively reduced. Negotiated reimbursement fees became widespread by the late 1990s and essentially locked in the cost side of claim volatility, leaving only utilization. Many companies engage in active utilization management and disease management for many chronic conditions. These high utilizers are said to dominate the claim experience in the 80/20 rule. The migration to contracted fees had the effect of changing practice patterns regardless of insurance product. Capitated arrangements were seldom global in nature. Claims were paid more quickly and accurately—creating better opportunity to adjust pricing when experience trends differently than expected.

Those with concentrations in Medicare and Medicaid will require more capital due to concentration to one payor/sponsor, uncertainty of future changes in reimbursement levels, lock-in periods to premium/benefit bids, and political ramifications of dropping out of selected geographic areas.

Methodology for computing factors.

Standard & Poor's undertook a study of historical loss ratio volatility (1992-2004) as a proxy for actual to expected results. Actual to expected data is not available on an aggregated industry basis. The data was aggregated by legal enterprise or rated group and a standard deviation of loss ratios for each group over the 13-year period was calculated. A natural split in volatility between large and small consolidated organizations was not found, therefore the midpoint in terms of size was selected. The median of standard deviation for consolidated companies with more than $2.5 billion medical premium was 2.8% while the median standard deviation of small companies was 3.6%. These serve as the basis for our new factors.

Standard & Poor's assumed a normal distribution and applied Z-scores developed from the 2005 default statistics to develop volatility factors by various rating classes.

All medical factors were increased by 20% reflecting additional catastrophic volatility not experienced in the past 13 years. Dental products have benefit limits, such that Standard & Poor's will use the medical factor before loading for catastrophic margin.

Volatility is not expected to vary materially by reimbursement methodology. This assumption is based on 65% of reported comprehensive major medical premiums (excluding administrative services only [ASO] and federal employee health benefits) paid by contracted fees.

Standard & Poor's expects that experience under Medicare and Medicaid risk contracts will be more volatile—not only based on recent actual experience—but also by virtue of concentration in one payor, legislated reimbursement levels, lag between bidding deadlines and effective periods of up to 18 months, and the political difficulty to exit from a market when reimbursement is no longer adequate. These premiums are reported on health statutory filings and will be loaded by 15% additional charge. Multiyear rate guarantees on underwritten business, if they exist, will be increased by analyst adjustment 200-600 bps depending on duration of the guarantee.

Administrative services business will have added benefits to scale by adding a third factor for volume more than $5 billion premium and equivalents. These factors will apply to disability as well as medical ASO business. Federal Employee Health benefits will also reflect proportionately lower volatility such that the factor (currently based on premium) is reduced to 3% from 4%.

Factors for StopLoss, Hospital Indemnity, other limited benefits, and Medical Supplement coverage continue to remain unchanged are based on premium. These products are generally not influenced by negotiated rates, utilization management and other managed care factors that have contributed to more rate stability in the sector. These products also tend to issue more opportunistically and therefore are more subject to swings in underwriting cycles.

The risk factors specific to long-term care (LTC) insurance have been developed to capture the pricing risk—all the more challenging given its relatively recent emergence as a product—and an ALM risk. Standard & Poor's reviewed the changes made to the NAIC RBC formula for longer term care insurance (effective year-end 2005) where both percentages of incurred claims and premiums were utilized. It is our opinion that a heavier weighting should be applied on the premium factor because it will result in a smoother build-up of required capital. More importantly, the incurred loss ratio for a typical LTC block of business is not expected to reach 50% until about the 10-year duration. Standard & Poor's believes that the insurance risk begins when a potentially mispriced LTC product is brought to market (e.g., a severely underpriced priced policy that is heavily marketed and sold) and not only when claims begin to emerge. Consequently, we have opted to increase the percentage of premium factor an additional 20% over the regulatory RBC factors.

Standard & Poor's applied an additional charge for LTC and individual disability to recognize the difficulty in matching assets and liabilities, given the products long liability duration. Standard & Poor's assigned risk charges for Standard Medicare Part D prescription drug benefit offered in the U.S. (effective Jan. 1, 2006). Because the product is new, Standard & Poor's has reviewed the December 2005 report published by the American Academy of Actuaries the Academy) on behalf of the NAIC. We agreed with the Academy's approach and added a 20% surcharge to the base factor reflecting the higher threshold expected at the 'BBB' level from the RBC company action

level. Factors for the target capital levels at 'A' through 'AAA' were then scaled to the confidence levels determined for fixed-income securities.

Appendix 1

U.S. Life And Health Capital Adequacy Factors

		(%)			
Asset Credit Risk		**AAA**	**AA**	**A**	**BBB**
Bond		**Confidence level**			
Less than 1 year					
	NAIC1	0.13	0.12	0.11	0.09
	NAIC2	0.81	0.73	0.68	0.55
	NAIC3	2.87	2.61	2.44	2.00
	NAIC4	12.6	11.7	11.0	9.3
	NAIC5	35.2	32.7	31.1	26.7
	NAIC6	30.0	30.0	30.0	30.0
1.01 to 5 years					
	NAIC1	0.31	0.28	0.26	0.21
	NAIC2	2.30	2.10	1.97	1.63
	NAIC3	9.16	8.48	8.02	6.81
	NAIC4	24.0	22.3	20.8	18.1
	NAIC5	37.7	35.4	32.9	29.8
	NAIC6	30.0	30.0	30.0	30.0
5.01 to 10 years					
	NAIC1	1.01	0.94	0.87	0.71
	NAIC2	4.33	4.12	3.84	3.35
	NAIC3	13.9	13.2	12.5	11.1
	NAIC4	26.9	25.8	24.2	21.8
	NAIC5	40.4	38.6	36.8	33.4
	NAIC6	30.0	30.0	30.0	30.0
10.01 to 20 years					
	NAIC1	1.45	1.34	1.22	1.04
	NAIC2	5.29	4.98	4.66	4.15
	NAIC3	15.7	14.9	14.1	12.8
	NAIC4	28.9	27.3	25.8	23.2
	NAIC5	42.9	41.6	39.7	35.8
	NAIC6	30.0	30.0	30.0	30.0
More than 20 years					
	NAIC1	1.80	1.64	1.50	1.33
	NAIC2	6.64	6.13	5.64	5.03
	NAIC3	17.1	16.1	15.2	13.8
	NAIC4	31.2	29.2	27.7	24.5
	NAIC5	48.3	45.6	43.7	38.8
	NAIC6	30.0	30.0	30.0	30.0

