

**INTERNATIONAL ASSOCIATION OF  
INSURANCE SUPERVISORS**



**GLOBAL REINSURANCE  
MARKET REPORT 2006**

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# International Association of Insurance Supervisors

## Global Reinsurance Market Report 2006

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## 1. Executive summary

2005 was an exceptional year for the reinsurance market, with unprecedented levels of natural catastrophe losses. The US windstorms in August and September had a much greater impact on the reinsurance sector than the hurricane season in 2004, and, at time of writing, the final quantum of losses is still far from completely understood.

Despite these enormous losses, the reinsurance sector has proved to be resilient, with no major failures caused as a result of losses incurred during 2005. That said, there have been a number of features in the market in late 2005 and into 2006 which show that losses and the events causing them were far from 'business as usual':

- There has been widespread re-pricing of US catastrophe risk, driven both by a greater appreciation of the levels of exposure being run and also by stark reductions in capacity, notably in the retrocession market. This pricing activity has been accompanied by a major tightening of terms and conditions for catastrophe-prone lines of business in particular in the Gulf of Mexico area.
- This change in pricing has been accompanied by a significant reappraisal of the risk management tools deployed in the industry, particularly catastrophe models. As well as changes to the underlying assumptions within the models, the industry has been considering more widely the way in which it uses their output and the levels of reliance that can be placed on them. What has not yet been observed is any significant change in reinsurance pricing or terms and conditions more generally.
- The reductions in capacity and accompanying increases in prices described above have led to significant increases in the capital markets' appetite for (re)insurance risk. This has been evidenced both by a willingness to (re)finance traditional insurance vehicles, and also by more direct assumption of risk through 'sidecars'<sup>1</sup>, catastrophe bonds and other forms of participation. What remains to be seen is whether this appetite is long-term, driven by the insurance market's traditional non-correlation to other financial markets, or purely opportunistic, driven by short-term potential for high levels of return.
- 2005's events have also highlighted, in the eyes of rating agencies, regulators and reinsurers themselves, the benefit of diversification in reinsurance portfolios. The proportionately largest losses suffered in 2005 were by those who concentrated on particular lines of business.

Inevitably, much of the comment in this report focuses on US windstorm risk, since events and resultant losses in this region were the biggest feature of the reinsurance market in 2005. Nevertheless, it is important to remember that the reinsurance industry assumes risk from all parts of the insurance market, and risk and exposure management needs to have a wider focus to ensure that all issues are properly understood and quantified. The potential for under-provisioning, under-pricing, major latent casualty exposures, emerging risks, and natural catastrophes worldwide, to name but a few, remains, and the level of risk posed by the reinsurance sector to the rest of the global economy will inevitably depend on how the industry continues to respond to this risk environment.

The data provided by the reporting entities continue to show modest participation by reinsurers in credit risk transfer (CRT). It is important for users of this report to

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<sup>1</sup> See section 6.1 for more information on sidecars

understand, however, that monoline financial guarantors – significant participators in the CRT market – fall largely outside of the scope of this report since most of their activity relates to insurance rather than reinsurance. Reinsurers' involvement in derivatives, other than credit derivatives, continues to be primarily for hedging (i.e. risk mitigation) rather than speculative purposes.

In 2006, no significant events affecting the reinsurance industry worthy of specific comment in this report have been reported as at the date of publication.

## **2. Limitations on the data in this report**

Before using individual items of data from the tables, readers should be aware of some of the limitations which arise from the compilation of the information. These are issues of detail, and we do not believe that they detract in any material way from the broad conclusions that can be drawn from the data. More details can be found in Appendix IX.

First, it should be noted that the data is a composite of information provided by reinsurers based in different jurisdictions. This gives rise to issues relating to the accounting treatment of certain items (such as deferred acquisition costs), as well as posing difficulties because of different standards of disclosure in different countries. Wider international developments will hopefully lead to convergence of such accounting standards over time, but the extent of this issue at present should not be underestimated. It should also be noted that whilst in most reporting jurisdictions the accounting reference date is the calendar year end, in Japan it is 31 March.

