Article Title: ARCHIVE | Criteria | Insurance | Life: Standard & Poor's Life/Health Capital Adequacy Model Data: (EDITOR'S NOTE: —This article is no longer current. It has been superseded by an article titled "Analysis Of Insurer Capital Adequacy," which was published on April 22, 2009.) Standard & Poor's capital adequacy model plays a significant role in its assessment of the capital strength of a life/health insurer. The model produces a "capital adequacy ratio," which compares adjusted capital and surplus, minus realistic expectations of potential investment losses, against a base level of surplus appropriate to support liabilities at a secure rating level (i.e., 'BBB' range). Standard & Poor's standards for superior, excellent, good, and adequate capital strength are based on the capital adequacy ratio. To be minimally secure ('BBB'), the capital adequacy ratio must be at least 100%. The capital adequacy ratio 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 Standard & Poor's model to best assess those risks that are unique to any given company, while still maintaining a standard of comparability between companies. Standard & Poor's capital adequacy ratio Adjusted capital & surplus - Asset-related risk charges Charges for mortality/morbidity/expense risk + Interest-rate risk + General risk HOW THE MODEL WORKS The numerator of the Standard & Poor's capital adequacy ratio is "total adjusted capital" (defined below) minus realistic expectations of potential investment losses. The total asset risk (`C-1') charge is adjusted by multiplying by a portfolio size factor, and adjusting for any single issuer concentration risk. The denominator of the ratio is arrived at by going through the same process for liabilities as for assets, i.e., by applying risk factors to each type of liability (`C-2' and `C-3' risks). The last ingredient in the denominator is a general business risk charge (`C-4'), which is assessed against premiums subject to guaranty fund assessments. DETERMINATION OF TOTAL ADJUSTED CAPITAL Total adjusted capital is statutory capital and surplus, plus the asset valuation reserve (AVR), plus voluntary reserves, plus one-half of the policyholder dividend liability. Analysts may add or subtract to this to incorporate items, such as surplus notes, that meet Standard & Poor's criteria for treatment as capital. If surplus notes (or other hybrid instruments being given equity credit) represent more than 15% of total capital, Standard & Poor's will give less equity credit for the note. Surplus notes (or other hybrid instruments being given equity credit) are amortized beginning in year 10 prior to maturity or potential call by the holder at 20% per year. As a result, by year five prior to maturity, there is no equity credit for these instruments. EVALUATION OF ASSET RISKS Standard & Poor's looks at the quality of an insurer's investment portfolio to establish a reasonable estimate of expected losses over a period of several years. The present value of these anticipated losses is charged against surplus, but Standard & Poor's will also adjust for any explicit statutory loss reserves that an insurer may already have set aside. Bonds. Charges for credit risks vary with the credit rating of the bond. Expected default losses are assumed to occur over 10 years and are present valued at an 8% discount rate starting in year two (no discount in year one). These gross charges are adjusted for an assumed 50% recovery rate. While the expected incidence of default that is used in the model for most rating classes agrees fairly well with recent experience, Standard & Poor's uses a conservative 9% incidence of default for `BBB' rated bonds. Standard & Poor's believes that recent history, during a benign economic period, is not indicative of the long-term risk associated with this rating category. Charges for collateralized bond obligations are based on the ratings of the tranches, provided the company retains less risk than it would by holding the underlying securities. Analytical judgment is used in determining appropriate charges for bonds of a parent or affiliate. In the absence of the information necessary to make this judgment, such bonds are assessed a risk charge of 100% of their carrying value. Capital adequacy ratio BELOW 100% 100%-124% 125%-149% 150%-174% 175% AND ABOVE Assessment of capital adequacy Vulnerable Adequate Good Excellent Superior Standard & Poor's model incorporates charges for interest rate risk associated with bonds, particularly mortgage-backed securities, but also including other negatively convex securities, such as callable corporates, asset-backed securities, and commercial mortgage-backed securities. Relative to a life insurer's positively convex liabilities, these negatively convex assets can and have created shortfalls that Standard & Poor's tries to capture in the capital model. The stress scenarios that Standard & Poor's uses in testing these securities depend on the level of interest rates at year end. Asset default/loss-risk factors BONDS RATING Exempt obligations 0% 0.0000 A or higher 1.15% gross charge 0.115% evenly over 10 years 0.0042 BBB 9%