Appendix 1 (cont.)

Unaffiliated preferred stock					
	NAIC1	3.6	3.4	3.1	2.5
	NAIC2	6.4	6.1	5.7	5.0
	NAIC3	22.3	21.1	19.6	16.9
	NAIC4	36.8	35.4	33.8	31.4
	NAIC5	61.9	59.3	56.2	51.1
	NAIC6	30.0	30.0	30.0	30.0
Commercial mortgages (tenor N.A.)					
	Problem commercial and farm mortages	30.0	26.6	21.6	13.3
	Performing commercial and farm mortgages	2.9	2.7	2.5	2.2
Commercial mortgages (tenor based)					
	Less than five years	1.37	1.27	1.21	1.03
	Five to ten years	2.42	2.27	2.14	1.84
	Ten to 20 years	3.10	2.95	2.75	2.39
	20 plus years	4.45	4.05	3.72	3.30
	Problem commercial and farm mortages	30.00	26.64	21.64	13.30
Residential mortgages					
	Insured mortgages				
	In good standing	0.13	0.12	0.11	0.10
	90 days overdue	0.26	0.25	0.23	0.20
	Other Residential Mortgages				
	In good standing	0.65	0.62	0.57	0.50
	90 days overdue	1.31	1.23	1.15	1.00
Corporate-owned life insurance (COLI) assets					
	General account COLI with insurer rated A or higher	1.80	1.64	1.50	1.33
	GA COLI with insurer rated BBB	6.64	6.13	5.64	5.03
Schedule BA asset charges					
	Schedule BA Mortgage Loans and Real Estate	32.6	29.0	26.4	20.0
	Schedule BA asset classified as bonds				
	Standard & Poor's rating of 'A' and above	1.01	0.94	0.87	0.71
	Standard & Poor's rating of 'BBB' and above	4.33	4.12	3.84	3.35
	Standard & Poor's rating of 'BB' and above	13.9	13.2	12.5	11.1
	Standard & Poor's rating of 'B' and above	26.9	25.8	24.2	21.8
	Standard & Poor's rating of 'CCC' and above	40.4	38.6	36.8	33.4
	Standard & Poor's rating of 'CC' and above	30.0	30.0	30.0	30.0
	Schedule BA asset classified as preferred stock				
	Standard & Poor's rating of 'A' and above	3.6	3.4	3.1	2.5
	Standard & Poor's rating of 'BBB' and above	6.4	6.1	5.7	5.0
	Standard & Poor's rating of 'BB' and above	22.3	21.1	19.6	16.9
	Standard & Poor's rating of 'B' and above	36.8	35.4	33.8	31.4
	Standard & Poor's rating of 'CCC' and above	61.9	59.3	56.2	51.1

Appendix 1 (cont.)					
	Standard & Poor's rating of 'CC' and above	30.0	30.0	30.0	30.0
	Affiliated life asset valuation reserve	100.0	100.0	100.0	100.0
	Schedule BA asset classified as common stock				
	Unaffiliated common stock	43.0	37.0	32.0	20.0
	Affiliated common stock	100.0	100.0	100.0	100.0
	Other schedule BA assets	48.9	43.5	39.6	30.0
Asset Market Risk					
	Common stock				
	Unaffiliated	43.0	37.0	32.0	20.0
	Affiliated	100.0	100.0	100.0	100.0
	Convexity Risk (Used where company-specific model not available)				
	Mortgage-backed securities	8.1	7.2	6.6	5.0
	Callable corporate bonds	3.3	2.9	2.6	2.0
	Home equity ABS	3.3	2.9	2.6	2.0
	All other ABS	1.6	1.4	1.3	1.0
	Real estate equity and long-term assets				
	Investment real estate	29.3	26.1	23.8	18.0
	Owner-occupied (home office) real estate	34.3	31.1	28.8	23.0
	Foreclosed encumbrances	24.5	21.8	19.8	15.0
	Investment encumbrances	16.3	14.5	13.2	10.0
	Property and equipment used to deliver health care cervices	16.3	14.5	13.2	10.0
Reinsurance Credit Risk					
	Reinsurance recoverables				
	AAA rated reinsurer	0.11	0.10	0.09	0.07
	AA rated reinsurer	0.11	0.10	0.09	0.07
	A rated reinsurer	0.21	0.19	0.17	0.13
	BBB rated reinsurer	0.88	0.08	0.71	0.54
	BB rated reinsurer	2.5	2.2	2.0	1.5
	B rated reinsurer	15.1	13.4	12.2	9.3
	CCC rated reinsurer	43.5	38.7	35.2	26.7
	Nonrated reinsurer	40.7	36.1	33.1	25.0
	Regulatory Supervision	50.0	50.0	50.0	50.0
Miscellaneous Asset Risk					
	Premium notes	8.1	7.2	6.6	5.0
	Cash and equivalents	0.03	0.03	0.03	0.02
	Short-term Investments	0.03	0.03	0.03	0.02
	Write-ins for invested assets and other than invested assets	8.1	7.2	6.6	5.0
	Noncontrolled assets				
	FHLB	0.0	0.0	0.0	0.0
	Other	1.0	1.0	1.0	1.0