Second, readers should be aware that the data is compiled on a legal entity basis. There are good reasons for doing this, including the fact that group failures are triggered by failures at legal entity level, insurers are supervised primarily on a legal entity basis, and the maintenance of confidentiality and practical considerations around the gathering of data. However, doing so distorts the effect of intra-group reinsurance transactions, which may lead to greater stability at group level but possibly overstate levels of reinsurance dependency at entity level.

It should also be noted that approximations have been used in some parts of the data where the appropriate underlying information is unavailable or compiled on a different basis. Also, comparisons with previous years may provide some misleading results because of (a) changes from year to year in the population of reinsurers who qualify for inclusion; and (b) currency fluctuations.

Finally, it should be noted that the method of compilation of the data is designed to protect the confidentiality of the participating reinsurers at each stage. For this reason it is not possible for any one person to verify the data produced at each stage and, as such, there is greater potential for error than would normally be found in a report of this nature. Nevertheless, it is of course the case that all parties have endeavoured to produce valid data.

### 3. Market developments

This chapter provides an update on the 2005 developments discussed in last year's report, and considers trends in the market in 2005 more generally. It also discusses the views of market commentators, including rating agencies.

#### 3.1 Follow up on 2005 significant events

Last year's report discussed the significant catastrophes which occurred during 2005, including early estimates of their impact on the global reinsurance market.

This section provides a follow-up to last year's analysis, with the aim of comparing the latest estimates with those available at time of publication last year.

Last year's report concluded that:

- the impact of the US hurricanes on the reinsurance sector had been heavy but estimates were far from final;
- no reinsurer failures appeared to have been triggered as a consequence of these losses, although some changes in the underwriting and funding behaviour of reinsurers had been observed;
- the major US windstorms exposed shortcomings in catastrophe models and the use to which they had been put by reinsurers.

#### Impact of 2005 US Hurricane Activity.

2005 was an exceptional year for event severity, notably the US hurricane season, which accounted for the largest share of insured losses. Total insured catastrophe losses amounted to US\$83 billion, with all but US\$5 billion attributable to natural catastrophes.<sup>2</sup> Although US\$83 billion was covered by property insurance, the total property damage caused by catastrophes during the year was US\$230 billion.

In the US, five North Atlantic hurricane events caused 93% of all insured property damage. The three most costly were Katrina, Rita and Wilma, causing US\$ 45 billion, US\$10 billion and US\$10 billion of insured losses respectively.

Most of these figures are still estimates. As reported in some market studies<sup>3</sup>, the scale of these events made it more than usually difficult for reinsurance companies to gather information on which to base their loss estimates. This has meant that initial estimates have been regularly revised, often with a significant increase in provisions.

As an aside, it should be noted that Hurricane Katrina is likely to be recorded as the first event to trigger a cat-bond<sup>4</sup> since they appeared in 1997<sup>5</sup>.

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2 *sigma 2/2006 – Natural catastrophes and man-made disasters 2005: high earthquake casualties, new dimension in windstorm losses*, Swiss Re, January 2006; and Insurance Services Office, Inc. USA Press Release of 26. January 2006.

3 For instance, Benfield Ltd. – *Reinsurance markets and renewals review – Swings and Roundabouts*, January 2006.

4 See section 6.1 for more information on cat-bonds.

5 This US\$ 190 million cat-bond was issued in August 2005 by a special purpose vehicle (Kamp Re), on behalf of Swiss Re America. It was designed to be triggered if a major cedent (Zurich Financial Services) would cause net losses over US\$ 1 billion on a hurricane or earthquake event in the US within 5 years. Since Zurich's estimation of losses after Katrina account to nearly US\$ 2 billion, the bond is likely to be triggered by this event.

## Reinsurer solvency and market and business behaviour after the major US catastrophes

When reviewing 2005 a number of features stand out. First, despite the huge losses incurred from the US catastrophic events, reinsurance markets have proved to be resilient and able to absorb the significant losses arising. No failures have been reported in the reinsurance sector as a consequence of 2005 performance. Some reinsurers have, however, withdrawn from, or reduced their exposure to, catastrophe-exposed lines of business in the US such as property, marine and energy, leading to sharp increases in rates in these classes.

