



## *Corporate Governance in Ukraine*



# **CONCEPTS OF RISK AND RISK-BASED CAPITAL IN INSURANCE INDUSTRY**

**Kyiv**

**2004**



## FOREWORD

An insurance company's management is continuously faced with a very challenging task – reconcile the interests of policyholders and shareholders.

Policyholders are interested in financial strength and therefore expect the insurance company to maintain the high solvency margin and receive high credit rating by rating agencies. This, in turn, requires an insurance company to have a sufficient risk-bearing capital which serves as a buffer against extreme loss of capital that are caused by single events (e.g. storm) or by series of unexpected claims.

It is very common practice that the insurance industry regulator sets the rules as to what minimal capital requirements are and how they should be maintained in relation to the risk bearing assets.

Shareholders are more concerned with a return on their investments that is corresponding with the risk inherent in their investment.

To meet the interests of these groups (policyholders, regulator, shareholders) the management of insurance company should select the profitable areas of business and should limit the company's risk. It is achieved by a variety of means, and in particular, by diversification of risks, assets and reinsurance.

This brochure provides a basic overview of concept for risk and capital allocation. We hope that this material will be useful both to regulator and Ukrainian insurance companies.





# INTRODUCTION

Maintaining a high degree of financial security is the highest priority for any insurance company, because any hint of real or perceived financial insecurity shakes its core idea of the business. In other words, why purchase the insurance coverage if there is no certainty about the insurer's ability to pay legitimate claims arising from an insured loss event?

Yet the during the eighties and early nineties the market saw a significant increase in the number of insolvencies in the insurance industry.

Large catastrophe losses such as the Piper Alpha disaster, Hurricane Andrew and the Northridge Earthquake caused financial troubles for many property insurers. The liability crisis in the eighties that was triggered by large claims arising from asbestos and environmental pollution reduced the financial strength of many casualty insurers. Some insurance company insolvencies were driven by rapidly rising or declining interest rates.

Example:

The insured damage from Hurricane Andrew (1992) ran up to \$16 billion, pushing seven insurance companies to insolvency and causing many others to reduce their exposure or leave the market altogether.

Obviously an insurance company's liabilities cannot be entirely foreseen. Unexpectedly large claims may occur at any time and must be backed by an adequate amount of capital. For this reason, regulatory authorities, rating agencies and, to an increasing degree, the public have a keen interest in an insurer's financial strength.

On the other hand, shareholders invest in a company expecting a risk-adjusted return on their investment in the form of dividends and rising share prices. The higher the level of equity capital, the harder it is to achieve this expected return. If return expectations are not met, shareholders invest their capital elsewhere. This inevitably causes share prices to decrease, thereby making it much

more difficult for a company to raise new capital, consequently hindering its further development.

If companies are to remain financially strong, they must also utilize their capital effectively. Here, it is essential not only to pursue realistic strategic goals but also to efficiently manage assets and liabilities as well as to understand and control the underlying risks.

Many companies in the insurance and banking industry are making large investments in sophisticated risk management systems and processes. Asset risk management systems have become an important management tool to manage asset portfolios in both the banking and insurance industry.

However, the reliable risk assessment of liabilities is also crucial for an insurance company's financial security. Various initiatives were started in the past with the aim of designing and implementing concepts for the risk assessment of both assets and liabilities, which finally led to the development of asset liability modeling techniques.

One of the key questions a company has to ask itself at the beginning of an efficient capital management strategy is the following:

How much risk are we able to bear given the capital we have available? or,

how much capital do we need for the risks included in our portfolio?

This publication describes the issue of capital adequacy. It discusses the two key figures used to judge a company's capital adequacy: capital and risk. It also briefly outlines some popular methods used to measure risk.

# RISK-BASED CAPITAL

An insurance company's capital represents its buffer against unexpected claims. This buffer is necessary if the insurer is to fulfil the legitimate claims of policyholders. This principle lies at the core of the insurance business.

The amount of capital available to serve this buffering function may be referred as a risk-bearing capital or as a risk-based capital.

In order to describe the risk-based capital for insurance company, a brief background and role of the accounting definition of capital is needed.

A company's balance sheet shows the value of the company's capital from an accounting point of view.

It reflects the equation:  $\text{assets} = \text{liabilities} + \text{shareholders' equity}$ . The asset side summarizes everything the company owns. The liability side lists the company's debt in the form of financial claims on the company's assets. (see example on next page)

**Example:**  
**Consolidated balance sheet of QBE Insurance Group**

	2003	2002
<b>CURRENT ASSETS</b>		
Cash	717	745
Receivables	2,954	3,380
Reinsurance and other recoveries on outstanding claims	772	1,137
Deferred insurance costs	1,167	1,131
Investments	4,078	4,592
Tax assets	46	62
Other	3	7
<b>TOTAL CURRENT ASSETS</b>	<b>9,737</b>	<b>11,054</b>
<b>NONCURRENT ASSETS</b>		
Reinsurance and other recoveries on outstanding claims	2,113	2,529
Investments	7,028	6,167
ABC investments pledged for funds at Lloyd's	731	-
Plant and equipment	110	133
Intangibles	511	516
Deferred tax assets	116	146
Other	132	90
<b>TOTAL NON-CURRENT ASSETS</b>	<b>10,741</b>	<b>9,581</b>
<b>TOTAL ASSETS</b>	<b>20,478</b>	<b>20,635</b>
<b>CURRENT LIABILITIES</b>		
Trade and other creditors	956	1,199
Outstanding claims	3,011	3,511
Unearned premium	3,320	3,180
Borrowings	86	251
Current tax liabilities	155	68
<b>TOTAL CURRENT LIABILITIES</b>	<b>7,528</b>	<b>8,209</b>
<b>NON-CURRENT LIABILITIES</b>		
Outstanding claims	7,469	8,149
Borrowings	1,248	1,205
ABC securities for funds at Lloyd's	731	-
Deferred tax liabilities	117	33
Provisions	17	18
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>9,582</b>	<b>9,405</b>
<b>TOTAL LIABILITIES</b>	<b>17,110</b>	<b>17,614</b>
<b>NET ASSETS</b>	<b>3,368</b>	<b>3,021</b>
<b>EQUITY</b>		
Share capital	2,340	1,926
Convertible preference shares	-	274
Equity component of hybrid securities	59	59
Reserves	(119)	(10)
Retained profits	1,033	705
<b>EQUITY attributable to members of the company</b>	<b>3,313</b>	<b>2,954</b>
<b>OUTSIDE EQUITY INTERESTS IN CONTROLLED ENTITIES</b>	<b>55</b>	<b>67</b>
<b>TOTAL EQUITY</b>	<b>3,368</b>	<b>3,021</b>

In the case of an insurance company, the asset side consists mainly of investments in financial assets in the form of bonds, shares, loans, deposits or mortgages, real estate holdings.

Investments in distribution networks, information technology and other operational assets only make up a small fraction of total assets. This contrasts with the asset side of a manufacturing company's balance sheet which consists mostly of investments in plants and equipment.

The liability side of an insurer's balance sheet comprises mainly insurance liabilities in the form of technical provisions, i.e. expected future payments to policyholders which have to be covered by assets.

As commonly known, the financial statements are an interpretation of a company's past performance based on accounting principles and standards used in preparation of these financial statements. As such, varying accounting standards may provide different views of the company's results.

For example, many European countries require losses to be reported as soon as they are recognized, whereas profits are reported only when realized.

Another example - certain financial assets held for trading purposes (e.g. trading securities) should be reported on

the balance sheet at a fair value. Such accounting treatment of these financial assets can lead to the accumulation of valuation differences, often considered as hidden reserves.

In the United States insurance companies are required to comply both with the Generally Accepted Accounting Principles (GAAP) and Statutory Accounting Principles (SAP). GAAP requires management to be responsible for the integrity and fair presentation of the financial statements.

Financial statements of public companies prepared on the basis of US GAAP are governed and regulated by the Securities and Exchange Commission (SEC) in order to provide shareholders and potential shareholders with a fair and consistent method of measuring the financial performance of a business.

On the other hand, financial statements of insurance companies are also required to be drawn up in accordance with SAP by the regulatory authority in the that state where the company is licensed. These statements, known as National Association of Insurance Commissioners (NAIC) annual statements, are used by the authority mainly as a means of monitoring the financial security of the company in question and of thus protecting policyholders (and the public) against the insolvency of the insurer.

Provided that various accounting rules and principles effect the amount of shareholders' equity in the balance sheet, it can not be an accurate measure to determine whether the amount of capital that an insurance company has is sufficient to cover unexpected losses.

**The main objective of a risk-based capital approach is:**

- **to ensure that the level of capital held by an insurer mirrors its risk profile.**
- **that the amount of capital that an insurer holds is adequate to ensure that there is no significant risk of insolvency**

Therefore, in this publication the term “risk-based capital” is implied when speaking of the role of capital.

**How is a company's available risk-based capital determined?**

A reasonable estimate of a company's available risk-based capital is the current market value of assets minus provisions and minus debt.

However, while the current market value of liquid financial instruments is easily determined, the market value of technical insurance provisions (e.g. unearned premiums, claims reserves) is much more difficult to calculate given that reinsurance/retrocession agreements are individually determined and not traded on organized markets.

Therefore, the net present value of technical provisions that are reported on the balance sheet has to be taken as an approximate figure for the market value by projecting expected future cash flows and discounting them with a risk-adjusted rate. This requires, among other things, estimates of claims inflation and interest-rate sensitivities of future cash flows.

But the difficulties do not end here. In the case of large claims it is necessary to liquidate investments to generate the necessary cash. For some illiquid assets there are significant costs associated with such liquidations which require some adjustments.

Ultimately the amount of capital available depends on a company's financial health. For instance, if a company becomes insolvent, some intangible assets such as human capital are lost. If a company continues to operate, on the other hand, it needs operational assets such as office buildings and distribution networks. These assets consequently do not qualify as risk-based capital.