Appendix 1 (cont.)					
	Surplus in nonguaranteed separate accounts	0.10	0.10	0.10	0.10
	Separate account expense allowance under Commissioners' Reserve Valuation Method/ Commissioners' Annuity Reserve Valuation Method				
	Current surrender charge based on fund balance	0.10	0.10	0.10	0.10
	Current surrender charge based on fund contribution	0.02	0.02	0.02	0.02
	Off balance sheet items				
	Contingent liabilities	8.1	7.2	6.6	5.0
	Long-term Leases	8.1	7.2	6.6	5.0
Accident, Health, And Mortality Risk (Mortality Risk)					
(Excluding life policies with critical illness acceleration riders)					
	Net amount at risk less than $1 bil.	0.372	0.331	0.302	0.229
	$1 bil. to $5 bil.	0.248	0.220	0.202	0.152
	$5 bil. to $10 bil.	0.186	0.165	0.151	0.114
	$10 bil. to $50 bil.	0.155	0.138	0.126	0.095
	$50 bil. to $100 bil.	0.124	0.110	0.101	0.076
	More than $100 bil.	0.093	0.083	0.076	0.057
Accident, Health, And Mortality Risk (Critical Illness)					
(Including riders to life insurance policies)					
	Net amount at risk less than $1 bil.	1.117	0.992	0.907	0.686
	$1 bil. to $5 bil.	0.745	0.661	0.605	0.457
	$5 bil. to $10 bil.	0.558	0.496	0.454	0.343
	$10 bil. to $50 bil.	0.465	0.413	0.378	0.286
	$50 bil. to $100 bil.	0.372	0.331	0.302	0.229
	More than $100 bil.	0.279	0.248	0.227	0.172
Accident, Health, And Mortality Risk (Morbidity)					
Comprehensive medical and dental earned premiums					
	Full risk and experience rated group and individual health				
	First $2,500 mil.	13.3	11.9	10.9	8.2
	More than $2,500 mil.	10.4	9.3	8.5	6.4
	Federal Employee Health Benefit Program				
	All premiums	5.3	4.5	3.8	3.0
	Medicare and Medicaid				
	First $2,500 mil.	15.4	13.7	12.5	9.5
	More than $2,500 mil.	11.9	10.7	9.7	7.4
	Dental				
	All premiums	11.1	9.9	9.1	6.9
	Administrative services only/administrative services contract(premium equivalents)				
	First $500 mil.	3.5	3.0	2.5	2.0
	More than $500 mil.	1.3	1.1	0.9	0.8
	More than $5,000 mil.	0.35	0.30	0.25	0.20

Appendix 1 (cont.)

Other accident and health earned premiums					
	Stop Loss Reinsurance	57.8	49.5	41.3	33.0
	Medicare supplemental				
	First $25 mil.	21.0	18.0	15.0	12.0
	More than $25 mil.	14.0	12.0	10.0	8.0
	Hospital indemnity, accidental death and dismemberment, and other limited benefits not antic rate increases	14.0	12.0	10.0	8.0
	Other limited benefits anticipating rate increases	21.0	18.0	15.0	12.0
	For Medicare Part D (with standard benefits)				
	First $25 mil.	9.6	8.3	6.9	5.5
	More than $25 mil.	7.4	6.3	5.3	4.2
	For Medicare Part D (with risk corridor protection only)				
	First $25 mil.	12.7	11.3	10.3	7.8
	More than $25 mil.	9.8	8.7	7.9	6.0
	All Other Medicare Part D	19.5	17.3	15.9	12.0
Disability income earned premiums					
	Noncancelable disability income				
	First $50 mil.	73.4	65.3	59.4	45.0
	More than $50 mil.	29.3	26.1	23.8	18.0
	Other individual income				
	First $50 mil.	48.9	43.5	39.6	30.0
	More than $50 mil.	14.7	13.1	11.9	9.0
	Group long term				
	First $50 mil.	29.3	26.1	23.8	18.0
	More than $50 mil.	6.5	5.8	5.3	4.0
	Group short term				
	First $50 mil.	9.8	8.7	7.9	6.0
	More than $50 mil.	6.5	5.8	5.3	4.0
	Credit monthly O/S balance				
	First $50 mil.	40.8	36.3	33.0	25.0
	More than $50 mil.	6.5	5.8	5.3	4.0
	Credit Single Premium with unearned premium reserve				
	First $50 mil.	19.6	17.4	15.8	12.0
	More than $50 mil.	6.5	5.8	5.3	4.0
	Credit single without unearned premium reserve				
	First $50 mil.	29.3	26.1	23.8	18.0
	More than $50 mil.	6.5	5.8	5.3	4.0
	Other disability income				
	First $50 mil.	48.9	43.5	39.6	30.0
	More than $50 mil.	14.7	13.1	11.9	9.0