The previous years of positive underwriting results strengthened balance sheets sufficiently to withstand the severity of these events without causing widespread solvency issues, although it should be noted that a small number of reinsurers have gone into run-off as a direct or indirect consequence.

Second, the capital markets' appetite for reinsurance risk has been considerable, backing both capital-raising initiatives by existing players and the formation of a number of new reinsurers (principally domiciled in Bermuda). The capital flowing into the industry has come from traditional institutional investors through stock market placements and, notably, from private equity and hedge fund sources<sup>6</sup>. There has been a suggestion that the presence of this 'hot money' may give rise to greater levels of instability in the reinsurance market, with investors seeking shorter-term returns than has been the case in the past. There is, however, a contrary view to the effect that a greater degree of fluidity of capital in the sector may lead to a smoothing of some of the extreme effects of the underwriting cycle, with capital entering and exiting more readily than has been the case in the past.

Third, whilst the above capital raising was happening, rating agencies announced several reviews of reinsurance companies with negative implications, as well as a smaller number of downgrades. Downgrades have been driven by (a) a revision by rating agencies of their approach to modelling exposures to catastrophic risk; and (b) a greater perception of the benefit associated with diversification across different lines of business and territories.<sup>7</sup>

Fourth, there has been a significant underwriting response by a number of carriers, most notably in the form of large rate increases across catastrophe-exposed lines of business. These have been accompanied by alterations to terms and conditions and reductions in capacity, most notably in the form of increased deductibles and a move to excess-of-loss from proportional coverage, especially in the US. Whilst these moves could lead to an increased concentration of risk on more extreme events, increases in pricing should offset these effects to some extent. It should also be noted that not all carriers have adopted the same strategy, with some choosing to take smaller lines on lower layers, with the intention of elimination or reducing model risk.

### Modelling natural catastrophes after 2004-2005.

The events of 2004 and 2005, especially in the US, have underlined the need to re-evaluate the forecasting and modelling framework for natural catastrophes and for

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6 Data compiled by the Reinsurance Association of America based on information from company press releases, Best Week, Insurance Information Institute, The Insurance Insider and Dowling & Partners Reports show that capital raised post Katrina amounts to more than US\$25 billion.

7 Towers Perrin – *Hurricane Katrina: Analysis of the Impact on the Insurance Industry*, October 2005. For further reference, see also section 3.3 and chapter 5.

windstorms in particular, and the way in which the output of such models are used in firms' underwriting and risk management decision-making processes.

The reinsurance industry is revising the tools used for modelling and forecasting natural disasters, including modelling future interdependencies of risks, rather than merely extrapolating from past experience<sup>8</sup>. Also, catastrophe modelling firms (such as AIR Worldwide Corp., EQE International's EQECAT, and Risk Management Solutions) are updating their models and moving towards shorter-term forecasting<sup>9</sup>.

These trends also affect rating agencies, as they factor catastrophe risk management into the rating process, including the resilience of catastrophe models, the quality of data used, how input parameters are changed and how output is used<sup>10</sup>. Rating agencies are also revising their stress testing framework to include the impact of higher frequency and severity events, and contingent losses across multiple lines<sup>11</sup>.

### **3.2 Significant events occurring in 2006**

No significant events affecting the reinsurance industry worthy of specific comment in this report have been reported as at the date of publication.

### **3.3 Outlook of market commentators**

The recent reactions of the major rating agencies show that A.M.Best takes a negative view for the global reinsurance sector, while Standard & Poor's, Fitch and Moody's maintain a stable view.

#### A.M.Best

A.M.Best's 2006 outlook for the global reinsurance sector is negative. While there are few negative rating outlooks on specific reinsurance companies, in their view the underlying stability of the current market remains weak. As a result, the likelihood for assignment of positive rating outlooks or upgrades over the mid-term appears remote. In A.M.Best's view, the global reinsurance sector remains susceptible to competition from both established players and new entrants<sup>12</sup>. Since Hurricane Katrina, 13 companies have been downgraded or had their ratings withdrawn after a downgrade, and hurricane losses were a factor in each of those actions. There were no upgrades, and seven companies had their ratings under review (August 2006)<sup>13</sup>.

