CAPITALIZATION OF PROPERTY/CASUALTY INSURANCE COMPANIES

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BIOGRAPHY:

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ABSTRACT

To protect policyholders, healthy insurers need to have adequate loss reserves, strong capital bases and the ongoing ability to generate sufficient earnings to protect and build overall capitalization. Risks to capital can emanate from many different areas of a property/casualty insurer's operating environment, including insurance liabilities, off balance sheet liabilities, invested and other asset quality, financial risks and general business risk. These risks must be balanced against the insurer's resources available to pay claims. This paper identifies and considers the risks to and sources of property/casualty insurers' capitalization, discussing the method used by Standard & Poor's (S&P) to measure appropriate amounts of capital to support these enterprises at various levels of financial strength.

Both quantitative and qualitative measures are part of the evaluation. Capital risks are identified and allocated according to the particular characteristics of particular lines of business or asset categories. The end result reflects the S&P analysts' subjective judgment as to how much weight is applied to different categories of risk for the particular situation involved. An example of the end result of the capital measurement process for a hypothetical insurance company is included.

CAPITALIZATION OF PROPERTY/CASUALTY INSURANCE COMPANIES

Insurance companies need resources to enable them to pay for claims covered under their policies. To protect policyholders, healthy companies need to have adequate loss reserves, strong capital bases and the ongoing ability to generate sufficient earnings to protect and build overall capitalization. The business of insurance is built upon the assumption of risk today by an insurer for claims which may occur in the future. Insurers attempt to set their rates high enough so premiums written on a particular book of business today will be sufficient to pay off all future claims and also yield a reasonable profit to the company for taking on the risk. In order to accomplish this, companies must estimate a number of different things, including the total amount of projected future losses and loss adjustment expenses, the timing of the payouts, the investment yields available today and in the future, and the likelihood of catastrophic or noncatastrophic events which might affect future losses. If they do this well, they will be able to generate capital through their operations, which, if retained, will enhance the capital bases of the companies.

While the ability to generate capital is an important part of a company's overall profile, it is only one of many risks affecting an insurance company's capitalization. Capital risks can emanate from many different areas, including 1) insurance liabilities such as underwriting risks and reserving policies, 2) other liabilities, including off balance sheet contingencies, 3) invested and other asset quality, 4) financial risks

such as leverage and asset liability management, and/or 5) general business risk, including changes in the political or social environment. Capital resources available to pay future claims include not only what accountants refer to as the capital base (policyholders' surplus), but also various types of reserves for losses, asset valuations, and reinsurance recoverables.

This paper will identify and discuss the risks to property/casualty insurers' capitalization, excluding the direct impact of a company's ability to generate capital through retained earnings. It also describes the method used by Standard & Poor's to measure the appropriate amounts of capital to support such enterprises at various levels of financial strength. The approach is consistent with "risk-based" capital modeling in that capital measurement is tied to different types of capital risks depending upon the characteristics of particular lines of business or asset categories. In the end, however, the appropriate level of capitalization for any particular company is a function of a group of S&P analysts imposing their subjective judgment as to how much weight is applied to different categories of risk for the particular situation.

WHAT IS CAPITAL?

In order to understand how well a company is capitalized, it is first necessary to review what is considered capital. Two different companies may have similar amounts of numerical capital, insurance premiums and reserves, and may write exactly the same forms of insurance, but have very

different capital positions. Standard & Poor's begins its definition of the capital base of a property/casualty insurer with the amount of policyholders' surplus shown in the statutory financial statement (page 3, line 26) ("statutory surplus"). However, in order to gauge the appropriate amount of capital available to support certain risks, this number must be adjusted to account for items which are overemphasized or underemphasized in arriving at statutory surplus ("Adjusted Surplus").

One of the most important adjustments is accounting for investments in affiliates. To the extent that such investments are in enterprises that require significant capital, such as other insurance affiliates or financial institutions, a downward adjustment is made to reflect the amount of capital "used" by these affiliates. The carrying value of an affiliate might represent the amount of the adjustment if the affiliate is considered appropriately capitalized. For those affiliates which are overcapitalized or undercapitalized, or where the carrying value is not a close reflection of the current equity of the company, further adjustments are necessary. Those affiliates that are listed as common stock assets, but are merely legal entities which invest in other types of assets on behalf of the insurer and have no other businesses, would most likely be treated as direct investments in underlying assets. Exhibit 1 shows three examples of adjustments to surplus made for hypothetical insurance groups which own affiliates.

Moreover, surplus is adjusted upwards in some cases for hidden asset values which are not already reflected in the calculation of statutory

surplus. An example of this would be in common stock values under certain European accounting practices, where companies are required to understate value significantly. However, asset values may also be adjusted either upward or downward for many U.S. insurers, if the balance sheet significantly understates or overstates current asset values.

In addition to an adjustment for current asset values, S&P makes an adjustment to surplus for potential credit losses on bonds and mortgages. Credit risks on invested assets reflect only the amount of losses related to the underlying entity's inability to pay on its obligations. Market risks, on the other hand, reflect the volatility of the price or market value of an asset, which is impacted as much by interest rates, economic cycles, and psychological factors as by pure credit risk. Potential market losses on all types of invested assets are also measured to view the potential impact of market changes on surplus, but are not reflected as a reduction of surplus in S&P's analysis, and are discussed more fully in the Invested and Other Assets section. The following asset quality charges represent deductions from capital for expected credit losses:

Bonds

Note: All charges are shown before an anticipated 33% recovery rate after default, and are discounted to present value at a rate of 8%. No adjustment is made for taxes.