Appendix 1 (cont.)					
Long-term care					
	Claims				
	First $35 mil.	40.8	36.3	33.0	25.0
	More than $35 mil.	13.0	11.6	10.6	8.0
	Earned premium				
	First $50 mil.	19.6	17.4	15.8	12.0
	More than $50 mil.	5.9	5.2	4.8	3.6
Accident and health claim reserves					
	All accident and health lines	8.2	7.3	6.6	5.0
Asset/Liability Risk					
Applied against policy reserves					
	Funding Liabilities with no embedded options				
	Medium-term Notes	2.9	2.6	2.4	1.8
	Funding Agreements	2.9	2.6	2.4	1.8
	Funding agreement-backed MTNs	2.9	2.6	2.4	1.8
	Structured settlements				
	With life contingencies	3.8	3.3	3.1	2.3
	Without life contingencies	2.9	2.6	2.4	1.8
	Benefit Responsive guaranteed investment contracts				
	Window guaranteed investment contracts	3.8	3.3	3.1	2.3
	Nonwindow guaranteed investment contracts (deposits certain)	3.2	2.8	2.6	2.0
	Institutional Fixed Rate Deferred Annuities				
	Institutional fixed rate deferred annuities with life contingencies	4.9	4.4	4.0	3.0
	Fixed Rate Deferred Annuities - Retail				
	Partial market value adjustment (with surrender charge)	4.4	3.9	3.6	2.7
	Full market value (with surrender charge)	4.4	3.9	3.6	2.7
	No market value (with surrender charge)	4.5	4.0	3.6	2.8
	Partial partial market value (without surrender charge)	5.0	4.4	4.0	3.1
	Full market value (without surrender charge)	4.9	4.4	4.0	3.0
	No market value (without surrender charge)	5.1	4.5	4.1	3.1
	Fixed Rate Immediate Payout Annuities (SPIA)				
	Retail SPIAs with life contingency	4.3	3.8	3.5	2.7
	Retail SPIAs without life contingency	3.5	3.1	2.8	2.1
	Pension Annuities - with life contingency	4.3	3.8	3.5	2.7
	Pension Annuities - without life contingency	3.5	3.1	2.8	2.1
	Indexed annuities	2.5	2.2	2.0	1.5
	2-tier annuities				
	Indexed deferral period	3.3	2.9	2.7	2.0
	Fixed rate deferral period	4.4	3.9	3.6	2.7

Appendix 1 (cont.)

	Accident and health active life reserves				
	Disability income	2.0	1.7	1.6	1.2
	Long-term care	2.0	1.7	1.6	1.2
	Synthetic guaranteed investment contracts				
	No credit risk retention	0.38	0.20	0.19	0.13
	With credit risk retention	0.70	0.49	0.35	0.24
Operational Risk					
	Total liabilities	0.20	0.20	0.20	0.20
Variable annuity guarantee risk (where stochastic results not available)					
	Return of premium death benefits	0.77	0.56	0.42	0.18
	Death benefits enhanced (roll-up or ratchet)	3.99	3.37	2.85	1.61
	Withdrawal benefits	5.52	3.46	2.73	1.37
	Accumulation benefits	2.29	1.66	1.24	0.52
	Income benefits	2.67	2.11	1.62	0.71
	Others	3.05	2.23	1.77	0.88

N.A.--Not available.

Appendix 2

U.S. Nonlife Capital Adequacy Factors

		(%)			
Asset Credit Risk		**AAA**	**AA**	**A**	**BBB**
Bond		**Confidence level**			
Less than 1 year					
	NAIC1	0.13	0.12	0.11	0.09
	NAIC2	0.81	0.73	0.68	0.55
	NAIC3	2.9	2.6	2.4	2.0
	NAIC4	12.6	11.7	11.0	9.3
	NAIC5	35.2	32.7	31.1	26.7
	NAIC6	30.0	30.0	30.0	30.0
1.01 to 5 years					
	NAIC1	0.31	0.28	0.26	0.21
	NAIC2	2.3	2.1	2.0	1.6
	NAIC3	9.2	8.5	8.0	6.8
	NAIC4	24.0	22.3	20.8	18.1
	NAIC5	37.7	35.4	32.9	29.8
	NAIC6	30.0	30.0	30.0	30.0
5.01 to 10 years					
	NAIC1	1.01	0.94	0.87	0.71
	NAIC2	4.3	4.1	3.8	3.3
	NAIC3	13.9	13.2	12.5	11.1
	NAIC4	26.9	25.8	24.2	21.8
	NAIC5	40.4	38.6	36.8	33.4

Appendix 2

U.S. Nonlife Capital Adequacy Factors (cont.)					
	NAIC6	30.0	30.0	30.0	30.0
10.01 to 20 years					
	NAIC1	1.5	1.3	1.2	1.0
	NAIC2	5.3	5.0	4.7	4.2
	NAIC3	15.7	14.9	14.1	12.8
	NAIC4	28.9	27.3	25.8	23.2
	NAIC5	42.9	41.6	39.7	35.8
	NAIC6	30.0	30.0	30.0	30.0
More than 20 years					
	NAIC1	1.8	1.6	1.5	1.3
	NAIC2	6.6	6.1	5.6	5.0
	NAIC3	17.1	16.1	15.2	13.8
	NAIC4	31.2	29.2	27.7	24.5
	NAIC5	48.3	45.6	43.7	38.8
	NAIC6	30.0	30.0	30.0	30.0
Unaffiliated preferred stock					
	Where ratings available				
	NAIC1	5.7	5.2	4.8	4.3
	NAIC2	10.8	9.8	8.9	7.7
	NAIC3	28.4	26.5	24.8	22.7
	NAIC4	41.9	39.9	38.3	34.4
	NAIC5	72.5	68.4	65.6	58.3
	NAIC6	30.0	30.0	30.0	30.0
	Composite change if breakdown not available	10.8	9.8	8.9	7.7
Mortgage loans					
	First liens	8.1	7.2	6.6	5.0
	Other than first liens	8.1	7.2	6.6	5.0
Asset Market Risk					
	Common stock				
	Unaffiliated	43.0	37.0	32.0	20.0
	Affiliated	100.0	100.0	100.0	100.0
Convexity Risk					
	Mortgage-backed securities	8.1	7.2	6.6	5.0
Real Estate And Long-Term Assets					
	Real estate investment for income	29.3	26.1	23.8	18.0
	Owner-occupied (home office) real estate	34.3	31.1	28.8	23.0
Reinsurance Credit Risk					
	Reinsurance recoverables				
	AAA rated reinsurer	0.8	0.7	0.6	0.5
	AA rated reinsurer	1.3	1.2	1.1	0.8
	A rated reinsurer	2.3	2.0	1.8	1.4