#### Standard & Poor's

In its *2006 Global Reinsurance Highlights* Standard & Poor's notes that the reinsurance sector experienced a number of rating downgrades in the second half of 2005 following the severe US hurricanes. However, they stress that global reinsurers continue to offer strong financial security to their cedents. At the same time, they point out that the reinsurance sector's security is less strong than it was before the World Trade Center

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8 Munich Re – *Hurricanes: More intense, more frequent, more expensive*, 2006

9 Risk Management Solutions – *Hurricane Katrina: Profile of a Super Cat: Lessons and Implications for Catastrophe Risk Management*, October 2005.

10 A.M. Best – *Methodology: Catastrophe Risk Management Incorporated Within the Rating Analysis*, May 2006

11 For further details on rating agencies' reactions, see Section 5.3.

12 A.M.Best: *2006 Annual Global Reinsurance Report: Reinsurers Humbled, But Most Not Broken, by Hurricane Losses*, August 2006, p. 1 and 6, [www.ambest.com](http://www.ambest.com)

13 *Ibid*, p. 5

loss in 2001. As a consequence, ceding companies have fewer choices of higher rated reinsurers, an issue which has been exacerbated somewhat by consolidation. Standard & Poor's outlook on the global reinsurance market is now (November 2006) "stable"<sup>14</sup>. Influencing factors mentioned by Standard & Poor's are numerous capital-raising initiatives by existing players, several new company formations, increasing usage of alternative forms of capital, such as sidecars and catastrophe bonds and substantially improved pricing and terms and conditions in catastrophe-exposed lines of business. Another challenge in the coming years that may increase volatility is changing weather patterns that may lead to increased frequency of severe natural catastrophes. Standard & Poor's takes some comfort from the fact that these concerns are partially offset by improved risk management and risk modelling<sup>15</sup>.

### FitchRatings

Fitch's rating outlook remains stable. They believe that over the next two years underwriting, operating and capital trends will generally support reinsurers' current ratings. Subject to a return to historical catastrophe experience in 2006, Fitch expects that reinsurers will experience moderate premium rate reductions in 2007 but sees their cycle management strategies truly tested in 2008.<sup>16</sup>

### Moody's

Moody's also continue to maintain a stable rating outlook on the global reinsurance industry, noting that most reinsurers have sound balance sheets and good earnings momentum (absent further catastrophes). These strengths are tempered by the inherent volatility of catastrophe-exposed business, the current pricing pressure on casualty lines of business, and the ease with which capital enters the market. Moody's expects many reinsurers to continue to seek casualty business to offset their more volatile catastrophe exposures<sup>17</sup>.

### Outlook beyond 2006

#### *Market participants*

Market participants stress<sup>18</sup> that the trend towards very high losses appears to be continuing. This is due at least in part to increasing population densities, higher concentrations of insured values and construction activity expanding into areas with a high natural-peril exposure<sup>19</sup>. Most market participants expect this trend to continue unchanged for the foreseeable future. Several commentators also focus on changing weather patterns with a resultant increase in the severity/frequency of natural catastrophes as an important factor influencing the reinsurance market in the coming years<sup>20</sup>.

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14 Standard & Poor's: *Global Reinsurance Highlights*, 2006 Edition, p. 11, [www.standardandpoors.com](http://www.standardandpoors.com)

15 Ibid p. 10

16 FitchRatings: *Reinsurance Review and Outlook: Cycle management – A Bumpy Ride Ahead*, September 2006, p. 1-2 and 5, [www.fitchratings.com](http://www.fitchratings.com)

17 Moody's Investors Service: Press release dated 7 September 2006 on their report: *Global reinsurance industry outlook stable despite tumult*, [www.moody.com](http://www.moody.com)

18 Swiss Re: News Release, 20 December 2005, Preliminary Swiss Re *sigma* estimates of catastrophe losses in 2005: High casualty count and record insured losses of US\$ 80 billion. [www.swissre.com](http://www.swissre.com)

19 See for example PartnerReviews, October 2006, p. 2. [www.partnerre.com](http://www.partnerre.com)

20 Munich Re: Annual Report 2005, p 16-17 "As temperatures rise, so do exposures". [www.munichre.com](http://www.munichre.com)