'BBB' rated, or NAIC category 2: 4% ultimate default rate spread

evenly over ten years, i.e. 0.4% annually;

'BB' rated, or NAIC category 3: 15% ultimate default rate spread at a 2.5% annual rate over the first five years, and at a 0.5% annual rate for years six through ten;

'B' rated, or NAIC category 4: 30% ultimate default rate spread at a 5% annual rate over the first five years, and at a 1% annual rate for years six through ten;

'C' range, or NAIC category 5: 50% ultimate default rate spread at an 8% annual rate over the first five years, and at a 2% annual rate for years six through ten;

'D' rated, or NAIC category 6: are expected to be carried at market or realizable value, and thus no incremental adjustment is made for these bonds.

Mortgages

S&P calculates a default loss charge for the mortgage portfolio that anticipates a loss of 6% of problem mortgages plus watchlist loans annually for a three year period, discounted at a rate of 8%. Problem mortgages are defined as the sum of mortgage loans delinquent for more than thirty days, loans in the process of foreclosure, loans foreclosed and transferred to real estate owned, and loans with

modified or restructured terms. In addition, S&P adds a "watchlist", which represents 50% of the problem mortgages defined above. A further charge is applied for performing mortgage loans that relates a company's problem mortgages to the industry average. This is calculated as 1% times the specific company's percent of problem mortgages divided by the industry average percent of problem mortgages.

Also, to the extent that a company carries any goodwill or other intangible asset on its statutory balance sheet, these would also be excluded from surplus.

Other adjustments include the amount by which loss reserves are either deficient (a downward adjustment) or redundant (an upward adjustment) according to S&P's internal analyses. This includes any effects of discounting reserves. Also, the amount of reinsurance currently deemed uncollectible is viewed as a reduction of surplus, net of credit for funds held under reinsurance treaties for this specific set of uncollectibles and reinsurance recoverable reserves. Funds held by the ceding company represent cash balances held as an offset to the liabilities ceded, and the provision for reinsurance is a reserve for potential losses from uncollectible reinsurance. These are available to offset reinsurance recoverable risk. However, because it is not possible to identify how much of the amounts available under letters of credit represent funds held (which are already considered an offset to risk), and many states do not give reinsurance credit for letters of credit, S&P does not adjust the

reinsurance recoverable balances by the amounts of letters of credit available.

Finally, asset valuation reserves for underperforming assets are considered a capital resource, and would be added to the capital base to determine capital adequacy if companies have set these reserves up. After taking all these items into account, S&P arrives at "Adjusted Surplus".

RISK-BASED CAPITAL MEASURES

As discussed earlier, S&P considers capital risks stemming from five broad elements in assessing the adequacy of a company's capital base:

1. Insurance Liabilities
2. Other Liabilities
3. Invested and Other Assets
4. Financial Risks
5. General Business Conditions.

Each of these risks will be discussed in further detail, and capital measurements will be assigned for many of them. However, it is important to keep in mind that these measurements are only the beginning of S&P's process and not the final evaluation. In the end, these allocations serve only as a general guideline, and further subjective evaluations and/or adjustments are still required to assess capitalization levels.

INSURANCE LIABILITIES

S&P looks closely at three types of insurance liabilities to assess risk: operating risks (risks stemming from the every day business of writing insurance), reserve risks (risks stemming from a company's reserving policies and the adequacy of the reserves over time), and reinsurance risks (risks stemming from reinsurance relationships). In doing so, it is necessary to recognize that within the spectrum of property/casualty insurance coverages there lies a vast differential between the nature of the liabilities. For purposes of assigning appropriate capital levels to companies, S&P believes it is necessary first to understand what types of liabilities a company is assuming.

There are thirty lines of insurance listed in the statutory statement. S&P reviews the risk characteristics and loss payout tail of each of these thirty lines and makes assumptions about them which are used in the capital measurement process. In order to illustrate this, for purposes of this discussion paper only, these lines will be reduced to three broad categories. Short tailed lines, defined herein as those where nearly all claims are generally paid out within two or three years, include fire, allied lines, ocean marine, inland marine, group accident and health, credit accident and health, other accident and health, auto physical damage, surety, glass, burglary and theft, boiler and machinery, and credit. Medium tailed lines, or those where nearly all claims are paid out within eight years, but where a substantial amount of claims remain to be paid out after three years (or other factor making the business riskier

than a short tailed line), include farmowners, homeowners and commercial multiple peril, earthquake, auto liability, aircraft, fidelity and international. Long tailed lines are those where a substantial amount or number of claims are still being paid out more than eight years after the occurrence. Long tailed lines for purposes of this discussion paper include medical malpractice, financial guaranty, workers compensation, other liability, and reinsurance. See Exhibit 2.

Operating Risks

S&P begins to measure operating risks through an examination of the relationship between premiums written and Adjusted Surplus ("Operating Leverage"). This ratio assesses a company's ongoing ability to underwrite new insurance policies in relation to surplus and its exposure to pricing or other underwriting errors which might affect its ability to generate sufficient funds to pay for future claims. The ratio is calculated three different ways: based upon Direct Premiums Written ("DPW") to Adjusted Surplus ("AS"), based upon Gross Written Premiums ("GPW", or DWP plus reinsurance assumed) to AS, and based upon Net Premiums Written ("NPW", or GWP minus reinsurance ceded premiums)to AS. Each of these ratios are calculated for each of the lines in the statutory statement. As noted earlier, for illustrative purposes, each line is assigned to one of three categories. The percentage of premiums written in each line (and here, in each of the three categories) in relation to total premiums written is also calculated.