gross charge 0.9% evenly over 10 years; 1.6% years 6-10 0.0326 BB 20% gross charge 2.4% years 1-5; 2% years 6-10 0.0752 B 35% gross charge 5% years 1-5; 2% years 6-10 0.1372 CCC 50% gross charge 8% years 1-5; 2% years 6-10 0.2018 In or near default 30% net charge 0.3000 Preferred stock Interest rate risk Commercial/farm mortgages Problem Performing experience adjustment factor = co. problem mortgage % divided by 14%. Min. exper. adj. factor 0.5. Insured mortgages In good standing 0.001 90 days overdue 0.002 Residential mortgages In good standing 0.005 90 days overdue 0.01 Due and unpaid taxes Common stock Nonaffiliated 0.15 Affiliated Parent: exclude 1.0 insurance subsidiary: consolidate all others: 100% (analyst may adjust) 1.0 Real estate Investment 0.18 foreclosed encumbrances 0.15 Schedule BA bonds,preferred,or common use the factor for the asset category Sch. BA mortgages and real estate 0.20 Other Sch. BA assets 0.30 Other Assets Surplus in nonguaranteed separate accounts Assets in separate accounts backing guaranteed separate accounts: pro-forma treatment for assets as if in general account,depending on nature of guarantee Cash,short-term investments,nongovernment money market funds not qualifying for Sch. DA treatment premium notes; collateral loans; write-ins net reinsurance recoverable noncontrolled assets 0.01 Off-balance-sheet items Contingent liabilities (e.g.,bond guarantees,guarantees for MIPs) Long-term leases (present value,discounted at 8%) 0.05 Asset size factors: Multiply asset charges by asset size factor (min. asset size factor = 1): Size factor = Total weighted dollar amount divided by total invested assets. Size factor = [(1st $100 million inv. assets x 2.5)+(next $100 million x 1.5)+(over $200 million 0.8)]/[total inv. Assets]. Commercial and agricultural mortgages. Separate charges are applied to performing and problem loans. The factor for performing commercial and agricultural mortgages is 0.02 times (x) an experience adjustment factor, but the minimum factor to be applied to performing mortgages is 0.01x regardless of experience. The experience adjustment factor is the ratio of the company's problem mortgages to the industry average and is applicable only when the company has a seasoned portfolio of mortgage investments. The factor for performing commercial and agricultural mortgages was derived as an estimate of the present value of the incidence of default, offset by expected recoveries. Problem mortgages include foreclosed, in process of foreclosure, 30 days overdue, and restructured or modified. A watchlist initially totaling the larger of the company watchlist or 33% of "actual" problem mortgages is calculated as a starting point, then adjusted as necessary to reflect individual portfolio strengths or weaknesses. A separate charge is applied to actual problem loans plus the watchlist: a 6% annual charge applied for three years and present valued at an 8% discount rate starting in year two (no discount in year one). Mortgage data is extracted from each insurer's response to Standard & Poor's periodic real estate and mortgage questionnaire. Standard & Poor's year-end 1995 data for companies with interactive claims-paying ability ratings indicates that problem mortgages (not including any watchlist) represented approximately 14% of the mortgage portfolio. However, this does not account for the recent increased aggressive issuance of mortgages by insurers following a period of relatively conservative mortgage lending. Prospectively, the mortgages being issued by insurers today may well be carrying inherent default rates that will be closer to the 18% rate, which prevailed a few years ago. The 2% factor that Standard & Poor's has adopted reflects a conservative assumption that over the long term, problem mortgages will be 18% of the average company's portfolio. Similarly, while the average watchlist for companies with interactive claims-paying ability ratings was approximately 17% of problem mortgages at year-end 1995, Standard & Poor's believes that 33% would more accurately reflect what watchlist mortgages will be over the long term. Single issuer concentration* PERCENTAGE OF TAC FACTOR (MAX. TOTAL CHARGE 1.0) 10%-25% (15%-25%) 0.20 + base asset factor 26%-50% 0.40 + base 51%-75% 0.60 + base 76%-100% 0.80 + base Over 100% 1.00 *Graded factors are applied to concentrations above 10% of total adjusted capital (15% if asset is investment-grade bond). Combine all investments in a single issuer. TAC--Total adjusted capital. Preferred stock. Preferred stocks are treated similarly to bonds except that no recovery is expected in the event of default. Equity