For illustrative purposes, at a very basics the calculation of the risk-based capital is based on the following approach:

Asset-related values	x	relevant asset risk factors (%)	=	X
Insurance-related values	x	relevant technical provisions risk factors (%)	=	X
Net written premium		relevant premium risk factors (%)	=	X
<b>Total amount of risk-based capital</b>			<b>=</b>	<b>X</b>

Asset-related values to which the relevant factors are applied are calculated after applying rules on admissibility and valuation.

Insurance-related values comprise, for each class of business, the total technical provisions; that is, the sum of outstanding claims reserves, reserves for claims incurred but not reported, or not sufficiently reported, unearned premium reserves, and additional reserves for unexpired risks. Claims reserves are calculated net of reinsurance recoveries anticipated for each class of business.

Unearned premium reserves are calculated net of deferred acquisition costs apportioned to each class of business.

Premiums to which the relevant factors are applied are written premiums net of reinsurance but before deduction of commission.

The risk-based capital is therefore capable of being calculated from information that is currently generated by insurance companies to meet existing financial reporting requirements.

# RISK

What is risk?

It is not at all easy to define risk. Mathematicians still have not come up with an appropriate description of what risk actually is.

In this publication risk is defined as the threat of a possible future event and its financial impact. If one thinks of risk in terms of possible threats, the degree of an individual's or institution's exposure to a threat influences their perception of risk.

For example, a policyholder is exposed to the threat that the insurer will not be able to meet its obligations in the case of insolvency, while shareholders of an insurance company take a different view, since they are exposed to the risk of not receiving the expected return on their investment.

Policyholders and investors thus may have different ideas of what constitutes risk.

By holding a diversified portfolio of different securities an investor can to a large extent diversify company-specific risks and is therefore mainly interested in the systemic risk component inherent in his or her investment decisions.

The policyholder, in contrast, usually cannot diversify company-specific risks.

Below are set out classifications of some of the threats an insurance company is exposed to. This list is not exhaustive as it is impossible to foresee all possible future threats.

## **General business risks**

An insurance company faces a lot of uncertainty, some of which is inherent in all types of business, while some is peculiar to the insurance business. The following risks apply to any business activity:

- strategic risk
- operational risk
- legal risk

- political risk
- counterparty risk
- reputation risk etc

**Strategic risk** is the danger that business will not focus on areas, markets or products that are profitable in the future. Failing to be abreast of new developments or taking the wrong decisions as regards the expansion of the business also belong to this category of risk.

**Operational risk** arises as a result of inappropriate control and steering mechanisms, human failure or technical errors, not to mention fraud or other deliberate impairments.

**Legal risk** is inherent in any business activity since legal regulations almost always leave room for interpretation, especially given social developments or new scientific evidence. Furthermore, the legal environment is constantly changing due to new laws and regulations. Such regulations may directly influence a company's core business.

**Political risk** and legal risk are sometimes difficult to distinguish. Political risk is inherent in business activities in countries without firmly established legal and political systems. Changes in regulation or taxation often arise from sudden changes in the political landscape.

**Counterparty risk** (sometimes referred to as default risk) arises when the counterparty of a creditor fails to fulfil his contractual obligations. In general, all types of lending entails default risk.

**Reputation risk** should not be underestimated. One example is the negative public opinion about large losses made by financial institutions which are supposedly caused by inadequate risk management or bad corporate governance.

With the exception of counterparty risk, it is usually extremely difficult, if not impossible, to model these risks using theories of probability. Who would have thought in 1985 that Germany would be united in 1990, that the Soviet Union would be dissolved in 1992, etc?

It should be kept in mind that probabilistic modeling requires specific possible future scenarios and their

assigned probabilities.

For insurance companies, the risks discussed below are easier to model probabilistically, which is essential for proper risk management.

### **Core business risks of an insurer - "Risk is our business"**

An insurer assumes those risks that other parties do not want to bear themselves and where it has a competitive advantage in managing these risks. The competitive advantage of an insurer is its expertise in the assessment and handling of risks and in the management of risk portfolios.

This description mentions the two core risk categories that an insurance company is exposed to:

- underwriting risk arising from the issue of insurance policies, and
- investment risk arising from its investment portfolio of assets.

In practice this classification is not a strict one, as it is difficult to completely separate investment and underwriting risk in the case of long-term contracts (eg long-term life business). This is because these contracts require reserves to be established, the adequacy of which depends on both the interest earned and on the underwriting result. It is not possible to eliminate investment risk because the timing of the underwriting cash flows is uncertain. Below these risk categories are described in more detail.

#### **Underwriting risk**

In non-life insurance, there are natural and man-made disasters and third party liability risks. Earthquakes, windstorms, floods and the like are events that immediately come to mind when one thinks of natural catastrophes.

Man-made catastrophes include plane crashes, fires in high-tech industrial complexes etc. Third party liability includes product liability and general liability.

There is less underwriting risk in pure life insurance since mortality rates are fairly stable. However, there is always the possibility of a catastrophe, such as an epidemic, a major accident or terrorist attack, or an extreme natural catastrophe. In addition, the model of future mortality or morbidity rates may prove to be incorrect because, for example, a significant medical discovery that increases longevity may not be accounted for.

### **Investment risk**

The asset side of the balance sheet consists mainly of financial assets in the form of government or corporate bonds, mortgages and shares, all of which are subject to market risk and liquidity risk.

Market risk includes unexpected changes in stock prices or interest rates or foreign exchange rates. It constitutes the main threat to the asset side of the balance sheet.

In the banking industry, the loss potential of investments due to market risk is commonly assessed by a "Value at Risk" (VaR) methodology. Bonds and other credit arrangements may be negatively affected by a deterioration in the creditworthiness of a debtor. Liquidity risk is the risk that assets need to be liquidated at unfavorable conditions if cash is needed immediately to meet unexpected obligations to policyholders. The investment departments of insurance companies often mitigate liquidity risk by appropriate asset liability management.

## **Interdependence of risks /diversification**

As discussed above, the core business of insurance companies is the acceptance of underwriting risks by issuing insurance policies.

Why is an insurer better able to manage these risks than an individual? After all, losses have to be paid for no matter whether a risk is insured or not.

The standard answer of course is that the insurer can diversify risk whereas an individual cannot.

Insurers build up portfolios of risks by accepting a large number of individual risks. How risky is a portfolio of risks in comparison to a single risk? Of course this depends on the precise definition of risk and on the dependency between the individual insurance risks. But it can generally be said that the total risk of a portfolio hardly ever corresponds to the sum of individual risks included in the portfolio. This is where diversification comes in.

Although the diversification of a portfolio depends on the measure of risk used, some general considerations are valid. As a general rule, diversification is inhibited if risks are dependent.

There are of course dependency structures between two loss events where the individual risks cancel each other out when aggregated. This is a common concept in the financial industry termed hedging. However, such dependency structures arising from the interaction of loss events are extremely rare in the insurance industry. Consequently, the best an insurer can hope for is that the individual risks are independent or at most only slightly dependent. Dependency between risks comes from phenomena having common causes, eg natural catastrophes.

Insurers strive to obtain well-diversified risks because there are costs associated with the risks inherent in their portfolios.

It can be broadly distinguished between those costs associated with financial distress and those with the volatility of results. Unexpectedly large losses may plunge an insurer into financial difficulties even if it is able to pay

all claims; one reason being that policyholders may cancel or not extend coverage due to their loss in confidence in the insurer.

An increase in the cost of financing is another negative factor for the financially distressed insurer. An insurer close to bankruptcy is also very much subject to regulatory intervention when regulators effectively take over the management and possibly do not act in the interest of shareholders.

An overly volatile annual result implies higher tax payments for the insurer due to the non-linearity of taxes. Additionally a volatile business makes it increasingly difficult for analysts to track the company's financial performance. The volatility of free cash flow may prevent the company from investing in profitable business opportunities given the lack of sufficient funds.

***Insurers try to become well diversified by:***

- building up sufficiently large and homogeneous portfolios;
- underwriting several lines of business;
- implementing accumulation control in order to avoid overexposure to risk factors that influence several policies, possibly in several lines of business;
- purchasing reinsurance.

## **Approaches to measuring risk**

As mentioned earlier, an insurance company faces many different types of risk which are often interrelated due to common underlying risk-driving factors.

Insurers, policyholders, shareholders, regulatory bodies and rating agencies all need reliable information about the risks they or their customers are exposed to. For a thorough understanding of these risks, it is essential to have quantitative models.

The models can be regarded as a combination of techniques for describing underwriting and investment risks, both of which are linked to macroeconomic variables.

Obviously, some stakeholders have only very limited access to information about the risk portfolio of a company. Consequently, the statistics based on publicly available data can give only a limited picture of the state of a company's affairs. Nevertheless, some useful information can be extracted from the annual report.

A sound understanding of the insurance markets in general and some information about a company's exposure in different markets, such as their reported premiums or reserves, can provide quite a good picture of a company's riskiness. In fact, financial statements provide a starting point for regulatory authorities to formulate their risk control directives for both the insurance and banking industry.

## **Risk-based capital approach in banking industry**

When regulatory authorities became alarmed by a series of banking failures in the late eighties, a committee was formed under the auspices of the Bank for International Settlement (BIS) known as the Basle Committee. This body consists of representatives of the G7 countries and draws up recommendations for banking regulations in these countries. Although it has no formal authority, the regulatory authorities in most countries adopt and implement the Committee's recommendations.

In 1988 the Basle Committee passed the Basle Accord. In this agreement, minimum capital adequacy requirements were set for banks in an effort to safeguard both the institutions and their depositors against credit risk. Each

asset position is multiplied by a suitable asset-specific weighting factor that should reflect the underlying credit risk. The weighted sum of all asset positions gives the amount of capital necessary to protect amounts owed to depositors. These rules do, however, have some critical observations; for example, the weights applied to corporate bonds do not take companies' credit ratings into account, which may encourage banks to lend money to low-quality borrowers promising a higher return on regulatory capital.