DPW as a percent of AS reflects the leveraging of direct business being written to the capital base, and is often the best measure of how much a company is willing to leverage underwriting risks which are truly within a company's control. GPW as a percent of AS measures a company's leveraging of its book after assumed reinsurance but before ceded reinsurance. NPW as a percent of AS reflects the leveraging of the business net of ceded reinsurance (which S&P assesses separately), and as such theoretically represents a more complete analysis. Often these ratios are very similar. However, they may be far apart, particularly for some industry segments which typically either assume or cede large amounts of reinsurance. S&P examines all three ratios and chooses which one is most appropriate to measure operating leverage for a given company. This process is based on S&P analysts imposing their subjective judgment on a particular situation.

S&P has assigned appropriate Operating Leverage Ratios for different rating levels of capitalization for each line of business, corresponding to its claims paying ability rating definitions. Each company's book is examined by line of business, and weighted average standard leverage ratios are calculated using the company's specific line distribution. It is important to note that this ratio reflects only one component of overall capitalization, and that capitalization is only one factor, albeit an important one, in a company's overall creditworthiness.

The following table illustrates S&P's general approach to Operating Leverage. While these values represent target operating leverage for each

of the four rating categories, they do not necessarily reflect actual ranges for rated companies. No single number is indicative of a rating. S&P analysts make subjective judgments of all of the factors outlined in this paper needs before ratings are assigned. This is true of all the factors mentioned in this paper. A copy of S&P's claims paying ability ratings definitions is attached for reference.

Table 1
OPERATING LEVERAGE
Premiums Written/Adjusted Surplus

	Rating Category			
Tail Category	AAA	AA	A	BBB
Short	2.25x	2.50x	3.00x	3.50x
Medium	1.50x	2.00x	2.50x	3.00x
Long	1.00x	1.50x	2.00x	2.50x

To determine how conservative or aggressive an individual company's operating leverage is, its overall operating leverage is compared to the weighted rating category average. Using Table 1 above, if a company's business mix were 60% short tailed lines, 15% medium tailed lines, and 25% long tailed lines, the maximum operating leverage consistent with a 'AAA' rating level of capitalization would be 1.62x; for 'AA' capitalization, it would be 2.08x; for 'A', 2.60x; and for 'BBB', 3.12x. Thus, if this company had operating leverage of 2.00x,it would be somewhere in between the 'AAA' and 'AA' category for operating leverage. See Table 1A below.

Table 1A
OPERATING LEVERAGE — XYZ INSURANCE CO.
Premiums Written/Adjusted Surplus

Tail Category	Weighted Average	Rating Category AAA	AA	A	BBB
Short	60%	2.25x	2.50x	3.00x	3.50x
Medium	15%	1.50x	2.00x	2.50x	3.00x
Long	25%	1.00x	1.50x	2.00x	2.50x
Weighted Average		1.62x	2.08x	2.60x	3.12x

Reserve Risks

As noted previously, S&P makes an adjustment to surplus to reflect its opinion of whether a company's reserves are adequate, deficient or redundant in the current period. This adjustment reflects the impact of adjustments that are expected to be made in future time periods which will ultimately impact surplus through additional or lower earnings, which contribute to surplus growth or shrinkage. However, given the difficulties in setting accurate loss reserves, and the changing nature of liabilities over time, it is still necessary to measure the potential impact on surplus of the leveraging of loss reserves to surplus. For example, if reserves are equal to five times the amount of surplus, and they are too low by just 5%, this would mean a 25% reduction in surplus. If the current reserve level proves to be 10% deficient, under this scenario, all other things being equal, surplus would be reduced by 50%. Thus the lower the reserve leverage, the less risk to the capital base.

Nonetheless, it may be quite appropriate to have high reserve levels relative to surplus, particularly for long tailed lines where most claims will not be paid for a long time and high reserving is a conservative strategy. In this manner, operating leverage and reserve leverage should be viewed in tandem, since it is often appropriate for long tailed lines to have high reserve leverage, but inappropriate to have high operating leverage, because the cost of underwriting mistakes are so much more far-reaching in a long tailed line. Conversely, it is usually acceptable for short tailed lines to have higher operating leverage, but it is normally accompanied by lower reserve leverage, since the underwriting risks will be revealed and accounted for in a relatively short time frame, and there is no need for a huge buildup of reserves. Also, a company which consciously overreserves will show much higher reserve leverage than a company which does not overreserve. This attribute is viewed as an indicator of financial strength, not weakness, and is taken into account as a subjective factor.

S&P measures reserve leverage by calculating loss reserves in relation to Adjusted Surplus ("Reserve Leverage"). Similar to Operating Leverage, Reserve Leverage is calculated by line of business and for illustrative purposes in this discussion paper is assigned to one of three categories, and the percentage of loss reserves in each of the three categories is calculated as a percentage of the total. Table 2 shows target leverage ratios for each of four rating categories, but like operating leverage, does not necessarily reflect actual ranges for rated companies.