Appendix 2

U.S. Nonlife Capital Adequacy Factors (cont.)					
	BBB rated reinsurer	5.0	4.4	4.1	3.1
	BB rated reinsurer	18.4	16.3	14.9	11.3
	B rated reinsurer	34.1	30.3	27.7	21.0
	CCC' rated reinsurer	55.5	49.3	45.1	34.1
	Nonrated reinsurer	40.7	36.1	33.1	25.0
	Regulatory supervision	50.0	50.0	50.0	50.0
Miscellaneous Asset Risk					
	Cash	0.03	0.03	0.03	0.02
	Schedule BA part 1 bonds plus mortgage plus real estate plus common stock	32.6	29.0	26.4	20.0
	Other Schedule BA invested assets (excluding Cap 17)	48.9	43.5	39.6	30.0
	Aggregate write-ins for invested assets plus receivable for securities	8.1	7.2	6.6	5.0
	Federal income tax recoverable	8.1	7.2	6.6	5.0
	Amounts receivable relating to uninsured accident and health plans	8.1	7.2	6.6	5.0
	Aggregate write-ins for other than invested assets	8.1	7.2	6.6	5.0
	Net deferred tax asset	8.1	7.2	6.6	5.0
	Off balance sheet items				
	Contingent Liabilities	8.1	7.2	6.6	5.0
	Long-term leases	8.1	7.2	6.6	5.0
Property/Casualty Premium Risk					
	Direct busines and proportional reinsurance				
	Homeowners' multi-peril	34.6	30.7	28.1	21.3
	Farm owners' multi-peril	34.6	30.7	28.1	21.3
	Private passenger auto liability	14.5	12.9	11.8	8.9
	Fire	14.6	13.0	11.9	9.0
	Allied lines	14.6	13.0	11.9	9.0
	Mortgage guaranty	53.7	47.7	43.6	33.0
	Financial guaranty	53.7	47.7	43.6	33.0
	Inland marine	14.6	13.0	11.9	9.0
	Earthquake	14.6	13.0	11.9	9.0
	Burglary and theft	14.6	13.0	11.9	9.0
	Accident and health	53.7	47.7	43.6	33.0
	Credit	53.7	47.7	43.6	33.0
	Auto physical damage	17.5	15.6	14.2	10.8
	Fidelity and Surety	14.6	13.0	11.9	9.0
	International	44.8	39.8	36.4	27.5
	Commercial auto liability	30.7	27.3	25.0	18.9
	Medical malpractice—occurrence	87.5	77.7	71.1	53.8
	Medical malpractice—claims made	63.9	56.7	51.9	39.3
	Ocean marine and aircraft	24.7	22.0	20.1	15.2
	Boiler and machinery	24.7	22.0	20.1	15.2
	Other liability—occurrence	49.2	43.7	40.0	30.2

Appendix 2

U.S. Nonlife Capital Adequacy Factors (cont.)					
	Other liability—claims made	37.6	33.4	30.6	23.1
	Products liability—occurrence	52.9	46.9	42.9	32.5
	Products liability—claims made	40.5	36.0	32.9	24.9
	Commerical multiple peril	21.3	18.9	17.3	13.1
	Workers' compensation	29.2	26.0	23.8	18.0
	Nonproportional reinsurance (treaty and facultative)				
	Homeowners' multi-peril	43.3	38.4	35.1	26.6
	Farm owners' multi-peril	43.3	38.4	35.1	26.6
	Private passenger auto liability	18.1	16.1	14.7	11.1
	Fire	14.6	13.0	11.9	9.0
	Allied lines	14.6	13.0	11.9	9.0
	Mortgage guaranty	67.1	59.6	54.5	41.3
	Financial guaranty	67.1	59.6	54.5	41.3
	Inland marine	14.6	13.0	11.9	9.0
	Earthquake	14.6	13.0	11.9	9.0
	Burglary and theft	14.6	13.0	11.9	9.0
	Accident and health	53.7	47.7	43.6	33.0
	Credit	67.1	59.6	54.5	41.3
	Auto physical damage	17.5	15.6	14.2	10.8
	Fidelity and surety	18.3	16.3	14.9	11.3
	International	55.9	49.7	45.5	34.4
	Commercial auto liability	30.7	27.3	25.0	18.9
	Medical malpractice—occurrence	109.4	97.1	88.9	67.2
	Medical malpractice—claims made	79.9	70.9	64.9	49.1
	Ocean marine and aircraft	30.9	27.5	25.1	19.0
	Boiler and machinery	24.7	22.0	20.1	15.2
	Other liability—occurrence	61.5	54.6	50.0	37.8
	Other liability—claims made	47.0	41.8	38.2	28.9
	Products liability—occurrence	66.1	58.7	53.7	40.6
	Products liability—claims made	50.6	45.0	41.1	31.1
	Commerical multiple peril	26.6	23.6	21.6	16.3
	Workers' compensation	36.6	32.5	29.7	22.5
Property/Casualty Reserve Risk					
Reserve risk charge					
	Lines of business				
	Homeowners'/Farm owners'	18.6	16.5	15.1	11.4
	Private passenger auto liability/medical	15.8	14.0	12.8	9.7
	Special property	45.6	40.5	37.0	28.0
	Auto physical damage	45.6	40.5	37.0	28.0
	Fidelity/surety	45.6	40.5	37.0	28.0
	Other (credit, accident and health, write-ins)	45.6	40.5	37.0	28.0