In January 2006, the Group of Thirty (G30), a non-profit, non-political organisation exploring the international financial system, published a report entitled *Reinsurance and International Financial Markets*<sup>21</sup>. The report notes that, abstracting from short-term developments, the reinsurance industry faces several major challenges in coming years. One is the ability of the industry to provide cover for risks where demand is increasing rapidly but where the primary insurance industry is increasingly wary of providing cover – for example, longevity, health, disability and certain casualty and liability risks. Overall, G30 finds that “the reinsurance industry is unlikely to be a significant source of systemic instability in its broadest manifestation. It [the G30 analysis] suggests that a reinsurance shock would be unlikely to have significant adverse effects on the real economy through the traditional financial contagion channel.”<sup>22</sup>.

### **Influenza Pandemic: Impact on Reinsurance**

There remains considerable uncertainty as to the extent and impact of any future influenza pandemic, a situation which is being monitored by the reinsurance industry, which could face considerable liabilities in the event of any significant increase in mortality levels.

Supervisors will need to be aware of accumulations of risk in reinsurers, which will be exacerbated by increased demand from the primary market for specific pandemic cover and high-layer excess-of-loss covers on retained risks. It is not clear, however, that the reinsurance market will have either the capacity or the appetite to provide such additional cover.

Whilst there is no suggestion that reinsurers will seek to exclude pandemic risk from death or disability coverage, it is likely that catastrophe protection wordings have been tightened in recent years to ensure that the definition of cover is limited to catastrophic events, i.e. man-made and natural accidents, as intended, priced and reserved, and that, as a result, there is no unintentional extension of the range of cover.

The use of insurance-linked securities can be seen as a reaction to the recognition of the remote, uncertain, but significant magnitude of shock risks. Such securities are usually index-linked and, as such, are inclusive of pandemic risk but not pandemic-specific.

It is also possible that an increased perception of risk by the public could lead to increased levels of demand, possibly in turn leading to operational disruption at primary life insurers. It is not possible to say with any degree of certainty at this stage what the underwriting reaction of these primary insurers will be, but clearly reinsurers will have an important influence. Reinsurers are less likely to suffer from operational issues caused by peaks in demand.

In the property and casualty market, the main area of exposure would be in business interruption, but this is likely to be limited because of the restriction in most contracts to consequential loss caused by a material damage claim covered by property insurance.

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21 Group of Thirty: *Reinsurance and International Financial Markets*, Washington, DC, 2006, [www.group30.org](http://www.group30.org)

22 For discussions of other aspects of the G30 report, see sections 4.2 and 6.2

## 4. Developments in regulation and reporting

This chapter discusses the main on-going and recent developments in regulation pertaining directly, or indirectly, to reinsurance.

### 4.1 Regulation of reinsurance

The regulation of reinsurers is currently not harmonised. Descriptions of individual reporting jurisdictions' regulatory capital requirements and regulatory reporting for reinsurers are provided in Appendices IV and V. They show that the level and content of regulation still vary substantially between jurisdictions.

#### IAIS initiatives

- Supervision of reinsurers

IAIS initiatives towards global harmonisation of the regulation of reinsurers to date include the *Insurance Core Principles and Methodology*, (October 2003), the *IAIS Principles on minimum requirements for supervision of reinsurers* (October 2002) and the *IAIS Standard on supervision of reinsurers* (October 2003)<sup>23</sup>.

Based on the underlying premise that all reinsurers should be supervised, the Principles and the Standard constitute a significant first step towards harmonising supervisory practice for the global reinsurance industry. The Principles identify requirements of a supervisory framework that are common for primary insurers and for reinsurers, such as licensing, fit and proper testing and on-site inspection, and those requirements that need to be adapted to reflect reinsurers' risks: technical provisions, investments and liquidity, economic capital adequacy, corporate governance, and exchange of information. The Standard addresses the latter requirements more specifically.