### Example of capital adequacy calculation

#### Privatbank

As at 31 December 1999

	Balance sheet	Risk weighting factor	Risk weighted amount
Cash and cash equivalents	287,285	0%	0
Due from other banks	491,498	20%	98,300
All other assets	1,292,746	100%	1,292,746
<b>Total balance sheet assets</b>	<b>2,071,529</b>		<b>1,391,046</b>
Credit commitments	52,672	50%	26,336
Guarantees issued	68,136	100%	68,136
<b>Total off-balance sheet assets</b>	<b>120,808</b>		<b>94,472</b>
<b>Total balance sheet and off-balance sheet items</b>	<b>2,192,337</b>		<b>1,485,518</b>
Share capital			140,000
Retained earnings			22,827
<b>Total Tier 1 capital</b>			<b>162,827</b>
General loan loss provision			3,901
Total Tier 2 capital			3,901
<b>Total capital</b>			<b>166,728</b>
<b>Capital adequacy ratio</b>			<b>11.22%</b>

In 1993, the Basle Committee proposed extending the credit risk directives to include the market risk of a bank's assets. A weighting procedure similar to the credit risk assessment was adopted. However, wide opposition by the banks prevented the regulatory authorities from

implementing the new directives. Since the latest agreement of 1996, banks have been allowed to use their own internal "Value at Risk" (VaR) models<sup>1</sup> as a basis for computing the required capital ratios. Similar probabilistic modeling techniques might be used in the future to compute regulatory capital for credit risk.

### **Risk-based capital approach of insurance regulatory bodies**

In response to the increased frequency of insurance company insolvencies in the eighties, the US insurance regulator, National Association of Insurance Committees (NAIC) proposed the risk-based capital (RBC) approach to control capital adequacy.

The method was adopted by the US state regulatory authority for life insurance companies in 1992 and for non-life insurance companies in 1993. Approaches similar to RBC in the US have since been developed and applied in many other countries.

The Risk-Based-Capital formula is made up of several components, essentially comprising asset risk, credit risk, underwriting loss and loss adjustment reserve risk, underwriting premium risk and off balance sheet risk. Each component is obtained by applying specific weights to various positions of the (statutory) accounting statements.

**Appendix 1** illustrates a basic example of calculation of the capital adequacy for the insurance company in accordance with Australian prudential supervision norms.

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<sup>1</sup> The VaR modelling technique was devised by JP Morgan and has become the industry standard to measure short-term portfolio risk. It is also recommended by the major regulatory institutions such as the Financial Accounting Standards Board (accounting standards setting authority in the US), the US Securities and Exchange Commission, the Basle Committee as well as by the major rating agencies.

VaR is defined as the **maximum possible loss in market value** of an asset portfolio within a given time span and at a given confidence level. The time span is usually referred to as the holding period, and during this period positions in the portfolio are assumed to remain unchanged. The holding period of a trading book typically ranges from one day up to two weeks.

## Rating agencies' judgement of capital adequacy

The rating agencies such as *AM Best*, Standard & Poor's or Moody's have different methods of judging the financial strength and security of companies. Standard & Poor's distinguishes between "public information" ratings based solely on publicly available information and "interactive" or "requested" ratings based on a considerable amount of additional, confidential information. **The financial strength of insurance companies is judged according to their ability to pay claims punctually.**

In the rating process, various indicative factors that characterize the financial state of a company are analyzed. One criterion of Standard & Poor's is the capital adequacy ratio which compares 'total-required capital' with 'total-adjusted capital.' Total-required capital is computed as a measure of the riskiness of the underwriting portfolio. Similar to the risk-based capital approach, this is calculated by applying specific weights to various premium and reserves positions.

On the other hand, total-adjusted capital roughly corresponds to risk-bearing capital adjusted to account for the asset portfolio risk. Standard & Poor's requires the ratio of total-adjusted capital/total-required capital to exceed a certain threshold in order to fulfil the capital adequacy condition for a certain rating. For example, a ratio of 125 % qualifies for an A rating, a ratio of 175 % for a AAA rating.

The risk measures discussed above are important since rating and regulatory requirements are crucial for a company's management. For example, regulatory requirements for reserves, such as in the life insurance industry, can be quite restrictive, since they may impose tight restraints on a company's management. However, by simply multiplying accounting positions by industry average weights, these measures cannot completely reflect the specialties of a company's risk portfolio.

## **ANALYSIS OF RATIOS**

This section provides a short and simplified description of areas and ratios used by analysts to evaluate the insurance company.

The evaluation of insurance company involves a comprehensive quantitative and qualitative analysis of a company's **balance sheet strength, operating performance and business profile.**

The interpretation of quantitative measurements involves the incorporation of more qualitative considerations into the process that may impact prospective financial strength.

Some quantitative evaluation is based on an analysis of each company's reported financial performance by utilizing up to a hundred key financial tests and supporting data. These tests, which underlie the evaluation of balance sheet strength and operating performance, may vary in their importance depending upon a company's characteristics.

An additional consideration should be given to balance sheet strength for those companies that are exposed to shorter tail liabilities (less than 2-3 years) or those companies maintaining extremely strong balance sheet strength. Companies exposed to short tail liabilities face fewer unknown losses, reducing long term risk.

Alternatively, those companies exposed to long tail liabilities (over 7 years) face greater uncertainty and risk and more importance is placed on operating performance which will need to be strong to sustain or enhance balance sheet strength over the long term. Those companies with an extremely strong balance sheet may be given additional consideration while improving their weak profitability.

A company's quantitative results should be compared with industry benchmarks that are based on the performance of many insurance companies with comparable business mix and organizational structure.

In addition, industry composite benchmarks should be adjusted from time to time for systemic changes in underwriting, economic and regulatory market conditions to ensure the most effective and appropriate analysis.

## **BALANCE SHEET STRENGTH**

In determining a company's ability to meet its current and ongoing obligations to policyholders, the most important area to evaluate is its balance sheet strength. An analysis

of a company's **underwriting, financial, and asset** leverage is very important in assessing its overall balance sheet strength.

Balance sheet strength measures the exposure of a company's equity to its operating and financial practices. A highly leveraged, or poorly capitalized company can show a high return on equity, but may be exposed to a high risk of instability. A conservative level of leverage or capitalization enables an insurer to better withstand catastrophes, unexpected losses and adverse changes in underwriting results, fluctuating investment returns or investment losses, and changes in regulatory or economic conditions.

### **Underwriting leverage**

**Underwriting leverage** is generated from four sources:

- current premium writings,
- annuity deposits,
- reinsurance and
- loss or policy reserves.

### **Financial leverage**

**financial leverage** in conjunction with its underwriting leverage in forming an overall opinion of a company's balance sheet strength.

Financial leverage through debt, or debt-like instruments (including financial reinsurance), may place a strain on an insurers earnings and strain its cash flow. Similar to underwriting leverage, excessive financial leverage can lead to financial instability.

### **Asset leverage**

**Asset leverage** measures the exposure of a company's capital to investment, interest rate and credit risks. Investment and interest rate risks measure the credit quality and volatility associated with the company's investment portfolio and the potential impact on its balance sheet strength.

## Capitalization Tests

**Change in Net Premiums Written (NPW):** A company should demonstrate an ability to support controlled business growth with quality capital growth from strong internal capital generation.

38,299 : 37,747 = 1.46%

*The annual percentage change in Net Premiums Written*

### Munich Re Group

#### Note 26 to the consolidated financial statements - Premiums

All figures in € m,	Reinsurance				Primary Insurance				Total	
	Life & Health		Property & Casualty		Life & Health		Property & Casualty		2004	2003
	2004	2003	2004	2003	2004	2003	2004	2003		
Gross premiums written	5,907	5,541	16,909	17,897	12,541	11,738	5,074	4,838	40,431	40,014
Ceded premiums	310	419	1,212	1,233	303	229	307	386	2,132	2,267
<b>Net premiums written</b>	<b>5,597</b>	<b>5,122</b>	<b>15,697</b>	<b>16,664</b>	<b>12,238</b>	<b>11,509</b>	<b>4,767</b>	<b>4,452</b>	<b>38,299</b>	<b>37,747</b>
Change in unearned premiums										
Gross amount	-195	-10	-373	-682	-2	-	-45	-76	-615	-768
Ceded share	3	-20	-6	-650	-1	28	-63	-31	-67	-673
Net amount	-192	-30	-379	-1,332	-3	28	-108	-107	-682	-1441
<b>Net earned premiums</b>	<b>5,405</b>	<b>5,092</b>	<b>15,318</b>	<b>15,332</b>	<b>12,235</b>	<b>11,537</b>	<b>4,659</b>	<b>4,345</b>	<b>37,617</b>	<b>36,306</b>

Change in Net premiums written (NPW)

### Munich Re Group

#### Consolidated balance sheet

##### EQUITY AND LIABILITIES

	2003	Prev. Year
A. Shareholders' equity		
I. Issued capital and capital reserve	7,388	3,447
II. Revenue reserves	7,823	8,953
III. Other reserves	4,122	1,260
IV. Consolidated profit	434	288
	<b>18,899</b>	<b>13,948</b>
B. Minority interests	483	532
C. Subordinated liabilities	3,390	-
.....		
.....		

Capital growth

18,899 : 13,948 = 35.4%

**NPW to Policyholders' Surplus (PHS):** A company's net retained premium in relation to its shareholders' surplus. This ratio measures the company's exposure to pricing errors in its current book of business.

*Policyholders' surplus* - means the sum of paid in capital, paid in and contributed surplus, and net earned surplus, including voluntary contingency reserves; OR a company's admitted assets less its liabilities, including its liability for an unearned premium reserve.

*Admitted assets* – Investments plus cash, interest, receivables from reinsurers and policyholders and tax assets.