Table 2
RESERVE LEVERAGE
Incurred Losses Plus Loss Adjustment Expenses/Adjusted Surplus

	Rating Category			
Tail Category	AAA	AA	A	BBB
Short	2.00x	2.50x	3.00x	3.50x
Medium	3.00x	3.50x	4.00x	4.50x
Long	4.00x	5.00x	6.00x	7.00x

These risks are weighted by line in the same fashion as Operating Leverage. Using Table 2 above, if a company's business mix were 60% short tailed lines, 15% medium tailed lines, and 25% long tailed lines, the maximum reserve leverage consistent with a 'AAA' rating level of capitalization would be 2.42x; for 'AA' capitalization, it would be 3.00x; for 'A', 3.58x; and for 'BBB', 4.22x. Thus, if this company had reserve leverage of 2.50x,it would be somewhere in between the 'AAA' and 'AA' category for reserve leverage. See Table 2A below.

Table 2A
RESERVE LEVERAGE
Loss Reserves/Adjusted Surplus

		Rating Category			
Tail Category	Weighted Average	AAA	AA	A	BBB
Short	60%	2.00x	2.50x	3.00x	3.50x
Medium	15%	3.00x	3.50x	4.00x	4.50x
Long	25%	4.00x	5.00x	6.00x	7.00x
Weighted Average		2.42x	3.00x	3.58x	4.22x

Reinsurance Risks

The third category of insurance liability risks is the collectability of ceded liabilities, or reinsurance recoverables. These recoverables represent the amounts due from reinsurers who assumed business from a primary or ceding company for claims incurred by the primary underwriter of an insurance policy. The total recoverable consists of five components: 1) amounts due for losses paid by the ceding company (paid recoverables); 2) outstanding losses that have been reported but remain unpaid by the ceding company (recoverables for unpaid losses); 3) the estimated unearned portion of ceded premiums (recoverable for unearned premiums); 4) ceded losses for claims which have been incurred but not reported (IBNR recoverables), and 5) the portion of allocated loss adjustment expenses (LAE) ceded to the reinsurer. However, S&P adjusts this recoverable to eliminate balances due from affiliates, pools and associations ("Adjusted Reinsurance Recoverable Balance"). Reinsurance recoverable balances due from affiliates are excluded because S&P believes that companies owned or managed by the ceding company are unlikely to default, particularly since such default would jeopardize the primary writer's industry reputation and surplus position. Similarly, recoverables due from pools and associations are viewed as ultimately collectible because member companies often bear both joint and several liability for obligations. Thus, should one member become insolvent, its liabilities from the pool or association are typically redistributed among

the remaining companies and eventually paid.

One measure of a company's reinsurance exposure is surplus aid — the amount by which a company's capital base would be reduced if reinsurance ceded to nonaffiliates were canceled. This measure estimates the amount of unearned commissions on reinsurance ceded to nonaffiliates. When compared to surplus, this ratio reflects a company's relative reliance on nonaffiliated companies as a source of capital. A second measure of a company's reinsurance exposure is its net retentions of business in relation to its Adjusted Surplus. This ratio demonstrates the number of retained losses that a company can have before it loses its surplus base. If retentions are too high relative to surplus, then small companies in particular may be especially susceptible to surplus changes.

Another measure of reinsurance exposure is the relationship between unsecured recoverables and surplus. This measures the impact on surplus of the company's future exposure to potentially uncollectible reinsurance. In order to quantify a company's reinsurance recoverable leverage, S&P modifies its Adjusted Reinsurance Recoverable Balance by multiplying it by the percentage of paid loss recoverables which are over 180 days past due. This factor is the starting point for a measurement of the overall quality of the reinsurance program as demonstrated by the aging of paid recoverables. Further adjustments may then be made to account for overall reinsurer credit quality and diversity. For example, if a review of Schedule F reveals that a generally high-quality

reinsurance program is in place with a preponderance of high-quality names and a well diversified list of reinsurers, the product is further reduced by a factor which can be up to or in excess of 50%. For lesser quality reinsurance programs, the product may be reduced by a lower percentage or not at all. After all these adjustments are made, the result is expressed as a ratio to Adjusted Surplus, and compared to maximum leverage ratios for several different rating categories, as shown in Table 3 below. This table does not necessarily represent values for companies with similar ratings, but is provided for illustrative purposes only.

Table 3
REINSURANCE RECOVERABLE LEVERAGE
Adjusted Reinsurance Recoverable Balances/Adjusted Surplus
(Percent)

Rating Category			
AAA	AA	A	BBB
50	75	100	125

For example, if a company has $50 million of Adjusted Reinsurance Recoverable Balances, with 20% of paid recoverables in excess of 180 days old on a high-quality reinsurance program (a judgmental factor of 50%), and adjusted surplus of $25 million, the amount of reinsurance recoverables at risk would equal 20% of surplus.

OTHER LIABILITIES

Another source of risk to capital is contingent liabilities, which may

take several forms. Common contingent liabilities include a company's exposure to litigation pending against it, exposure resulting from employee and retiree benefits programs, and potential future reserving requirements such as rate rollbacks under California's Proposition 103. In addition, some property/casualty insurers have financial guaranty exposure on their books, where premiums written are not a true reflection of underwriting risk.

Because of the unique nature of many contingent liabilities, measurements of a company's exposure to capital at certain rating levels are often performed on an ad hoc basis based upon S&P analysts imposing their subjective opinion upon a particular situation. However, certain exposures may be quantified.