Following the adoption of these papers, work is continuing on a survey on reinsurance supervision, the purpose of which is to assess the degree of compliance with the Principles and Standard on supervision of reinsurers and to determine what additional guidance or elaboration of the Standard may be required to assist supervisors

The IAIS is continuing to focus its efforts on developing an efficient and effective international framework including mutual recognition criteria and processes which will be sufficient to allow host supervisors, both on a bi-lateral and a multi-lateral basis, to rely on the supervisory capacity and capability of home supervisors, as well as providing credibility and comfort in relation to the reinsurance support provided to local insurers. This work will result in an IAIS Guidance Paper in 2007.

- Finite reinsurance

In October 2005, the IAIS issued a *Guidance paper on risk transfer, disclosure and analysis of finite reinsurance*<sup>24</sup>. Finite reinsurance, or financial reinsurance, is a contract between an insurer and a reinsurer where limited risks are transferred to the reinsurer. In some cases, these contracts may be financing arrangements

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23 [www.iaisweb.org](http://www.iaisweb.org)

24 [www.iaisweb.org](http://www.iaisweb.org)

(where funds are effectively loaned by the reinsurer to the insurer), in which case they should be accounted for as loans and not reinsurance.

Recent regulatory developments have highlighted the concern that this form of reinsurance has been used improperly on occasion. From a supervisory perspective, the primary issues in finite reinsurance revolve around whether there is adequate risk transfer and there is appropriate accounting and disclosure. In some instances, misuse of finite reinsurance has resulted in misrepresentation of an insurer's financial position to supervisors, policyholders, investors and other stakeholders and brought into question the adequacy of corporate governance and management accountability. Notwithstanding this, there has not been widespread misrepresentation of reinsurer's reported equity as a result of the misuse of finite reinsurance products.

The supervisory guidance paper outlines the key areas that supervisors should focus on. Sections of the paper include:

- background on the development of finite reinsurances and its uses;
- characteristics of finite reinsurance, evaluation of risk transfer, accounting and disclosure; and
- issues supervisors should be aware of and recommended supervisory approaches.

In October 2006 the IAIS adopted a revised *Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance*, adding life insurance examples and reflecting the latest developments in accounting for reinsurance contracts.

- Solvency and capital adequacy

In October 2005, the IAIS adopted a paper *A new framework for insurance supervision*<sup>25</sup>. The framework underpins the IAIS's past and future standard-setting activities on supervision of insurers and reinsurers. A central part of this framework is the development of a common structure and common standards for the assessment of insurer solvency in order to enhance transparency and comparability across different regulatory regimes, and thereby engender convergence of solvency regimes on an international basis. In this regard, the IAIS in October 2005 also adopted a paper, *Towards a common structure and standards for the assessment of insurer solvency: cornerstones for the formulation of regulatory financial requirements*<sup>26</sup>. These cornerstones will form the foundation of further work towards common standards for the assessment of insurer solvency.

A 'roadmap paper' containing a detailed work plan and time path for the completion of the common structure and common standards for solvency assessment was released in February 2006.

The next stage in formulating a consistent, reliable and transparent approach to the assessment of insurer solvency is the drafting of *The IAIS Common Structure for the Assessment of Insurer Solvency*. This work is currently underway within the IAIS.

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25 [www.iaisweb.org](http://www.iaisweb.org)

26 [www.iaisweb.org](http://www.iaisweb.org)

## Developments in the EU

- The Reinsurance Directive<sup>27</sup>

In June 2005, the EU Directive on Reinsurance was approved by the European Parliament and in October 2005 it was adopted by the European Council of Ministers. EU Member States will have to implement the Directive into national legislation by December 2007.

The Directive is principles-based. It establishes a legal framework for the regulation and prudential supervision of reinsurers by their home country on the basis of harmonised requirements.

The Directive requires reinsurers to be authorised by the Member State in which the reinsurer has its head office and imposes minimum capital requirements on authorised reinsurers, requiring them to maintain at all times, capital resources of not less than €3m (€1m in the case of captives). Authorised reinsurers will also need to comply with various other prudential rules, including requirements to maintain a minimum margin of solvency, establish adequate technical provisions and ensure that assets are prudently invested, properly diversified and sufficiently liquid, having due regard to the amount and duration of the expected claims payments.

The Directive will abolish requirements of collateralisation to cover outstanding claims provisions, where these currently exist, and will allow 'passporting' of reinsurance companies within the EU, removing the requirement for separate authorisation of branches in each Member State.