Appendix 2

U.S. Nonlife Capital Adequacy Factors (cont.)					
	Financial guaranty/mortgage guaranty	45.6	40.5	37.0	28.0
	International	24.4	21.7	19.8	15.0
	Commercial auto/truck liability/medical	19.5	17.3	15.9	12.0
	Medical malpractice—occurrence	60.2	53.5	48.9	37.0
	Medical malpractice—claims made	35.8	31.8	29.1	22.0
	Special liability	26.0	23.1	21.2	16.0
	Other liability—occurrence	22.8	20.2	18.5	14.0
	Other liability—claims made	27.7	24.6	22.5	17.0
	Products liability—occurrence	39.1	34.7	31.7	24.0
	Products liability—claims made	21.2	18.8	17.2	13.0
	Commercial multiple peril	8.5	7.5	6.9	5.2
	Workers' compensation	16.4	14.6	13.4	10.1
Operational risk					
	Direct premiums written factor	0.5			

Appendix 3

European Capital Adequacy Factors					
		(%)			
		AAA	**AA**	**A**	**BBB**
Market Risk—Equities					
	U.S, U.K., Australia, South Africa, Belgium, Hungary	43.0	37.0	32.0	20.0
	Mexico, Switzerland, Netherlands, Japan, Denmark	45.0	40.0	37.0	25.0
	Spain, Canada, Norway, Hong Kong, Italy, Austria, France, Sweden, Germany	53.0	47.0	43.0	30.0
	Singapore, Czech Republic	62.0	56.0	52.0	40.0
	Korea, Indonesia, Malaysia, Finland, Taiwan	71.0	65.0	60.0	45.0
	Poland, Thailand, Russia	83.0	79.0	75.0	60.0
	Europe	43.0	37.0	32.0	20.0
	World	45.0	40.0	37.0	25.0
	Far East	45.0	40.0	37.0	25.0
	Nordic Countries	53.0	47.0	43.0	30.0
	Emerging Market Far East	62.0	56.0	52.0	40.0
	Hedge Funds	54.0	46.0	40.0	25.0
	Private Equity	83.0	79.0	75.0	60.0
Market Risk—Properties					
	Germany	10.0	8.0	7.0	5.0
	Netherlands	15.0	13.0	11.0	8.0
	Other Europe	20.0	18.0	15.0	10.0
	Owner-occupied	28.0	25.0	22.0	15.0
Credit Risk—Bonds					
Less than 1 year					
	AAA Security	0.109	0.098	0.090	0.070

Appendix 3

European Capital Adequacy Factors (cont.)					
	AA Security	0.109	0.098	0.090	0.070
	A Security	0.180	0.161	0.149	0.117
	BBB Security	0.808	0.732	0.680	0.546
	BB Security	2.866	2.615	2.445	2.000
	B Security	12.626	11.670	11.023	9.332
	CCC/C Security	35.217	32.737	31.059	26.671
	Unrated	2.866	2.615	2.445	2.000
1.01 to 5 years					
	AAA Security	0.149	0.133	0.123	0.095
	AA Security	0.194	0.175	0.162	0.129
	A Security	0.574	0.521	0.485	0.392
	BBB Security	2.299	2.104	1.972	1.627
	BB Security	9.159	8.478	8.017	6.812
	B Security	23.976	22.284	20.793	18.115
	CCC/C Security	37.653	35.439	32.920	29.812
	Unrated	9.159	8.478	8.017	6.812
5.01 to 10 years					
	AAA Security	0.446	0.413	0.381	0.309
	AA Security	0.761	0.713	0.668	0.560
	A Security	1.887	1.758	1.620	1.312
	BBB Security	4.333	4.116	3.842	3.346
	BB Security	13.865	13.212	12.542	11.140
	B Security	26.877	25.815	24.198	21.838
	CCC/C Security	40.441	38.588	36.825	33.394
	Unrated	13.865	13.212	12.542	11.140
10.01 to 20 years					
	AAA Security	0.674	0.633	0.581	0.511
	AA Security	1.374	1.287	1.183	1.033
	A Security	2.491	2.290	2.066	1.713
	BBB Security	5.295	4.980	4.658	4.152
	BB Security	15.673	14.893	14.089	12.780
	B Security	28.889	27.337	25.833	23.207
	CCC/C Security	42.898	41.567	39.702	35.768
	Unrated	15.673	14.893	14.089	12.780
More than 20 years					
	AAA Security	0.847	0.787	0.737	0.672
	AA Security	1.636	1.511	1.407	1.271
	A Security	3.117	2.816	2.537	2.201
	BBB Security	6.638	6.127	5.642	5.032
	BB Security	17.102	16.133	15.185	13.791
	B Security	31.167	29.178	27.689	24.537
	CCC/C Security	48.341	45.585	43.721	38.845