assets. Standard & Poor's analysis of stock market movements indicates that a 15% risk factor is appropriate for unaffiliated common stock holdings. This represents one standard deviation in the S&P; 500 Stock Index year-to-year change as calculated since 1945. Affiliated common stock. Common stock of a parent is assessed a 100% charge. Insurance subsidiaries are analyzed to determine whether they are strategically important; if so, their assets and liabilities are consolidated into the parent company capital model. When such risk charges are assessed, the 15% factor for common stocks does not apply, full equity credit is given for the stock of the affiliate, and adjustments to the parent's total adjusted capital are made to reflect the subsidiaries' AVR, policyholder dividend liability, and so on. The treatment of affiliates deemed nonstrategically important involves a `C-1' charge in an amount representing the capital deemed necessary for their rating, if a stand-alone rating exists or at the `BBB' level where it does not. The analyst will consult with other departments within Standard & Poor's to determine the appropriate capitalization levels for noninsurance subsidiaries. Real estate. Standard & Poor's has chosen to apply an 18% risk factor to this asset class, reflecting Standard & Poor's opinion that this asset class on average presents greater risk than common stocks. Schedule BA. The risk charges for this category reflect the range of asset types in this schedule. Surplus in nonguaranteed separate accounts. This item is assessed a 10% charge; the factor may be adjusted by Standard & Poor's to reflect the actual risk of the underlying assets. Separate accounts with guarantees. The charges Standard & Poor's uses depend on the type of guarantee and the nature of the underlying assets, and should correspond to the charge that would be made if these liabilities were in the general account. Concentration risk. All assets with credit risk associated with a single issuer are aggregated for the purpose of assessing concentration risk. Graded charges are assessed when single issuer concentrations exceed 15% of total adjusted capital for investment-grade bonds or 10% for other types of assets. Size factor. Standard & Poor's incorporates a "size" factor, based on total invested assets, which is multiplied against the total asset default risk charge for the insurer, subject to a minimum level of 1x, meaning that the largest insurers would still be subject to the full asset charges determined by Standard & Poor's. Health Insurance--Liability Risk Factors Individual morbidity USUAL AND CUSTOMARY MAJOR MEDICAL AND HOSPITAL EARNED PREMIUM FIRST $25 MILLION 0.25 Earned premium over $25 million 0.15 Medicare Supp.,dental,and other limited benefits anticipating rate increases Earned premium 0.12 Hospital indemnity,AD&D;,and other limited benefits not anticipating rate increases Earned premium 0.08 Noncancelable disability income Earned premium first $50 million 0.35 Earned premium over $50 million 0.15 Other disability income or long-term care Earned premium first $50 million 0.25 Earned premium over $50 million 0.15 Group and credit morbidity (based on earned premium or premium equivalent) Insured major medical 0.17 Minimum premium 0.17 Retrospectively experience-rated major medical 0.10 Stop loss 0.33 Administrative-services only (premium equivalent) 0.02 Medicare supp.,dental,and other limited benefits anticipating rate increases 0.12 Hospital indemnity,AD&D;,and other limited benefits not anticipating rate increases 0.08 Disability income or long-term care Earned premium first $50 million 0.25 Earned premium over $50 million 0.15 Claim reserves Exhibit 9 individual and group and credit claim reserves 0.05 EVALUATION OF LIABILITY RISKS The factors reflect Standard & Poor's assumptions about the threshold level of capital necessary to absorb in aggregate mortality, morbidity, lapsation, expense, and interest rate mismatch risks for securely rated companies. Life and health. For the most part, Standard & Poor's evaluation of `C-2' risks (mortality, morbidity, expense, persistency, and other pricing risks) is similar to the NAIC's approach, although most of Standard & Poor's factors are more conservative. No credit is applied for the premium stabilization reserve. For companies that assume life reinsurance, Standard & Poor's generally applies a surcharge of between 25% and 50% of the standard applicable factors, reflecting Standard & Poor's opinion that the reinsurer has less control over the risk than the issuing company. Insurance risk (C-2) LIFE INSURANCE NET AMOUNT AT RISK INDIVIDUALANDINDUSTRIAL GROUP ANDCREDIT First $500 million 0.0020 0.0016 Next $4,500 million 0.0013 0.0011 Next $20,000 million 0.0010 0.0008 Over $25,000 million 0.0008 0.0007 Nonguaranteed separate account liabilities Factor First $5 billion of reserves 0.0025 Over $5 