**Munich Re Group  
Note 26 to the consolidated financial statements - Premiums**

All figures in € m,	Reinsurance				Primary Insurance				Total	
	Life & Health		Property & Casualty		Life & Health		Property & Casualty			
	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003
Gross premiums written	5,907	5,541	16,909	17,897	12,541	11,738	5,074	4,838	40,431	40,014
Ceded premiums	310	419	1,212	1,233	303	229	307	386	2,132	2,267
<b>Net premiums written</b>	<b>5,597</b>	<b>5,122</b>	<b>15,697</b>	<b>16,664</b>	<b>12,238</b>	<b>11,509</b>	<b>4,767</b>	<b>4,452</b>	<b>38,299</b>	<b>37,747</b>

Retained premiums

**Munich Re Group  
Consolidated balance sheet**

ASSETS	2003	Prev. Year	EQUITY AND LIABILITIES	2003	Prev. Year
A. Intangible assets			A. Shareholders' equity		
I. Goodwill	3,568	4,441	I. Issued capital and capital reserve	7,388	3,447
II. Other intangible assets	1,372	1,336	II. Revenue reserves	7,823	8,953
	4,940	5,777	III. Other reserves	4,122	1,260
B. Investments			IV. Consolidated profit	-434	288
I. Real estate	10,075	9,848		18,899	13,948
II. Investments in affiliated enterprises and associated enterprises	4,353	9,601	B. Minority interests	483	532
III. Loans	16,046	12,644	C. Subordinated liabilities	3,390	-
IV. Other securities			D. Gross underwriting provisions		
1. Held to maturity	747	852	I. Unearned premiums	6,315	6,158
2. Available for sale	122,367	106,175	II. Provision for future policy benefits	98,134	96,088
3. Held for trading	548	452	III. Provision for outstanding claims	42,619	42,792
	123,662	107,479	IV. Other underwriting provisions	7,488	7,460
V. Other investments				154,556	152,498
1. Deposits retained on assumed reinsurance	14,480	12,911	E. Gross underwriting provisions for life insurance policies where the investment risk is borne by the policyholders	958	698
2. Miscellaneous	2,256	3,092	F. Other accrued liabilities	3,577	3,197
	16,736	16,003	G. Liabilities		
C. Investments for the benefit of life insurance policyholders who bear the investment risk	1,009	703	I. Notes and debentures	2,209	2,205
D. Ceded share of underwriting provisions	8,038	10,230	II. Other liabilities	18,098	18,467
E. Receivables	8,175	8,871		20,307	20,672
F. Cash with banks, cheques and cash in hand	1,884	2,735	H. Deferred tax liabilities	7,159	4,738
G. Deferred acquisition costs	7,997	7,451	I. Other deferred items	55	158
H. Deferred tax assets	5,140	4,067			
I. Other assets	1,329	1,032			
<b>Total assets</b>	<b>209,384</b>	<b>196,441</b>	<b>Total equity and liabilities</b>	<b>209,384</b>	<b>196,441</b>

Admitted assets  
195,118

Liabilities  
190,002

PHS  
5,116

**Net Liabilities to PHS:** This ratio measures a company's exposures to errors of estimation in its loss reserves and all other liabilities. The higher the loss reserve leverage the more critical a company's solvency depends upon having and maintaining adequate reserve levels.

Net liabilities = 190,002

PHS = 5,116

Ratio = 37

*Net Liabilities to Policyholder Surplus - Net liabilities expressed as a ratio to policyholder surplus.*

*Net liabilities equal total liabilities less conditional reserves, plus encumbrances on real estate, less the smaller of receivables from or payable to affiliates.*

*Conditional Reserves - This item represents the aggregate of various reserves which, for technical reasons, are treated by companies as liabilities. Such reserves, which are similar to free resources or surplus, include unauthorized reinsurance, excess of statutory loss reserves over statement reserves, dividends to policyholders undeclared and other similar reserves established voluntarily or in compliance with statutory regulations.*

**Munich Re Group  
Consolidated balance sheet**

ASSETS	2003	Prev. Year	EQUITY AND LIABILITIES	2003	Prev. Year
A. Intangible assets			A. Shareholders' equity		
I. Goodwill	3,568	4,441	I. Issued capital and capital reserve	7,388	3,447
II. Other intangible assets	1,372	1,336	II. Revenue reserves	7,823	8,953
	4,940	5,777	III. Other reserves	4,122	1,260
B. Investments			IV. Consolidated profit	-434	288
I. Real estate	10,075	9,848		18,899	13,948
II. Investments in affiliated enterprises and associated enterprises	4,353	9,601	B. Minority interests	483	532
III. Loans	16,046	12,644	C. Subordinated liabilities	3,390	-
IV. Other securities			D. Gross underwriting provisions		
1. Held to maturity	747	852	I. Unearned premiums	6,315	6,158
2. Available for sale	122,367	106,175	II. Provision for future policy benefits	98,134	96,088
3. Held for trading	548	452	III. Provision for outstanding claims	42,619	42,792
	123,662	107,479	IV. Other underwriting provisions	7,488	7,460
V. Other investments				154,556	152,498
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	16,736	16,003	G. Liabilities		
C. Investments for the benefit of life insurance policyholders who bear the investment risk	1,009	703	I. Notes and debentures	2,209	2,205
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E. Receivables	8,175	8,871		20,307	20,672
F. Cash with banks, cheques and cash in hand	1,884	2,735	H. Deferred tax liabilities	7,159	4,738
G. Deferred acquisition costs	7,997	7,451	I. Other deferred items	55	158
H. Deferred tax assets	5,140	4,067			
I. Other assets	1,329	1,032			
<b>Total assets</b>	<b>209,384</b>	<b>196,441</b>	<b>Total equity and liabilities</b>	<b>209,384</b>	<b>196,441</b>

Admitted assets 195,118 = Liabilities 190,002 = PHS 5,116

**Net Leverage:** This ratio measures the combination of a company's net exposure to pricing errors in its current book of business and errors of estimation in its net liabilities after reinsurance, in relation to surplus.

NPW : PHS = 7.4

Net Liab : PHS = 37

Ratio = 44.4

*The sum of a company's net premium written to policyholder surplus and net liabilities to policyholder surplus.*

**Munich Re Group  
Note 26 to the consolidated financial statements - Premiums**

All figures in € m,	Reinsurance				Primary Insurance				Total	
	Life & Health		Property & Casualty		Life & Health		Property & Casualty			
	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003
Gross premiums written	5,907	5,541	16,909	17,897	12,541	11,738	5,074	4,838	40,431	40,014
Ceded premiums	310	419	1,212	1,233	303	229	307	386	2,132	2,267
<b>Net premiums written</b>	<b>5,597</b>	<b>5,122</b>	<b>15,697</b>	<b>16,664</b>	<b>12,238</b>	<b>11,509</b>	<b>4,767</b>	<b>4,452</b>	<b>38,299</b>	<b>37,747</b>

Retained premiums

**Munich Re Group  
Consolidated balance sheet**

ASSETS	2003	Prev. Year	EQUITY AND LIABILITIES	2003	Prev. Year
A. Intangible assets			A. Shareholders' equity		
I. Goodwill	3,568	4,441	I. Issued capital and capital reserve	7,388	3,447
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	4,940	5,777	III. Other reserves	4,122	1,260
B. Investments			IV. Consolidated profit	-434	288
I. Real estate	10,075	9,848		18,899	13,948
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G. Deferred acquisition costs	7,997	7,451	I. Other deferred items	55	158
H. Deferred tax assets	5,140	4,067			
I. Other assets	1,329	1,032			
<b>Total assets</b>	<b>209,384</b>	<b>196,441</b>	<b>Total equity and liabilities</b>	<b>209,384</b>	<b>196,441</b>

Admitted assets  
195,118

Liabilities  
190,002

PHS  
5,116

**Ceded Reinsurance Leverage:** This ratio measures the company's dependence upon the security provided by its reinsurers and its potential exposure to adjustments on such reinsurance.

$$\frac{2,132 + 8,038 + 3,654 + 2,164}{15,988} = \text{PHS} = 3.1$$

*The ratio of the reinsurance premiums ceded, plus net ceded reinsurance balances for paid losses, unpaid losses, incurred but not reported (IBNR), unearned premiums and commissions, less funds held from reinsurers, plus ceded reinsurance balances payable, to policyholders' surplus.*

**Munich Re Group**  
**Note 26 to the consolidated financial statements - Premiums**

All figures in € m,	Reinsurance				Primary Insurance				Total	
	Life & Health		Property & Casualty		Life & Health		Property & Casualty		2004	2003
	2004	2003	2004	2003	2004	2003	2004	2003		
Gross premiums written	5,907	5,541	16,909	17,897	12,541	11,738	5,074	4,838	40,431	40,014
Ceded premiums	310	419	1,212	1,233	303	229	307	386	2,132	2,267
<b>Net premiums written</b>	<b>5,597</b>	<b>5,122</b>	<b>15,697</b>	<b>16,664</b>	<b>12,238</b>	<b>11,509</b>	<b>4,767</b>	<b>4,452</b>	<b>38,299</b>	<b>37,747</b>