Appendix 3

European Capital Adequacy Factors (cont.)					
	Unrated	17.102	16.133	15.185	13.791
Market Risk—Life Bonds					
	Assumed duration mismatch (years)				
U.K., U.S.	1.00	2.373	2.108	1.928	1.458
Netherlands, France, Spain, Italy, Switzerland, Belgium	2.00	4.747	4.216	3.856	2.916
Germany, Austria, Central & Eastern Europe	3.00	7.120	6.323	5.784	4.375
Nordic Countries	4.00	9.494	8.431	7.713	5.833
Market Risk—Nonlife Bonds					
	Assumed duration mismatch (years)				
Bond duration (less than 1 year)	0.25	0.593	0.527	0.482	0.365
Bond duration (1-5 years)	1.50	3.560	3.162	2.892	2.187
Bond duration (5-10 years)	3.75	8.900	7.904	7.230	5.468
Bond duration (more than 10 years)	7.50	17.800	15.808	14.461	10.937
Market Risk—Shareholder Bonds					
	Assumed duration mismatch (years)				
Bond duration (less than 1 year)	0.50	1.187	1.054	0.964	0.729
Bond duration (1-5years)	3.00	7.120	6.323	5.784	4.375
Bond duration (5-10 years)	7.50	17.800	15.808	14.461	10.937
Bond duration (more than 10 years)	15.00	35.601	31.617	28.922	21.874
Credit Risk—Reinsurance Recoverables					
	Reinsurers rated 'AAA'	0.8	0.7	0.6	0.5
	Reinsurers rated 'AA'	1.3	1.2	1.1	0.8
	Reinsurers rated 'A'	2.3	2.0	1.8	1.4
	Reinsurers rated 'BBB'	5.0	4.4	4.1	3.1
	Reinsurers rated 'BB'	18.4	16.3	14.9	11.3
	Reinsurers rated 'B'	34.1	30.3	27.7	21.0
	Reinsurers rated 'CCC'	50.0	49.3	45.1	34.1
	Reinsurers rated 'R'	50.0	50.0	50.0	50.0
	Unrated reinsurers	40.7	36.1	33.1	25.0
Other Funds Under Management (Off Balance Sheet)					
	First $2.5 bil.	0.81	0.72	0.66	0.50
	Next $7.5 bil.	0.49	0.43	0.40	0.30
	Next $15 bil.	0.33	0.29	0.26	0.20
	Excess over $25 bil.	0.16	0.14	0.13	0.10
Other Assets					
	Mortgages—performing				
	LTV <60%	0.81	0.72	0.66	0.50
	LTV 60%-85%	8.14	7.23	6.61	5.00
	LTV >85%	16.28	14.45	13.22	10.00

Appendix 3

European Capital Adequacy Factors (cont.)

	Mortgages—nonperforming				
	LTV <60%	1.63	1.45	1.32	1.00
	LTV 60%-85%	16.28	14.45	13.22	10.00
	LTV >85%	32.55	28.91	26.44	20.00
	Preference shares	9.87	9.05	8.15	7.04
	Derivatives	0.76	0.71	0.67	0.56
	Loans	24.41	21.68	19.83	15.00
	Bank deposits				
	A- or higher	0.030	0.027	0.025	0.019
	BBB	0.147	0.133	0.124	0.099
	BB	0.478	0.436	0.407	0.333
	B	2.104	1.945	1.837	1.555
	CCC+ or lower	5.870	5.456	5.177	4.445
	Deferred tax assets	8.1	7.2	6.6	5.0
	Deposits with cedents	4.9	4.3	4.0	3.0
	Other assets	8.1	7.2	6.6	5.0
	Fixed assets	100.0	100.0	100.0	100.0
Mortality—Net Sums At Risk					
(excluding life policies with critical illness acceleration riders)					
	Highly developed life markets				
	Less than $1 bil.	0.372	0.331	0.302	0.229
	$1 bil. to $5 bil.	0.248	0.220	0.202	0.152
	$5 bil. to $10 bil.	0.186	0.165	0.151	0.114
	$10 bil. to $50 bil.	0.155	0.138	0.126	0.095
	$50 bil. to $100 bil.	0.124	0.110	0.101	0.076
	More than $100 bil.	0.093	0.083	0.076	0.057
	Medium developed life markets				
	Less than $1 bil.	0.465	0.414	0.378	0.286
	$1 bil. to $5 bil.	0.310	0.275	0.253	0.190
	$5 bil. to $10 bil.	0.233	0.206	0.189	0.143
	$10 bil. to $50 bil.	0.194	0.173	0.158	0.119
	$50 bil. to $100 bil.	0.155	0.138	0.126	0.095
	More than $100 bil.	0.116	0.104	0.095	0.071
	Less developed life markets				
	Less than $1 bil.	0.558	0.497	0.453	0.344
	$1 bil. to $5 bil.	0.372	0.330	0.303	0.228
	$5 bil. to $10 bil.	0.279	0.248	0.227	0.171
	$10 bil. to $50 bil.	0.233	0.207	0.189	0.143
	$50 bil. to $100 bil.	0.186	0.165	0.152	0.114
	More than $100 bil.	0.140	0.125	0.114	0.086

Appendix 3

European Capital Adequacy Factors (cont.)