Property/casualty companies are required to report the amount of financial guaranty exposure they have in the notes to the statutory statement and in the holding company's annual report. Risks are divided into four classes pursuant to the reporting requirements. Class 1 is municipal bond insurance, class 2, corporate bond insurance and guarantees of debt service on obligations having underlying security or collateral, class 3, corporate bond insurance and guarantees of debt service on obligations not having underlying security or collateral, and class 4, all other financial guarantees. The companies are required to report both maximum annual debt service exposure and total debt service exposure.

Because the majority of exposures written by multiline insurance companies have typically been tax-exempt Industrial Revenue Bonds or other types of special revenue issues, S&P's capital measurement for this line reflects this business mix. However, the measurement would be significantly different for a company writing predominantly general obligation type municipal issues. Also, companies guaranteeing or insuring issues with liquidity risk, such as those with put features or commercial paper programs, or of lower inherent credit quality, would have accordingly higher capital usage. Capital usage for financial guaranty exposures is expressed as a percent of maximum annual debt service. It should be noted that monoline bond insurers are assessed according to a similar methodology. However, S&P has more elaborate rating procedures for such companies which take into account the much more limited diversification of their business lines, different reserving requirements, and a very comprehensive review of the nature of the liabilities.

Pension obligations and retiree medical benefits are also analyzed for impact on the capital of the property/casualty insurer. While these obligations are typically "offered" at the holding company level, they can stress the capital of the operating subsidiaries by requiring these subsidiaries to support them. The first step in analyzing pension obligations is to quantify pension obligations and plan assets. Analysis centers on the spread between the plan's assumed rate of return on investments and the discount rate, and the rate of return versus assumed compensation growth rate, viewed in the context of industry norms. When

the projected benefit obligation (PBO) exceeds plan assets, the difference is considered a reduction of surplus, net of any tax considerations arising from recognition of the pension liabilities.

S&P also focusses on the mandatory funding obligation. This discounted cash flow stream may be substituted as a reduction of surplus in lieu of the excess of the PBO over the plan assets, described above, subject to subjective judgment.

To assess the impact of retiree medical liabilities on capital, S&P focuses on cash outlays, viewing them as a component of cost position. A company burdened with particularly heavy retiree medical costs is penalized in its competitive assessment. By calculating ratios of a company's cash outlays for retiree medical liabilities to revenues, operating earnings, and operating cash flow for several years, and considering the trend in these ratios, one can get a sense of the problem's magnitude and compare a company with its industry peers. The ratio of retirees to active employees is also a meaningful indicator. Companies with a ratio of greater than 0.5 to 1 typically have a heavy burden. Where retiree medical obligations do represent a very substantial use of cash, S&P seeks information about a company's work force and retiree population makeup, insurance plan characteristics, and cost-cutting strategies to gain a better understanding of the likely direction of future cash outlays.

INVESTED AND OTHER ASSETS

S&P's adjustments to surplus resulting from expected credit risk have already been discussed. This section focusses on interest rate and market risk from invested and other assets, including the vulnerability of investment values to changes in market conditions, interest rates, and credit deterioration. Any significant changes in investment values will have an impact on capital. Property/casualty insurers have traditionally been conservative investors, investing predominantly in high quality fixed income securities. However, the search for higher long term and short term returns, and the increased availability of new types of financial instruments, has led some companies to adopt less conservative investment postures. Accordingly, a number of property/casualty companies have significant amounts of investments in common and preferred stocks, noninvestment grade and/or lower investment grade bonds, real estate, mortgages, and derivative financial instruments. These asset categories have substantially more risk because they generally have lower credit quality, less market liquidity, and are more vulnerable to changes in interest rates, economic cycles, and other economic indicators which affect asset values.

Bonds

High grade fixed income securities (those rated in the A, AA and AAA categories) are among the safest investments available, since the risk of

default is extremely low, and these securities tend to fluctuate least in price in relation to interest rate changes. Moreover, market liquidity is extremely good. Companies holding predominantly highly rated bonds therefore have strong capitalization from the invested asset perspective.

Lower investment grade bonds (those in the BBB category) are also safe investments, but have higher potential default and more volatile market characteristics. Lower investment grade bonds are defined by S&P as those public bonds appearing in category 2 of Schedule D of the statutory statement.

High yield bonds, defined as those with a credit rating below BBB- or an assessment by the NAIC of classes 3, 4, 5, and 6, have significantly higher default rates, are significantly more vulnerable to changes in interest rates and economic cycles, and have far less market liquidity than investment grade securities. Accordingly, S&P believes that it is not prudent for companies desiring strong capitalization to have significant exposure to these types of securities. In measuring a company's exposure to high yield bonds, S&P includes all public and private bonds appearing in Categories 3, 4, 5 and 6 in Schedule D of the statutory statement.

TABLE 4
DESCRIPTION OF BOND CLASSES

NAIC Class	S&P Rating	Description
1	AAA, AA, A	High investment grade
2	BBB	Low investment grade
3	BB	Noninvestment grade
4	B	Noninvestment grade
5	CCC, CC, C	Noninvestment grade
6	D	In default

For purposes of measuring appropriate capitalization for the market risk of these types of investments, S&P assumes that a company has a portfolio of high yield bonds consisting predominantly of BB and B rated securities, with less than 25% of the portfolio rated below that level. Illustrative maximum levels of high yield bonds and lower investment grade bonds relative to Adjusted Surplus for different rating categories are listed in Table 5 below. These guidelines do not reflect actual ranges for rated companies. Moreover, further adjustments would be necessary for companies which have significantly higher or lower quality high yield bonds in their portfolio.