**Munich Re Group**  
**Consolidated balance sheet**

ASSETS	2003	Prev. Year	EQUITY AND LIABILITIES	2003	Prev. Year
A. Intangible assets			A. Shareholders' equity		
I. Goodwill	3,568	4,441	I. Issued capital and capital reserve	7,388	3,447
II. Other intangible assets	1,372	1,336	II. Revenue reserves	7,823	8,953
	4,940	5,777	III. Other reserves	4,122	1,260
B. Investments			IV. Consolidated profit	-434	288
I. Real estate	10,075	9,848		18,899	13,948
II. Investments in affiliated enterprises and associated enterprises	4,353	9,601	B. Minority interests	483	532
III. Loans	16,046	12,644	C. Subordinated liabilities	3,390	-
IV. Other securities			D. Gross underwriting provisions		
1. Held to maturity	747	852	I. Unearned premiums	6,315	6,158
2. Available for sale	122,367	106,175	II. Provision for future policy benefits	98,134	96,088
3. Held for trading	548	452	III. Provision for outstanding claims	42,619	42,792
	123,662	107,479	IV. Other underwriting provisions	7,488	7,460
V. Other investments				154,556	152,498
1. Deposits retained on assumed reinsurance	14,480	12,911	E. Gross underwriting provisions for life insurance policies where the investment risk is borne by the policyholders	958	698
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	16,736	16,003	F. Other accrued liabilities	3,577	3,197
C. Investments for the benefit of life insurance policyholders who bear the investment risk	1,009	703	G. Liabilities		
D. Ceded share of underwriting provisions	8,038	10,230	I. Notes and debentures	2,209	2,205
E. Receivables	8,475	8,871	II. Other liabilities	18,098	18,467
F. Cash with banks, cheques and cash in hand	1,884	2,735		20,307	20,672
G. Deferred acquisition costs	7,997	7,451	H. Deferred tax liabilities	7,159	4,738
H. Deferred tax assets	5,140	4,067	I. Other deferred items	55	158
I. Other assets	1,329	1,032			
<b>Total assets</b>	<b>209,384</b>	<b>196,441</b>	<b>Total equity and liabilities</b>	<b>209,384</b>	<b>196,441</b>

reinsurance receivable  
see next page

reinsurance payable  
see next page

**Munich Re Group**  
**Note 10 to the consolidated financial statements - Receivables**

All figures in € m,

	2003	Prev. year
Amounts receivable on primary insurance business	1,002	954
– From policyholders	650	580
– From intermediaries	352	374
Accounts receivable on reinsurance business	3,654	4,083
Interest and rent	2,914	2,126
Other receivables	1,505	1,708
<b>Total</b>	<b>8,175</b>	<b>8,871</b>

**Munich Re Group**  
**Note 24 to the consolidated financial statements – Other liabilities**

All figures in € m,

	2003	Prev. year
Deposits retained on ceded business	4,186	4,296
Accounts payable on primary insurance business	6,111	6,012
Accounts payable on reinsurance business	2,164	3,339
Amounts owed to banks	3,035	2,783
Miscellaneous liabilities	2,602	2,037
<b>Total</b>	<b>18,098</b>	<b>18,467</b>

## **Quality and Appropriateness of Reinsurance Program**

Reinsurance plays an essential role in the risk spreading process and provides insurers, with varying degrees of financial stability.

A company's reinsurance program should be evaluated to determine its appropriateness and credit quality. A company's reinsurance program should be appropriate relative to its policy limits and underwriting risks, catastrophe exposures, business, financial capacity and the credit quality of the reinsurers involved.

In addition, a reinsurance program should involve time-risk transfer and include reinsurers of good credit quality, since in the event of a reinsurer's failure to respond to its share of a loss, the reinsured or counterparty would have to absorb a potentially large loss in its entirety.

To be considered adequate for catastrophe protection, a program needs to protect a property/casualty company from impairment or insolvency, from large shock-losses such as a 100 year wind storm, a 250 year earthquake, or its annual aggregate loss exposure. Reinsurance should also provide protection from a series of smaller storm losses that do not trigger recovery from a traditional catastrophe reinsurance program.

In addition to spreading risk, reinsurance can be utilized to leverage a company's surplus to enable it to write more business than would otherwise be possible.

For life/health companies, a reliable reinsurance program must consider sound risk management practices to provide the company with protection against adverse fluctuations in experience. Since these risk transfer agreements on an underlying policy or policies indemnify the company for insurance risks, prudent evaluation of the economic impact on a company's life, health, and annuity operations is critical.

Incorporating reinsurance to manage a company's financial risk that includes mortality, morbidity, lapse or surrender, expense, and investment performance, presents a competitive risk to an insurer's future growth prospects and long-term viability. Therefore, the range of reinsurance must be evaluated with the company's ability to manage its growth relative to demands for life and health insurance coverages under existing economic and

regulatory environments.

An insurer's ability to meet its financial obligations can become overly dependent upon the performance of its reinsurers.

A company can also become exposed to the state of reinsurance markets in general. A significant dependency on reinsurance can become problematic if a major reinsurer of the company becomes insolvent or disputes coverage for claims. It also can become a problem if general reinsurance rates, capacity, terms and conditions change dramatically following an industry event.

The more a company is dependent upon reinsurance, the more vulnerable its underwriting capacity becomes to adverse changes in the reinsurance market. The greater this dependency, the greater is should be the scrutiny of a company's reinsurance program to determine its appropriateness and credit quality and whether it is temporary or permanent in nature.

### **Adequacy of Loss/Policy Reserves**

Reserves play an important role in determining the balance sheet strength and flexibility of an insurance carrier, as well as its underlying profitability.

The ability to predict ultimate reserve requirements is as much an art form as it is a science. Actuaries who certify a company's reserves typically provide management with a range within which loss and loss adjustment expense reserves are deemed adequate.

The range of reserve adequacy estimated by actuaries can be very significant. For casualty-oriented insurers, a 25% deficiency in current reserves may exceed policyholders' surplus and, therefore, render them technically insolvent.

Separately, a company's ability to monitor premium adequacy and the degree of uncertainty in loss reserves should be evaluated.

## Key Loss Reserve Tests:

**Loss and Loss-Adjustment Expenses Reserves to PHS:** This ratio measures the trend and magnitude of loss reserves to surplus. The higher the multiple of loss reserves to surplus, the more critical reserve adequacy becomes to an insurer's solvency.

Ratio = Loss LAE reserves to PHS

$$10,480 : 1,329 = 7.8$$

### QBE Insurance Group Consolidated balance sheet

	2003	2002
<b>CURRENT ASSETS</b>		
Cash	717	745
Receivables	2,954	3,380
Reinsurance and other recoveries on outstanding claims	772	1,137
Deferred insurance costs	1,167	1,131
Investments	4,078	4,592
Tax assets	46	62
Other	3	7
<b>TOTAL CURRENT ASSETS</b>	<b>9,737</b>	<b>11,054</b>
<b>NONCURRENT ASSETS</b>		
Reinsurance and other recoveries on outstanding claims	2,113	2,529
Investments	7,028	6,167
ABC investments pledged for funds at Lloyd's	731	-
Plant and equipment	110	133
Intangibles	511	516
Deferred tax assets	116	146
Other	132	90
<b>TOTAL NON-CURRENT ASSETS</b>	<b>10,741</b>	<b>9,581</b>
<b>TOTAL ASSETS</b>	<b>20,478</b>	<b>20,635</b>
<b>CURRENT LIABILITIES</b>		
Trade and other creditors	956	1,199
Outstanding claims	3,011	3,511
Unearned premium	3,320	3,180
Borrowings	86	251
Current tax liabilities	155	68
<b>TOTAL CURRENT LIABILITIES</b>	<b>7,528</b>	<b>8,209</b>
<b>NON-CURRENT LIABILITIES</b>		
Outstanding claims	7,469	8,149
Borrowings	1,248	1,205
ABC securities for funds at Lloyd's	731	-
Deferred tax liabilities	117	33
Provisions	17	18
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>9,582</b>	<b>9,405</b>
<b>TOTAL LIABILITIES</b>	<b>17,110</b>	<b>17,614</b>
<b>NET ASSETS</b>	<b>3,368</b>	<b>3,021</b>
<b>EQUITY</b>		
Share capital	2,340	1,926
Convertible preference shares	-	274
Equity component of hybrid securities	59	59
Reserves	(119)	(10)
Retained profits	1,033	705
<b>EQUITY attributable to members of the company</b>	<b>3,313</b>	<b>2,954</b>
<b>OUTSIDE EQUITY INTERESTS IN CONTROLLED ENTITIES</b>	<b>55</b>	<b>67</b>
<b>TOTAL EQUITY</b>	<b>3,368</b>	<b>3,021</b>

PHS (policyholders' surplus)  
= admitted assets – total liabilities  
18,439 – 17,110 = 1,329

Admitted assets  
18,439

Loss reserve  
10,480

**Development to PHS (IRIS):** The ratio measures loss reserve deficiency or redundancy in relation to policyholder surplus. This ratio reflects the degree to which year-end surplus was either overstated (+) or understated (-) in each of the past several years, if original reserves had been restated to reflect subsequent loss development through year end.

If the reserves are inadequate and ultimately develop adversely, a company's policyholders surplus is diminished by a like amount. For example, assume an insurance company has \$20,000,000 in policyholders surplus and \$10,000,000 of net loss reserves. If this insurance company had loss reserves understated by 50%, and the loss reserves were increased by another \$5,000,000, the insurer would still be solvent, however its surplus would be reduced to \$15,000,000. If, on the other hand, an insurer with \$20,000,000 in policyholders surplus and \$100,000,000 of net loss reserves, the company would become insolvent if it was under-reserved by 20%, as its surplus would be depleted (20% of \$100,000,000 would be \$20,000,000).