Morbidity—Net Sums At Risk (Critical Illness)					
(including riders to life insurance policies)					
	Highly developed life markets				
	Less than $1 bil.	1.117	0.992	0.907	0.686
	$1 bil. to $5 bil.	0.745	0.661	0.605	0.457
	$5 bil. to $10 bil.	0.558	0.496	0.454	0.343
	$10 bil. to $50 bil.	0.465	0.413	0.378	0.286
	$50 bil. to $100 bil.	0.372	0.331	0.302	0.229
	More than $100 bil.	0.279	0.248	0.227	0.172
	Medium developed life markets				
	Less than $1 bil.	1.396	1.240	1.134	0.858
	$1 bil. to $5 bil.	0.931	0.826	0.756	0.571
	$5 bil. to $10 bil.	0.698	0.620	0.568	0.429
	$10 bil. to $50 bil.	0.581	0.516	0.473	0.358
	$50 bil. to $100 bil.	0.465	0.414	0.378	0.286
	More than $100 bil.	0.349	0.310	0.284	0.215
	Less developed life markets				
	Less than $1 bil.	1.676	1.488	1.361	1.029
	$1 bil. to $5 bil.	1.118	0.992	0.908	0.686
	$5 bil. to $10 bil.	0.837	0.744	0.681	0.515
	$10 bil. to $50 bil.	0.698	0.620	0.567	0.429
	$50 bil. to $100 bil.	0.558	0.497	0.453	0.344
	More than $100 bil.	0.419	0.372	0.341	0.258
Longevity Risk					
	Longevity risk	6.0	5.6	5.4	5.0
Life Reserve Risk					
	Participating business				
	Participating business (excluding annuities)	3.26	2.89	2.64	2.00
	Participating annuities	3.26	2.89	2.64	2.00
	Nonparticipating business (excluding annuities)				
	Protection	1.06	0.94	0.86	0.65
	Savings	3.26	2.89	2.64	2.00
	Permanent health insurance	1.06	0.94	0.86	0.65
	Nonparticipating annuities				
	Immediate annuities	0.73	0.65	0.60	0.45
	Deferred annuities (without guarantees)	1.06	0.94	0.86	0.65
	Deferred annuities (with guarantees)	3.26	2.89	2.64	2.00
	Linked business with investment guarantees	3.26	2.89	2.64	2.00
	Linked business with expense guarantees only	1.63	1.45	1.32	1.00
	Linked business without guarantees	1.06	0.94	0.86	0.65

Appendix 3

European Capital Adequacy Factors (cont.)

Nonlife Net Premium Risk					
	Primary and proportional reinsurance business				
	Health-based on morbidity tables	20.0	17.0	16.0	12.0
	Accident and health—other	24.0	22.0	20.0	15.0
	Motor	16.0	14.0	13.0	10.0
	Marine	36.0	32.0	29.0	22.0
	Aviation	52.0	46.0	42.0	32.0
	Transport	20.0	17.0	16.0	12.0
	Property	29.0	26.0	24.0	18.0
	Liability	37.0	33.0	30.0	23.0
	Pecuniary	29.0	26.0	24.0	18.0
	Credit	122.0	108.0	99.0	75.0
	Nonproportional reinsurance (treaty and facultative)				
	Health-based on morbidity tables	29.0	26.0	24.0	18.0
	Accident and health—other	37.0	33.0	30.0	23.0
	Motor	24.0	22.0	20.0	15.0
	Marine	54.0	48.0	44.0	33.0
	Aviation	78.0	69.0	63.0	48.0
	Transport	29.0	26.0	24.0	18.0
	Property	44.0	39.0	36.0	27.0
	Liability	57.0	51.0	46.0	35.0
	Pecuniary	44.0	39.0	36.0	27.0
	Credit	183.0	163.0	149.0	112.5
	Finite	7.0	6.0	5.0	4.0
Nonlife Loss Reserve Risk					
	Primary and proportional reinsurance business				
	Health-based on morbidity tables	8.0	7.0	6.0	5.0
	Accident and health—other	33.0	29.0	26.0	20.0
	Motor	18.0	16.0	15.0	11.0
	Marine, aviation, and transport	26.0	23.0	21.0	16.0
	Property	11.0	10.0	9.0	7.0
	Liability	24.0	22.0	20.0	15.0
	Pecuniary	33.0	29.0	26.0	20.0
	Credit	41.0	36.0	33.0	25.0
	Nonproportional reinsurance (treaty and facultative)				
	Health-based on morbidity tables	8.0	7.0	6.0	5.0
	Accident and health—other	33.0	29.0	26.0	20.0
	Motor	18.0	16.0	15.0	11.0
	Marine, aviation, and transport	26.0	23.0	21.0	16.0
	Property	11.0	10.0	9.0	7.0
	Liability	24.0	22.0	20.0	15.0

Appendix 3

European Capital Adequacy Factors (cont.)					
	Pecuniary	33.0	29.0	26.0	20.0
	Credit	41.0	36.0	33.0	25.0
	Finite	10.0	9.0	8.0	6.0
U.K. With-Profits Risk Charges					
	Value in force haircut	50.0	50.0	50.0	50.0
	Haircut on investment in subsidiaries	100.0	100.0	100.0	100.0
	Risk capital margin loading	50.0	50.0	50.0	50.0
	Longevity risk charge	6.0	5.6	5.4	5.0
	Reserve risk charge	0.73	0.65	0.60	0.45
	Risk capital margin scaling factor	162.8	144.5	132.2	100.0
German Health Insurance Risk Charges					
	Net ageing reserves	4.1	3.6	3.3	2.5