Equities

Sinking fund redeemable preferred stocks are considered fixed income securities, and are treated as bonds according to their rating.

Nonredeemable preferred stocks and common stocks have much higher market

volatility than both investment grade and noninvestment grade bonds. Market price reflects a combination of factors, including economic cycles, a company's short term and long term expectations for earnings performance, the interest rate environment, as well as psychological factors related to appropriate company valuations. In addition to these inherently more volatile characteristics, investment strategy is also a function in the risk profile. Portfolios of diversified stocks are significantly less volatile than portfolios consisting of stocks in a single market sector. Portfolios that are traded frequently generally bear more market risk than those with a "buy and hold for the long term" strategy.

Equities are listed at market value in the statutory statement. As such, changes in their value flow through directly to surplus. The appropriate maximum amounts of equities held relative to Adjusted Surplus listed in Table 5 assume that the investing company holds a diversified portfolio of stocks for the long term. A downward adjustment in maximum leverage would be made for companies employing riskier investment strategies. Again, the values in Table 5 do not reflect actual ranges for rated companies.

Mortgages and Real Estate

Mortgages (both residential and commercial) have some characteristics of other fixed income securities in that they generate a predictable stream of income over a term certain. However, they cannot be sold in a market

for a known price on any given day, and most mortgages carry significantly higher credit risk and prepayment exposure than investment grade bonds. [Note: This is not the case with rated government insured or pooled mortgage securities, which are structured in a way to remove most of the credit risk and at times some of the prepayment risk. However, these are considered bonds.] Commercial mortgage loans are considered riskier than residential mortgage loans, since the market for commercial properties is less broad, the diversity of most commercial mortgage pools much lower because of the much higher average amount of each loan, and residential mortgages generally have recourse to the borrower whereas most commercial mortgages do not, and therefore depend to a much larger extent upon the inherent value in the property.

Real estate listed as an asset on the balance sheet of insurance companies often consists substantially of properties held under foreclosed mortgages held by the insurer, as well as property occupied by the company in the course of its operations. In assessing capital adequacy, S&P measures a property/casualty insurer's exposure to a) residential mortgages, and b) commercial mortgages and real estate other than that occupied by the company. For this purpose, S&P expects that a company's residential mortgage portfolio is well diversified geographically, and its commercial mortgage and real estate portfolio is well diversified both geographically and by property type. Downward adjustments in the amount of leverage deemed acceptable would be made for insurers not meeting this profile. Appropriate maximum levels of residential mortgages, commercial mortgages

and real estate relative to Adjusted Surplus for different rating categories are listed in Table 5 below, although they do not necessarily reflect actual ranges for rated companies.

Derivative Financial Instruments

These instruments include some of the latest innovations in financial technology, and include options, swaps, swaptions and other like derivatives, commodities trading, as well as derivatives of mortgage-backed securities, such as interest only and principal only mortgage-backed securities (IO's and PO's). They share common characteristics of being specifically targeted to a particular financial function or credit risk that often changes quickly in value from one day to the next, which make such endeavors significantly more risky than any of the asset types previously discussed. With some limited exceptions, data concerning a company's exposure to these instruments is not widely available through public sources. S&P reviews an insurer's exposure to these types of instruments through discussion with management of the scope and purpose of the program. For instance, a company's purchase of options which closely hedges its risks in its common stock portfolio is far more conservative than a similar purchase with a strategy of increasing total return. The ultimate evaluation remains a subjective one, since it is very difficult to track the overall exposure to these types of instruments on a timely basis.

Underperforming or Problem Assets

In addition to reviewing the overall risk of each category of assets, S&P measures the potential impact on surplus of a company's current portfolio of specific problem bonds and mortgages. Problem bonds include bonds which are delinquent more than 30 days, not fully paying, or on a watch list. Problem mortgages include those delinquent more than 30 days, in process of foreclosure, foreclosed, modified, or on a watchlist. Total problem bonds and mortgage represent a significant risk to capital, since these are the most likely assets to devalue substantially, resulting in a direct hit to capital. Accordingly, S&P views this as the single most important indicator of asset volatility for a property/casualty insurer. For example, an insurer owning a substantial amount of the outstanding debt or bonds of companies in danger of bankruptcy would be in danger of losing large amounts of capital. Appropriate levels of total problem assets in relation to Adjusted Surplus are listed for illustrative purposes in Table 5 below. This ratio measures the volatility of a company's capital base to known or existing asset quality problems.

In addition to measuring total problem assets, S&P measures the insurer's total exposure to more volatile types of assets. Thus, a company which invests in high yield bonds, equities and mortgages where each category accounts for 25% of its surplus (total of 75%) may have more risk than a company investing in 40% of its surplus in equities.

Table 5
INVESTED ASSET LEVERAGE
(Percent of Adjusted Surplus)

	Rating Category			
Asset Type	AAA	AA	A	BBB
High Risk Assets				
High Yield Bonds	0 - 10	11 - 20	21 - 30	31 - 40
Lower Inv. Grade Bonds	0 - 100	101 - 150	151 - 200	201 - 275
Equities	0 - 30	31 - 60	61 - 90	91 - 125
Residential Mortgages	0 - 75	76 - 100	101 - 125	126 - 150
Commercial Mortgages and Real Estate	0 - 15	16 - 30	31 - 60	61 - 100
Problem Assets	0 - 5	5 - 10	10 - 24	25 - 40

In addition to invested assets, S&P reviews the insurer's other asset categories to see if there is any measurable risk from these sources to capital. For example, agents' balances booked but deferred and not yet due, accrued retrospective premiums, and net investment income due and accrued, if large enough, could represent significant risks to capitalization.