## Example:

### Extract from the 2003 financial statements of Munich Re prepared under IFRS. Note 20: Provision for outstanding claims

Net claims provisions and their run-off in EURO m	31.12. 1993	31.12. 1994	31.12. 1995	31.12. 1996	31.12. 1997	31.12. 1998	31.12. 1999	31.12. 2000	31.12. 2001	31.12. 2002	31.12. 2003
<b>Net provision for outstanding claims</b>	15,335	15,780	16,855	18,031	19,615	19,485	23,125	24,230	29,556	32,992	31,739
Aggregate payments for the year concerned and previous years											
One year later	3,602	3,475	3,882	4,725	4,292	5,412	7,359	7,356	8,626	7227	
Two years later	5,284	5,536	6,706	6,812	7,148	9,216	11,605	12,181	12,439		
Three years later	6,674	7,624	8,064	8,667	9,672	11,639	14,889	14,068			
Four years later	8,371	8,573	9,428	10,268	11,174	13,687	15,953				
Five years later	9,072	9,626	10,763	11,556	12,576	14,413					
Six years later	9,878	10,753	11,654	12,653	13,328						
Seven years later	10,854	11,523	12,574	13,298							
Eight years later	11,517	12,337	13,090								
Nine years later	12,257	12,759									
Ten years later	12,631										
<b>Net provision for the year concerned and previous years, plus payments already made from the original provision</b>	15,335	15,780	16,855	18,031	19,615	19,485	23,125	24,230	29,556	32,992	31,739
One year later	14,556	15,180	16,999	18,573	17,840	20,415	24,409	26,428	32,074	31,827	
Two years later	14,356	15,425	17,410	17,384	18,213	20,867	25,492	28,469	32,144		
Three years later	14,968	16,007	16,190	17,700	18,253	21,192	27,062	28,395			
Four years later	15,642	15,234	16,617	17,611	18,405	22,409	26,608				
Five years later	14,938	15,644	16,377	17,730	19,279	21,685					
Six years later	15,297	15,550	16,488	18,380	18,470						
Seven years later	15,308	15,737	16,951	17,698							
Eight years later	15,517	16,063	16,276								
Nine years later	15,832	15,405									
Ten years later	15,170										
<b>Net run-off result of claims provisions</b>	165	375	579	333	1,145	-2,200	-3,483	-4,165	-2,588	1,165	-
Thereof: Currency translation differences	585	-22	-1,187	-1,305	222	-1,356	-647	-122	1,786	1,829	-
<b>Net run-off result excluding currency translation differences</b>	-420	397	1,766	1,638	923	-844	-2,836	-4,043	-4,374	-664	-

Amount of loss reserve reported in the balance sheet for each respective year.

Amount by which loss reserve was understated (-) or overstated (+) in each respective year.

For example, aggregate amount of payments for accidents related to year 2000 and previous years totaled 28,395 million. The amount of loss reserve as at year end of 2000 was estimated at 24,230 million. This loss reserve was underestimated by 4,165 million, or 17%.

Run-off result line demonstrates positive or adverse development of claims related to each year concerned and previous year.

**Developed to NPE:** The ratio of developed premiums through the year to net premiums earned. If premium growth has been relatively steady, and if the product mix has not changed materially, this ratio measures whether or not a company's loss reserves are keeping pace with premium growth.

### **Quality and Diversification of Assets**

The quality and diversification of assets contributes to a company's financial stability.

Invested assets (principally bonds, common stocks, mortgages and real estate) should be evaluated to assess the risk of default and the potential impact on capital if the sale of these assets occurred unexpectedly.

The better the liquidity, diversification and/or quality of the assets, the less uncertainty there is in the value to be realized upon their sale and the lesser the likelihood of default. Therefore, a review of a company's invested assets is performed to identify a lack of diversification among industries or geographic regions, with particular attention paid to large single investments that exceed 10% of a company's total capital.

Companies that hold illiquid, undiversified and/or speculative assets and have a significant underwriting exposure to volatile lines of business that are vulnerable to unfavorable changes in underwriting and/or economic conditions is a combination that can jeopardize policyholders' surplus.

### **Liquidity**

Liquidity measures a company's ability to meet its anticipated short- and long-term obligations to policyholders and other creditors.

A company's liquidity depends upon the degree to which it can satisfy its financial obligations by holding cash and investments that are sound, diversified and liquid or through operating cash flow. A high degree of liquidity enables an insurer to meet unexpected needs for cash without the untimely sale of investments or fixed assets, which may result in substantial realized losses due to

temporary market conditions and/or tax consequences.

To measure a company's ability to satisfy its financial obligations without having to resort to selling long-term investments or affiliated assets, we review a company's quick liquidity, which measures the amount of cash and quickly convertible investments that have a low exposure to fluctuations in market value.

Current liquidity measures the proportion of a company's total liabilities that are covered by cash and unaffiliated invested assets. Operational and net cash flows are reviewed since they, by themselves, can meet some liquidity needs provided cash flows are positive, large and stable relative to cash requirements.

Finally, the quality, market value and diversification of assets should be evaluated, particularly the exposure of large single investments relative to capital.

## Key Liquidity Tests:

**Quick Liquidity:** This ratio measures the proportion of net liabilities covered by cash and investments that can be quickly converted to cash. This ratio may indicate a company's ability to settle its outstanding liabilities without prematurely selling long-term investments or to borrow money.

Quick liquidity  
540 : 22,479 = 2.4%

## Example:

### AON Corporation Consolidated balance sheet

	(million \$)	
ASSETS	2003	2002
Investments		
Fixed maturities at fair value	2,751	2,089
Equity securities at fair value	42	62
Short-term investments	3,815	3,835
Other investments	716	600
Total investments	<u>7,324</u>	<u>6,586</u>
Cash	540	484
Receivables		
Insurance brokerage and consulting services	8,607	8,430
Other receivables	1,504	1,129
Total receivables (net of allowance for doubtful accounts: (2003 — \$187; 2002 — \$177))	<u>10,111</u>	<u>9,559</u>
Current Income Taxes	84	124
Deferred Income Taxes	524	689
Deferred Policy Acquisition Costs	1,021	882
Goodwill		
(net of accumulated amortization: 2003 — \$805; 2002 — \$723)	4,509	4,099
Other intangible assets		
(net of accumulated amortization: 2003 — \$300; 2002 — \$238)	176	225
Property and equipment, net	827	865
Other assets	1,911	1,821
<b>TOTAL ASSETS</b>	<b><u>27,027</u></b>	<b><u>25,334</u></b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Insurance premiums payable	10,368	9,904
Policy liabilities		
Future policy benefits	1,396	1,310
Policy and contract claims	1,609	1,251
Unearned and advance premiums and contract fees	2,869	2,610
Other policyholder funds	58	139
Total policy liabilities	<u>5,932</u>	<u>5,310</u>
General liabilities		
General expenses	1,498	1,518
Short-term borrowings	53	117
Notes payable	2,095	1,671
Other liabilities	2,533	2,167
<b>TOTAL LIABILITIES</b>	<b><u>22,479</u></b>	<b><u>20,687</u></b>
Redeemable preferred stock	50	50
Company-obligated mandatorily redeemable preferred capital securities of subsidiary trust holding solely the company's junior subordinated debentures	-	702
<b>STOCKHOLDERS' EQUITY</b>		
Common stock — \$1 par value		
Authorized: 750 shares; issued	336	333
Paid-in additional capital	2,283	2,228
Accumulated other comprehensive loss	(861)	(954)
Retained earnings	3,679	3,251
Treasury stock at cost (shares: 2003 — 22.4; 2002 — 22.7)	(784)	(794)
Deferred compensation	(1,55)	(169)
<b>TOTAL STOCKHOLDERS' EQUITY</b>	<b><u>4,498</u></b>	<b><u>3,895</u></b>
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY</b>	<b><u>27,027</u></b>	<b><u>25,334</u></b>

Cash and cash equivalents  
= 540

Liabilities

**Current Liquidity:** The sum of cash, unaffiliated invested assets and encumbrances on other properties to net liabilities plus ceded reinsurance balances payable, expressed as a percent. This ratio measures the proportion of liabilities covered by unencumbered cash and unaffiliated investments. If this ratio is less than 100, the company's solvency is dependent on the collectibility or marketability of premium balances and investments in affiliates. This ratio assumes the collectibility of all amounts recoverable from reinsurers on paid and unpaid losses and unearned premiums.

Current Liquidity =  
7,864 : 22,479 = 35%

## AON Corporation Consolidated balance sheet

	(million \$)	
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<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY</b>	<b><u>27,027</u></b>	<b><u>25,334</u></b>

Cash and investments = 7,864

Liabilities

**Operating Cash Flow:** This indicator measures a company's ability to meet current obligations through the internal generation of funds from insurance operations. Negative amounts may indicate unprofitable underwriting results or low yielding assets.

**Example:**

**Extract from the 2003 financial statements of AIG Group  
Consolidated statement of cash flows**

(in millions)

	2003	2002	2001
<b>Cash flows from operating activities:</b>			
<b>Net income</b>	<b>\$ 9,274</b>	<b>\$ 5,519</b>	<b>\$ 5,363</b>
<b>Adjustments to reconcile net income to net cash provided by operating activities:</b>			
Non cash revenues, expenses, gains and losses included in income:			
Change in:			
General and life insurance reserves	21,527	16,725	7,405
Premiums and insurance balances receivable and payable – net	-1,647	-744	588
Reinsurance assets	1,919	-2,683	-4,590
Deferred policy acquisition costs	-3,848	-3,850	-1,104
Investment income due and accrued	-459	-616	-124
Funds held under reinsurance treaties	1,239	740	1,228
Other policyholders' funds	752	-29	727
Current and deferred income taxes – net	2,657	745	648
Reserve for commissions, expenses and taxes	992	48	55
Other assets and liabilities – net	635	1,300	836
Trading assets and liabilities – net	4,566	901	831
Trading securities, at market value	846	1,587	1,614
Spot commodities, at market value	239	-137	11
Net unrealized (gain) loss on interest rate and currency swaps, options and forward transactions	-2220	-1,431	-1,026
Securities purchased under agreements to resell	-2510	-3,980	-6,690
Securities sold under agreements to repurchase	5,648	-2,656	510
Securities and spot commodities sold but not yet purchased, at market	-6,307	3,434	630
Realized capital (gains) losses	1,433	2,441	836
Equity in income of partially owned companies and other invested assets	-673	-229	-479
Amortization of premium and discount on securities	61	-195	-285
Depreciation expenses, principally flight equipment	1,865	1,653	1,437
Provision for finance receivable losses	429	402	395
Other – net	-263	148	-15
<b>Total adjustments</b>	<b>26,881</b>	<b>13,574</b>	<b>3,438</b>
<b>Net cash provided by operating activities</b>	<b>\$ 36,155</b>	<b>\$ 19,093</b>	<b>\$ 8,801</b>

indicates a positive cash flows from operating activities

## **OPERATING PERFORMANCE**

### **Profitability**

Profitable insurance operations are essential for a company to operate as an ongoing concern.