Member States are able to supplement the rules with additional requirements, if they so wish.

Once implemented, the Directive will contribute to reinforcing financial security and stability by imposing minimum capital requirements and improving transparency about reinsurers, thereby facilitating the markets' assessment of their financial standing.

- Solvency II<sup>28</sup>

At the beginning of 2000, the European Commission initiated a fundamental and wide-ranging review of the current EU solvency regime for insurance (including reinsurance) undertakings in the light of developments in insurance, risk management, financing techniques and financial reporting. One of the key objectives of the project is to establish a solvency system that better matches the true risk profiles of insurance undertakings and reflects market realities and developments while avoiding undue complexity. It is intended that this should then lead to more efficient and secure markets and, by harmonising national legislation and supervisory practices, to a more level playing-field among insurers in Europe and to a stronger position for European insurers generally. Thus, Solvency II aims at providing an enhanced safety net for policyholders and supporting market stability.

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<sup>27</sup> [ec.europa.eu/internal\\_market/insurance/reinsurance](http://ec.europa.eu/internal_market/insurance/reinsurance)

<sup>28</sup> [ec.europa.eu/internal\\_market/insurance/solvency2](http://ec.europa.eu/internal_market/insurance/solvency2) and [www.ceiops.org](http://www.ceiops.org)

Solvency II will provide supervisors with the appropriate tools and powers to assess the "overall solvency" of insurers based on a prospective and risk-oriented approach. Solvency II takes as its starting point a three pillar structure: quantitative requirements (Pillar 1), supervisory activities (Pillar 2) and supervisory reporting and public disclosure (Pillar 3).

Detailed work on Solvency II started in September 2004 and, it is expected that a framework directive will be adopted by the European Commission in July 2007 with more detailed regulation expected to be finalised in 2008 and fully implemented in Member States in 2010.

#### OECD work on reinsurance – an overview

- Since the mid-1990s, the OECD Insurance Committee has been pursuing work on reinsurance. In 1996 it published a Note entitled *Regulation and Supervision of Reinsurance*<sup>29</sup>, which observed a large range in the degree of supervision of reinsurers among OECD Member States. In 1998 the OECD issued the *Recommendation of the Council on Assessment of Reinsurance Companies*<sup>30</sup>, which recommended that the Member States invite insurance companies and reinsurance companies under their supervision to collect and provide specific information that would allow the ceding companies to assess the soundness of the reinsurance companies to which they cede risks. In its Annex and Notes, the Recommendation identified specific factors which an insurer ought to consider in its assessment of a reinsurer.
- In 2004 the Committee commissioned an extensive Paper entitled *Trends in Reinsurance Markets and Regulation in OECD Countries*<sup>31</sup> and an identically entitled Note for discussion, which addresses reinsurance market issues and concerns after the 11 September 2001 events, reviews the rationale and alternative approaches to reinsurance regulation, focuses on reinsurer capital adequacy requirements and highlights the risks in reinsurer market conduct.
- The Committee continues to monitor developments relevant to the insurance and reinsurance sector, including financial education & awareness (report on best practices), the challenges due to longevity risks, the financial management of large scale catastrophes (a revised network being approved), medical malpractice (revised report including policy options), the financial policy landscape, the code of liberalisation, and pensions.

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29 [www.oecd.org](http://www.oecd.org)

30 [www.oecd.org](http://www.oecd.org)

31 [www.oecd.org](http://www.oecd.org)

## **Contract Certainty**

A long-standing feature of the non-life insurance and reinsurance market has been that the documentation of contracts has been less detailed and formalised than in other parts of the financial services sector. Within the subscription market, the main contract terms are summarised in a 'slip' document; however, the final policy wording containing full terms and conditions is only finalised later. Historically, this has often occurred only after the inception of coverage, as it can take a very long time for wording to be agreed.

This can lead to risks to all the parties in the insurance chain: insurers do not know precisely what cover they have provided and cannot, therefore, be sure that they have sufficient capital to hold against the risk; their clients do not have certainty over coverage; and brokers are exposed to legal and other risks.