FINANCIAL RISKS

The fourth broad set of risks to capital is financial risks, such as financial leverage and asset liability management. Most property/casualty insurers do not have debt on their own balance sheet, although some do. Many of those that don't, however, are owned by parents who have debt on their balance sheet, and they are indirectly required to service the parent's debt through dividend payments to the parent. Thus, financial

leverage at both the operating and the holding company, as well as coverage ratios and dividend payout trends, are important measures of capitalization.

S&P measures financial leverage by calculating the relationship between total debt to capital at both the parent and the operating subsidiary. In addition, where the parent does not have any other significant subsidiaries, the parental debt is consolidated with the operating company debt. If the parent does have other sources with which to service the debt, an appropriate portion of the parental debt may be allocated to the operating property/casualty subsidiary and consolidated with the operating company's debt. The ratio of operating company dividends paid to the parent as a percent of statutory net income, as well as pretax interest coverage, is also computed. The maximum allowable dividends which can be paid by a company without the permission of its regulator is measured against the debt service requirement as well. In addition, S&P considers the amount of other monetary outflows such as parent company shareholder dividend requirements. The following table is an example of ratios for four rating categories, but does not necessarily reflect actual ranges for rated companies:

Table 6
FINANCIAL RATIOS
(Percent)

	Rating Category			
	AAA	AA	A	BBB
Cons. debt/AS*	10	20	30	40
Pretax interest coverage	10	8	6	4
Dividend payout ratio**	30	40	50	60

*Total operating company debt plus total parent company debt divided by operating company adjusted surplus. If parent company debt is serviced by other operating entities, appropriate reduction may be made.
**Operating company dividends as a percent of statutory net income.

GENERAL BUSINESS CONDITIONS

Finally, the general business and operating environment is also an ongoing part of the measurement of the strength of a company's capital base. Political, social and economic changes can all affect both the losses and expenses of insurers. Policies are priced and written based upon a set of assumptions, and when those assumptions change significantly, they affect capital in a significant way. For example, most insurers did not anticipate or adequately price for the risks of environmental pollution liability when they wrote policies several decades ago. As a result, industry reserves for pollution-related claims from prior years have increased each year for the past several years in order to account for the higher losses.

The property/casualty insurance industry faces a number of challenges

today which could affect its future capitalization, including political and regulatory movements which could potentially limit the profitability of or further erode the adequacy of reserves for certain lines of business; a more litigious social environment; and the spiralling costs of legal defense and medical care, which greatly exceed the overall rate of inflation. S&P evaluates how companies approach these major issues and its evaluation of management's response to potential changes becomes a subjective part of the capitalization analysis.

CONCLUSION

The ultimate determination of the level of adequacy of capital of a property/casualty insurer is a function of the many different elements of risk discussed above. S&P performs the quantitative and qualitative analyses outlined earlier, assigning scores to the different subcategories of the capitalization analysis. These scores are then reviewed in total. They are not, however, uniformly weighted for the relative importance of each category and then totalled to arrive at an aggregate rating category or score. This is because the relative weighting of different measures of capital risks would change depending upon the unique characteristics of certain companies and industry segments. For example, while operating leverage is usually a very important factor in the analysis of overall capitalization, for a company which exclusively writes a long tail line such as medical malpractice, there is almost no amount of conservatism in operating leverage which would be able to compensate for a lack of

conservatism in reserve leverage. Instead, the risk based capital guidelines outlined in this paper are modified by subjective judgment in each case, so that different parts of the analysis are stressed according to what is most appropriate for each situation. In this way, a conclusion is made regarding a company's level of capitalization. This is only one part of the whole rating analysis, however, and the ultimate rating of any company may reflect overall capitalization levels which are higher or lower than the published rating.

EXHIBIT 1

(MIL. $)

COMPANY	NOMINAL SURPLUS	TOTAL AFFILIATED INVESTMENTS	LIFE SUBS	INVESTMENT VEHICLE SUBS	OTHER CAP* SUBS	TOTAL ADJUSTMENT	ADJUSTED SURPLUS
ABC	1,500	75	20	0	55	75	1,425
DEF	3,500	2,300	600	0	1,700	2,300	1,200
GHI	1,500	800	0	550	150	150	1,350

EXHIBIT 2

INSURANCE UNDERWRITING RISKS

Lines per statutory blank:	Risk Classification		
	Short	Medium	Long
Fire	X		
Allied Lines	X		
Farmowners multiperil		X	
Homeowners multiperil		X	
Commercial multiperil		X	
Ocean marine	X		
Inland marine	X		
Financial guaranty			X
Medical malpractice			X
Earthquake		X	
Group accident and health	X		
Credit accident and health	X		
Other accident and health	X		
Workers compensation			X
Other Liability			X
Auto liability		X	
Auto physical damage	X		
Aircraft		X	
Fidelity		X	
Surety	X		
Glass	X		
Burglary and theft	X		
Boiler and machinery	X		
Credit	X		
International		X	
Reinsurance			X

Short — Nearly all claims paid out within 2 - 3 years
Medium — Nearly all claims paid out within 8 years
Long — Substantial amount or number of claims still being paid out 8 years or more after occurrence.