For an insurer to remain viable in the marketplace, it must perpetuate a financially strong balance sheet for its policyholders. When evaluating operating performance, analysis should be centered on the stability and sustainability of the company's sources of earnings in relation to the liabilities that are retained by the company.

Since long term balance sheet strength is generally driven by operating performance, greater importance is placed on operating performance when evaluating insurers writing long tail business. Conversely, operating performance is weighted less heavily for those insurers writing predominantly short tail business that also possess very strong capitalization and a stable business profile.

An analysis should be focused on a review of the components of a company's earnings over the past five year period to make an evaluation of the sources of profits and the degree and trends of various profitability measures. Areas for the review include underwriting, investments, capital gains/losses and total operating earnings, both before and after taxes.

Profitability measures are easily distorted by operational changes. Therefore, the mix and trends of premium volume, investment income, net income and surplus should be reviewed. Also important to evaluating profitability is the capital structure of the company, the length and nature of its insurance liability risks and how these elements relate to the company's operating mission. The degree of volatility in a company's earnings and the impact that this could have on capitalization and balance sheet strength should be of particular interest.

## Key Profitability Tests:

**Loss Ratio:** This ratio measures the company's underlying profitability, or loss experience, on its total book of business. Based on a formula used by insurers to relate loss expenses to income: (incurred losses + loss adjustment expenses) : earned premiums.

The lower the loss ratio the better. Higher loss ratios may indicate that an insurance company may need better risk management policies to guard against future possible insurance pay-outs.

**Expense Ratio:** This ratio measures the company's operational efficiency in underwriting its book of business. Formula: expenses (excluding losses, loss adjusting expenses and policyholder dividends) ÷ earned premiums.

## Example

### Swiss Re Group 2003 financial statements Statement of income

(CHF millions)

	<u>2002</u>	<u>2003</u>	
<b>Revenues</b>			
Premiums earned	29,058	30,740	Loss ratio = 78% (14,898 + 9,085) : 30,740
Net investment income	5,494	4,606	
Net realized investment gains/losses	-730	376	
Trading revenues	228	472	
Other revenues	365	236	
<b>Total revenues</b>	<b>34,415</b>	<b>36,430</b>	
<b>Expenses</b>			
Claims and claim adjustment expenses	-14,485	-14,898	Expense ratio = 32% (6,854 + 2,942) : 30,740
Life and health benefits	-10,084	-9,085	
Acquisition costs	-6,220	-6,854	
Amortization of goodwill	-350	-315	
Other operating costs and expenses	-3,240	-2,942	
<b>Total expenses</b>	<b>-34,379</b>	<b>-34,094</b>	
<b>Income before income tax expense</b>	<b>36</b>	<b>2,336</b>	
Income tax expense	-127	-634	
<b>Net income/loss</b>	<b>-91</b>	<b>1,702</b>	

**Combined Ratio after Policyholder Dividends  
( Loss Ratio + Expense Ratio )**

based on example above

Combined ratio = 110  
78% + 32%

This ratio measures the company's overall underwriting profitability.

This figure just measures claims losses and operating expenses against premiums earned. The lower the figure the better. The combined ratio is the total of estimated claims expenses for a period plus overhead expressed as a percentage of earned premiums. A ratio below 100 percent represents a measure of profitability and the efficiency of an insurance firms underwriting efficiency. Ratios above 100 percent denote a failure to earn sufficient premiums to cover expected claims. High ratios can usually occur either because of underpricing and/or because of unexpected high claims.

**Operating Ratio** : Combined Ratio less the Net Investment Income Ratio (net investment income to net premiums earned, expressed as a percent).

based on above example

Operating ratio = 95  
110 – 15

The operating ratio measures a company's overall operational profitability from underwriting and investment activities. This ratio does not reflect other operating income/expenses, capital gains or income taxes. An operating ratio of more than 100 indicates a company is able to generate profits from its underwriting and investment activities.

**Example:**

**Swiss Re Group 2003 financial statements  
Extract from statement of income**

(CHF millions)

	2002	2003
<b>Revenues</b>		
Premiums earned	29,058	30,740
Net investment income	5,494	4,606
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Amortization of goodwill	-350	-315
Other operating costs and expenses	-3,240	-2,942
<b>Total expenses</b>	<b>-34,379</b>	<b>-34,094</b>

Investment income ratio = 15%  
4,606 : 30,740

**Pretax ROR (Return on Revenue):** This ratio measures a company's operating profitability and is calculated as pretax operating income divided by net premiums earned.

**Yield on Invested Assets:** This ratio measures the average return on a company's invested assets before capital gains/losses and income taxes.

Net investment income :  
avg. invested assets

$$4,606 : 92,067 = 5\%$$

Calculated as - Annual net investment income after expenses, divided by the mean of cash and net invested assets.

### Example

#### Swiss Re Group 2003 financial statements Statement of income

(CHF millions)

	2002	2003
<b>Revenues</b>		
Premiums earned	29,058	30,740
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Income tax expense	-127	-634
<b>Net income/loss</b>	<b>-91</b>	<b>1,702</b>

$$\text{ROR} = 7.6\%$$

$$2,336 : 30,740$$

#### Extract from balance sheet

ASSETS	2002	2003
<b>Investments</b>		
Fixed income securities:		
Available-for-sale, at amortized cost (fair value: 2002: 61514; 2003: 64274)	59,282	63,131
Trading, at fair value (amortized cost: 2002: 527; 2003: 1129)	517	1,131
Equity securities – Available-for-sale, at fair value (cost: 2002: 13080; 2003: 6335)	12,259	6,751
Mortgages and other loans	6,939	6,133
Investment real estate	1,537	1,646
Short-term investments, at amortized cost, which approximates fair value	3,356	7,339
Other invested assets	2,838	2,074
<b>Total investments</b>	<b>86,728</b>	<b>88,205</b>
Cash and cash equivalents	3,773	5,429
.....	.....	.....
.....	.....	.....

$$\text{Avg. amount of invested assets} = 92,067$$

**Return on Policyholders' Surplus (ROE):** This ratio measures a company's efficiency in utilizing its surplus on a total return basis.

Calculated as the sum of after-tax net income and unrealized capital gains divided to the mean of prior and current year-end policyholders' surplus.

## **BUSINESS PROFILE**

### **Business Profile Issues**

Business profile can be an important component of any insurance company's evaluation. The factors that comprise an insurer's business profile drive current and future operating performance and, in turn, can impact long-term financial strength and the company's ability to meet its obligations to policyholders.

Business profile is influenced by the degree of risk inherent in the company's mix of business, an insurer's competitive market position and the depth and experience of its management. Lack of size or growth would not be considered negative factors unless it is believed that these issues have a negative influence on the company's prospective operating performance and balance sheet strength.

Greater emphasis should be placed on business profile issues for insurers writing long duration business, such as life, retirement savings, casualty lines, and reinsurance where long term financial strength is critical. Conversely, less business profile emphasis is placed on auto and property writers as well as indemnity health insurers writing shorter-duration contracts where short to medium term financial strength is of greater importance.

### **Key Business Profile Issues**

**Spread of Risk:** A company's book of business must be analyzed by-line in terms of its geographic, product and distribution diversification. However, the size of a company, measured solely by its premium volume, cannot be used to judge its spread of risk.

Generally, large companies have a natural spread of risk. Similarly, a small company, which is conservatively

managed, writes conservative lines of business and avoids a concentration of risk, can attain the same degree of stability in its book of business as that experienced by a large company, with the exception of regulatory or residual market risks.

For property/casualty companies, the geographic location of a book of business can have a great impact upon its exposure to natural hazards, such as hurricanes, tornadoes, wind storms, hail or earthquakes.

Because the underwriting experience between lines of business varies dramatically, the underwriting risk profile of a company must be determined since high risk lines with volatile loss experience can impact the financial stability of an insurer, particularly one that is poorly capitalized and/or has poor liquidity.

Also evaluated is the possibility of event risk which can encompass a variety of sudden or unexpected circumstances that may arise and can potentially impact an insurer's financial strength. Event risk may include changes in management, ownership, parental commitment, distribution, legal rulings or regulatory developments.

**Revenue Composition:** A by-line analysis of net premium volume is important to determine changes in the amount, type, geographic distribution, diversification and volatility of business written by a company, which can either have a beneficial or adverse effect on its prospective profitability. Underwriting income, investment income, capital gains, asset values and, consequently, surplus can be significantly affected by external changes in economic, regulatory, legal and financial market environments, as well as by natural and man-made catastrophes.

**Competitive Market Position:** Analysis of an insurer's operating strategy and competitive advantages by-line is essential to assess a company's ability to respond to competitive market challenges, economic volatility and regulatory change in relation to its book of business. Defensible and sustainable competitive advantages include control over distribution, multiple distribution channels, a low cost structure, effective utilization and leveraging of technology, superior service, strong franchise recognition, a captive market of insured, easy and inexpensive access to capital, and underwriting expertise within the book of business.

**Management** The experience and depth of management are important determinants for achieving success.

Because the insurance business is based on an underlying foundation of trust and fiscal responsibility, prudent management plays a more vital role than in most other industries.

Competitive pressures within virtually every insurance market segment have amplified the importance of management's ability to develop and execute defensible strategic plans. Operating objectives of a company's management team play an important role in qualitative evaluation of the current and future operating performance of a company. This is particularly true when a company is undergoing restructuring to address operational issues, balance sheet problems or is actively raising capital.

**Insurance Market Risk:** Insurance market risk reflects the potential financial volatility that is introduced by, and associated with, the segment(s) of the insurance industry and/or the financial services sphere within which an organization operates. Such risks may also be considered systemic risks and are generally common to all market participants (i.e., financial services reform, healthcare reform, expansion of alternative markets, integration of healthcare providers). Insurance market risk can be biased either positively or negatively by a number of company-specific business factors.