billion of reserves 0.0010 Annuities. Annuity lines are considered either low, medium, or high risk and are assessed charges of 1%, 2%, and 3%, respectively. The medium-risk category includes annuity reserves with surrender charges. Standard & Poor's assumption is that the surrender charges on an insurer's block of annuities are fairly evenly distributed among the standard range for surrender charges. Model adjustments may be appropriate when this assumption is not valid. Standard & Poor's views annuity reserves not withdrawable, which include many guaranteed investment contracts (GICs), as medium-risk reserves. Short-term GICs are also viewed as medium-risk reserves. The high-risk category includes structured settlements and single premium immediate annuities, which are often long-tailed liabilities that can present difficult asset/liability management challenges. Standard & Poor's capital model does not include any reduction in its risk factors, based on the company having an unqualified actuarial opinion on the appropriateness of the asset/liability management process. GENERAL BUSINESS RISK FACTOR The model incorporates a charge for general business risk, which is based on the company's exposure to state guaranty fund assessments. Standard & Poor's measurement of this exposure is based on premium information reported in the annual statutory statement, mirroring the NAIC's approach. ADJUSTMENTS TO THE MODEL Standard & Poor's capital adequacy model is designed to create a reasonably consistent "first crack" approach to measuring capital adequacy for insurers. Still, results are primarily designed to be 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 include: The ability of a company to internally generate capital and self-fund growth through statutory earnings. All else being equal, Standard & Poor's views companies with long, consistent track records of good earnings as having a stronger capacity for reliable surplus development than companies with more volatile performance. Standard & Poor's also takes into consideration an insurer's prospective growth plans in conjunction with management's commitment to maintaining or enhancing surplus adequacy, or running a leaner capital structure over time. Interest-rate risk (C-3) Factors LOW-RISK CATEGORY FACTOR Life insurance reserves net of reinsurance and policy loans 0.005 Annuity reserves with market value adjustment (crediting rate guaranteed for up to 1 year) 0.01 Medium-risk category Factor Annuity reserves not withdrawable (excluding structured settlements) 0.020 Annuity reserves with surrender charges 0.020 Exhibit 10 reserves not captured elsewhere 0.020 GICs or annuity reserves with market value adj. and crediting rate guaranteed for over one year 0.020 High-risk category Factor Annuity reserves with no adjustments 0.030 Structured settlements 0.030 SPIAs (such as pension closeouts) 0.030 Separate accounts with guarantees: pro forma treatment as if in general account,factors applied will depend on the nature of the guarantee. GIC Guaranted investment contract. Capital needs of a parent, affiliate, or subsidiaries. Standard & Poor's factors in potential calls on capital by affiliates that may look to the rated entity for future capital support or a parent's potentially increasingly aggressive appetite for dividends. Conversely, the ability of a parent, subsidiary, or affiliate to be a source of future surplus support may have a positive impact on how Standard & Poor's views an insurer's capital strength. Quality of asset/liability management techniques. Standard & Poor's views companies willing to accept incremental risk less favorably than those adhering to more prudent practices. Reinsurance usage. The amount of reinsurance used to support aggressive growth and reported capital strength, expected timing of treaty recapture, and quality of assuming reinsurers are all factored into capital adequacy. Other contingent liabilities. Bond guarantees or similar contingent liabilities that may warrant a charge against capital are also taken into account. Business risk factors (C-4) Premiums subject to guaranty fund assessment FACTOR Life and annuity premiums subject to guaranty fund assessment 0.020 Health premiums subject to guaranty fund assessment 0.005 While considerable attention is focused on risk-based capital ratios, Standard & Poor's assessment of capital adequacy is only one of many factors used in arriving at a financial strength rating for a company. Standard & Poor's rating process will continue to be predicated on the belief that capital adequacy ratios are not a substitute for broad-based analysis of insurer credit quality. Strength or weakness in other key areas, such as a company's management and corporate strategy, business profile, operating performance, liquidity, and financial flexibility, can more than offset relative strength or weakness in capital adequacy.