EXHIBIT 3

CAPITALIZATION ANALYSIS OF : ABC INSURANCE CO.

I. SURPLUS ADJUSTMENTS

Stated Surplus	1,500,000
+/- affiliated investments	(75,000)
+/- hidden assets/overvalued assets	0
+/- loss reserve adequacy	(100,000)
+ asset valuation reserves	0
- uncollectible reinsurance	(5,000)
+ reinsurance recoverable reserves	4,000
+ funds held for uncollectible reinsurance	500
- asset valuation charges (bonds/mortgages)	(1,000)
- pension liability underfunding	0
- financial guaranty risks	0
Adjusted Surplus	1,323,500

II. INSURANCE LIABILITIES

	Ratio	Quality
Operating Leverage	2.0x	AA
Reserve Leverage	1.2x	AAA
Surplus Aid	30%	A
Reins. Recoverable Leverage	25%	AAA

III. OTHER LIABILITIES

	Y/N
Litigation pending	N
Need for future reserves	Y
Retiree benefits	N
Other	N

IV. INVESTED AND OTHER ASSET RISK

	Ratio	Quality
High Yield Bond Leverage	20%	AA
Low IG Bond Leverage	100%	AAA
Equity Leverage	0	AAA
Resid. Mortgage Leverage	0	AAA
Commercial Mortgage Leverage	0	AAA
Problem Asset Leverage	1%	AAA
Other Asset Leverage	10%	AAA

V. FINANCIAL RISKS

	Ratio	Quality
Debt Leverage	5%	AAA
Fixed Charge Coverage	20x	AAA
Max. Dividend Coverage	15x	AAA
Dividend Payout Ratio	75%	A

VI. GENERAL BUSINESS CONDITIONS

Quality
A

VII. OVERALL WEIGHTED CAPITALIZATION AA

S&P'S CLAIMS-PAYING ABILITY RATING DEFINITIONS

A Standard & Poor's insurance claims-paying ability rating is an opinion of an operating insurance company's financial capacity to meet the obligations of its insurance policies in accordance with their terms. This opinion is not specific to any particular insurance policy or contract, nor does it address the suitability of a particular policy for a specific purpose or purchaser. Furthermore, the opinion does not take into account deductibles, surrender or cancellation penalties, the timeliness of payment, or the likelihood of the use of a defense such as fraud to deny claims. Claims-paying ability ratings do not refer to an insurer's ability to meet nonpolicy obligations (i.e. debt contracts).

The assignment of ratings to debt issues that are fully or partially supported by insurance policies, contracts, or guarantees is a separate process from the determination of claims-paying ability ratings, and follows procedures consistent with debt rating definitions and practices.

Claims-paying ability ratings are divided into two broad classifications. Rating categories from 'AAA' to 'BBB' are classified as "Secure" claims-paying ability ratings and are used to indicate insurers whose financial capacity to meet policyholder obligations is viewed on balance as sound. Among factors considered in placing insurers within the spectrum of "Secure" rating categories, is the time frame within which policyholder security could be damaged by adverse developments. That time frame grows shorter as ratings move down the "Secure" rating scale.

Rating categories from 'BB' to 'D' are classified as "Vulnerable" claims-paying ability ratings and are used to indicate insurers whose financial capacity to meet policyholder obligations is viewed as vulnerable to adverse developments. In fact, the financial capacity of insurers rated 'CC' to 'C' may already be impaired, while insurers rated 'D' are in liquidation.

Ratings from 'AA' to 'CCC' may be modified by the use of a plus or minus sign to show relative standing of the insurer within those rating categories.

Secure claims-paying ability

AAA Insurers rated 'AAA' offer *superior* financial security on both an absolute and relative basis. They possess the highest safety and have an overwhelming capacity to meet policyholder obligations.

AA Insurers rated 'AA' offer *excellent* financial security, and their capacity to meet policyholder obligations differs only in a small degree from insurers rated 'AAA'.

A Insurers rated 'A' offer *good* financial security, but their capacity to meet policyholder obligations is somewhat more susceptible to adverse changes in economic or underwriting conditions than more highly rated insurers.

BBB Insurers rated 'BBB' offer *adequate* financial security, but their capacity to meet policyholder obligations is considered more vulnerable to adverse economic or underwriting conditions than that of more highly rated insurers.

Vulnerable claims-paying ability

BB Insurers rated 'BB' offer financial security that may be adequate but caution is indicated since their capacity to meet policyholder obligations is considered vulnerable to adverse economic or underwriting conditions and may not be adequate for "long-tail" or long-term policies.

B Insurers rated 'B' are currently able to meet policyholder obligations, but their vulnerability to adverse economic or underwriting conditions is considered high.

CCC Insurers rated 'CCC' are vulnerable to adverse economic or underwriting conditions to the extent that their continued capacity to meet policyholder obligations is highly questionable unless a favorable environment prevails.

CC Insurers rated 'CC' or 'C' may not be meeting all policy-
C holder obligations, may be operating under the jurisdiction of insurance regulators and are vulnerable to liquidation.

D Insurers rated 'D' have been placed under an order of liquidation.

Note: Ratings appear on *CreditWatch* where an event or deviation from an expected trend occurs and additional information is necessary to evaluate the current rating. A rating decision is normally made within 120 days, unless pending the outcome of a specific event. Ratings may change without appearing on *CreditWatch*.