**Event Risk:** Event risk can encompass a variety of sudden or unexpected circumstances that may arise and can potentially impact an insurer's financial strength. For example, the potential exists for major business and distribution disruption associated with significant litigation, the potential for a "run-on-the-bank" due to a loss of policyholder/distributor confidence, economic collapse or the enactment of significant legislation. In addition, constraints imposed by regulators in the form of mandated rate roll-backs, extraordinary assessments, and mandatory market lock-in arrangements in catastrophe-prone areas can adversely affect a company. Event risk may include changes in management, ownership, parental commitment, distribution, a legal ruling or regulatory development. Finally, event risks can also be influenced by potential regulatory or legislative reforms, economic conditions, interest rate levels, and financial market performance, as well as societal changes.

# APPENDIX 1

## ***Australian Prudential Regulatory Authority Philosophy - Capital Adequacy / Risk Management***

The previous regulatory regime (in place since 1973) has been described as a 'blunt instrument', in that an insurers minimum capital was prescribed by '20% of premium income, 15% of outstanding claims, or \$2m, whichever is the greater".

Australian Prudential Regulatory Authority – APRA - has now adopted a risk-based approach to the measurement of capital adequacy.

The new approach attempts to match capital to risks on both sides of an insurer's balance sheet and to weigh that risk. APRA has also prescribed minimum risk management standards.

APRA's overall philosophy, being to focus of risk based capital and risk management, is best indicated in the Principles contained in the Objectives and Key Requirements of the Capital Adequacy Prudential Standard:

“Capital is the cornerstone of an insurer's strength. It provides a buffer against losses that have not been anticipated and, in the event of problems, enables the insurer to continue operating while those problems are addressed or resolved. In this way, the maintenance of adequate capital resources can engender confidence on the part of policyholders, creditors and the market more generally in the financial soundness and stability of the insurer.

Beyond the minimum levels of capital specified by this Standard, it is the responsibility of an insurer's Board and senior management to ensure that the insurer's capital resources are appropriate to the size, business mix and complexity of its business. Accordingly, the insurer must have suitable systems in place to identify, manage and monitor the risks associated with its business activities, and to hold capital commensurate with its overall risk profile.”

In addition, APRA has commented:

Small companies need to meet a significant threshold size or entry hurdle to operate in what is an inherently risky industry, and the absolute minimum capital requirement

# APPENDIX 1

for general insurers has risen from \$2m to \$5m, in order to provide for a prudent base level of internal infrastructure and risk management.

Above the \$5m floor, the regulatory capital requirement is risk based. Thus, insurers writing liability and reinsurance lines need more capital to meet the greater uncertainty they face - due to the potential time lag between premium and claim – than insurers writing property business.

## ***Capital Adequacy***

Australian Prudential Regulatory Authority (APRA) risk-based approach to the measurement of capital adequacy seeks to ensure insurers maintain a minimum level of capital commensurate with the risk profile of their businesses, and capital is matched to risks on both sides of an insurer's balance sheet (thereby allowing for volatility in both assets and liabilities).

In calculating its capital adequacy, an insurer has to calculate both its Eligible Capital Base and its required level of capital for regulatory purposes, which is referred to as the Minimum Capital Requirement (MCR). The MCR can be determined using either a:

- standardized approach – the Prescribed Method.
- internal model developed by the company – Internal Model Based (IMB) Method.
- combination of the two.

Regardless of the outcome, an insurer's MCR cannot be less than \$5 million. The insurer has to ensure that Eligible Capital Base is in excess of its Minimum Capital Requirement (MCR) at all times.

The Measurement of Capital Base dictates Tier 1 Capital (basically permanent capital that does not pose any ongoing servicing cost) and Tier 2 Capital (which may be of a limited life or have ongoing servicing costs), and the limits relating to Tier 2 capital and reductions in Capital.

Use of an Internal Model is conditional on APRA's prior approval. APRA requires insurers to satisfy a range of criteria, both qualitative and quantitative, eg the model should calculate an amount of capital sufficient to reduce the insurer's probability of default over a one year time horizon to 0.5% or below. Due to the complexity and resource required in the development of internal models

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(effectively a Dynamic Financial Analysis (DFA) model), it is expected that only major insurers would undertake this exercise, either in whole or in part, in the short term.

For insurers using the Prescribed Method, the MCR will be determined as the sum of the capital charges for:

## ***Insurance Risk***

Allows for the risk that the true values of liabilities is greater than reported insurance liabilities, including a charge in respect of:

- outstanding claims risk, between 9% and 15% depending on the class,
- premium liability risk, (i.e. future claims and associated expenses represented in unearned premium) between 13.5% and 22.5% depending on the class.

Different rates apply to Inwards Reinsurance.

## ***Investment Risk***

Allows for the movement in the value of an insurer's assets, including market / mismatch risk, credit risk and liquidity risk. The investment risk category includes :

- Allocation of assets to one of nine categories (with varying capital charge factors between 0.5% and 100%).
- Allocation of reinsurance recoverables to one of five counterparty grades (and thereby allocating to one of the above nine categories). For example, an Investment Capital Charge of 2% will be applied to reinsurance recoveries that are recoverable from reinsurers rated AA or above by S&P (Grade 1 or 2). By comparison, reinsurance recoveries rated BB+ or below (Grade 5) would receive an 8% capital charge.
- An investment concentration risk arising from excessive exposure to a particular asset, including reinsurance recoverables. Excessive exposure to a Grade 4 (greater than 50% of capital base) or Grade 5 (greater than 25% of capital base) assets require an insurer to hold additional capital (GGN110.4.17).

## ***Concentration risk***

Allows for the risk associated with an accumulation of

## APPENDIX 1

exposures to a single catastrophic event. This charge is 100% of the insurer's Maximum Event Retention (MER). The MER should be calculated net of reinsurance recoveries and allow for the cost of one reinstatement premium. Insurers will be required to assume a return period of 1 in 250 years or greater and regularly review detail of the methodology used in the calculation.

The fundamentals of the new regime are probably best demonstrated by the **following Sample Minimum Capital Requirement and Capital Adequacy Calculation**. It demonstrates how figures flow from an insurer's Balance Sheet into its capital charge calculations and, ultimately, when related to Eligible capital base, to prudential solvency.

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## Sample MCR and Capital Adequacy Calculation - Prescribed Method

Summary balance sheet (\$ m)			
<b>Assets</b>		<b>Liabilities</b>	
Investment		Premium Liability	
- Cash, Gov't Bond	21	- H/H, Motor and Travel	22
- Grade 1&2 Debt less than 1 year	15	- Fire and ISR	5
- Grade 1&2 Debt more than 1 year	53	- Casualty	9
- Grade 3	11	Outstanding Claims Liability	
- Grade 4	5	- H/H, Motor and Travel	20
Reinsurance Recoverable (S&P)		- Fire and ISR	5
- AAA Reinsurers	10	- Casualty	48
- AAs Reinsurers	3	Accounts payable	24
- As Reinsurers	1	Life Insurance Liability	18
- BBs Reinsurers	0	Other Liabilities	10
- BB+ or below Reinsurers	0		
Equities	59		
Intangibles, Future Income Tax Benefit (FITB)	16		
Unpaid Premiums < 6 months	16		
Unpaid Premiums > 6 months	4		
Other Assets	6		
<b>Total Assets</b>	<b>220</b>	<b>Total Liabilities</b>	<b>161</b>
		<b>Surplus</b>	
		Shareholders' Funds	50
		General Reserves	6
		Retained Earnings	1
		Current Year Earnings	2
		<b>Total Surplus</b>	<b>59</b>
		<b>Total Liability &amp; Surplus</b>	<b>220</b>

Summary of capital charges			
Item	Amount	Factor	Capital charge (\$ m)
Investment			
- Cash, Gov't Bond	21	0.5%	0.1
- Grade 1&2 Debt less than 1 year	15	1.0%	0.2
- Grade 1&2 Debt more than 1 year	53	2.0%	1.1
- Grade 3, Unpaid premiums <6 months	27	4.0%	1.1
- Grade 4, Unpaid premiums >6 months	9	6.0%	0.5
<b>Investment: Subtotal</b>	<b>125</b>	<b>2.3%</b>	<b>2.9</b>
Reinsurance Recoverable (S&P)			
- AAA Reinsurers	10	2.0%	0.2
- AAs Reinsurers	3	2.0%	0.1
- As Reinsurers	1	4.0%	0.0
- BBs Reinsurers	0	6.0%	0.0
- BB+ or below Reinsurers	0	8.0%	0.0
<b>Reinsurance: Subtotal</b>	<b>14</b>	<b>2.1%</b>	<b>0.3</b>
<b>Equities</b>	<b>59</b>	<b>8.0%</b>	<b>4.7</b>
<b>Premium Liability</b>			
- H/H, Motor and Travel	22	13.5%	3
- Fire and ISR	5	16.5%	0.8
- Casualty	9	22.5%	2.0
<b>Premium liability: Subtotal</b>	<b>36</b>	<b>16.2%</b>	<b>5.8</b>
<b>Outstanding Claims Liability</b>			
- H/H, Motor and Travel	20	9.0%	1.8
- Fire and ISR	5	11.0%	0.6
- Casualty	48	15.0%	7.2
<b>Outstanding Claims Liability: Subtotal</b>	<b>73</b>	<b>13.1%</b>	<b>9.6</b>
<b>Max Event Retention + Reinstatement</b>	<b>6</b>	<b>100.0%</b>	<b>6.0</b>
<b>Total Capital Charge</b>			<b>29.3</b>

# APPENDIX 1

<b>Calculation of Eligible Capital Base (\$ m)</b>	
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<b>Tier 1 Capital</b>	
Shareholders' Funds	50.0
General Reserves	6.0
Retained Earnings	1.0
Current Year Earnings	2.0
Intangible Assets	-16.0
<b>Tier 2 Capital</b>	0.0

<b>Total Eligible Capital Base</b>	<b>43.0</b>
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<b>Solvency Calculation</b>	
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Capital Charge (must be minimum of \$5m or greater)	29.3
Capital Base	43.0
<b>Solvency Ratio</b>	<b>146.6%</b>