Whilst these risks occur firstly at the jurisdiction level, there also are international implications of the lack of contract certainty. Individual jurisdictions are part of the wider, global insurance market. Lack of contract certainty in one market could give rise to similar risks to those described above for regulated entities in other markets with which it conducts insurance or reinsurance business.

Within the UK, the Financial Services Authority set the insurance market a challenge of rectifying this issue by the end of 2006. The UK supervisor's focus is on contract documentation, and on having the contract terms and wording agreed up-front – rather than the legal certainty of the contract itself. The UK industry has responded by developing Codes of Practice and providing related guidance to assist firms in resolving the issue. Good progress has been made over the last 18 months such that a significant proportion of contracts undertaken in the London Market now achieve contract certainty, thus reducing the risks and increasing efficiency in the market.

In Australia, APRA now requires reinsurance contracts documentation to be finalised within short time frames after inception for insurers to obtain regulatory capital credit for the reinsurance.

## The Collateral Issue in the US

In the US, the National Association of Insurance Commissioners (NAIC) is currently considering the issue of collateral requirements. The NAIC Executive Committee has charged the Reinsurance Task Force with considering the issue under the following mandate:

"The Reinsurance (E) Task Force is directed to develop alternatives to the current reinsurance regulatory framework, including the use of collateral within the U.S. and abroad. Consider approaches that account for a reinsurers financial strength regardless of domicile, i.e., state or country. Identify and consider variations in state law and regulation relative to reinsurance contracts, financial reporting, etc. As part of its deliberations, the Task Force should consult with international regulators in addition to all other interested parties. The Task Force shall present the proposal to the membership by the December 2006 national meeting."<sup>32</sup>

Following the March meeting, representatives of industry (US and foreign) undertook an effort to review potential structural changes to the US reinsurance regulatory system as well as incremental efforts aimed at potential collateral reduction. This group, the Interested Persons, submitted a comprehensive report at the June NAIC meeting. Following the presentation of that report, the Reinsurance Task Force requested that

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32 [www.naic.org/documents/committees\\_Charges.pdf](http://www.naic.org/documents/committees_Charges.pdf)

the Interested Persons focus on one of the incremental approaches, the Rating Proposal, and that they report back to the Task Force in September with the industry's point of views. In September, the Interested Persons presented the Reinsurance Task Force with a report outlining the pros and cons of various aspects of the Rating Proposal providing, in effect, a roadmap for alterations to that proposal. Despite the fact that the Interested Persons were able to produce reports in both June and September, the Interested Persons were not able to agree on what reforms should take place.

At the same time, the Task Force consulted a number of other stakeholders, including non-US regulators, CEIOPS and the European Commission.

The collateral issue remains controversial with some foreign reinsurers advocating a change in the system, US non-life insurers opposing any collateral reduction, and some reinsurers advocating comprehensive reinsurance regulation reform with elements of mutual recognition.

The Reinsurance Task Force continues to work on the Rating Proposal and NAIC leadership expects that a report from the Task Force will be presented to the full NAIC membership at the NAIC meeting in December 2006.

## **4.2 Disclosure Requirements**

Current disclosure requirements and practices for reinsurers are widely divergent (see Appendix V for a summary of regulatory reporting and the current level of disclosures by reinsurers in participating jurisdictions).

### IAIS initiatives

In developing insurance supervisory standards the IAIS has, as one of its objectives, the promotion of market discipline.

Recent and current steps taken by the IAIS towards global harmonisation of disclosure regulation for insurers and reinsurers include:

- The adoption of an IAIS *Standard on disclosures concerning technical performance and risks for non-life insurers and reinsurers* in October 2004<sup>33</sup>, the first of three IAIS standards regarding public disclosure requirements. The standard addresses the analysis of technical performance, key assumptions and sources of measurement uncertainty as well as sensitivity, stress testing and scenario analysis (including sensitivity analysis of both assets and insurance liabilities).
- The adoption of an IAIS *Standard on disclosure concerning investment risks and performance for insurers and reinsurers*, in October 2005<sup>34</sup>. This standard sets minimum disclosure requirements, both qualitative and quantitative, so that market participants can assess the specific risks to which the company may be exposed. The standard requires disclosures on the investment objectives, risk exposures, asset class segregation and performance measurement.
- The adoption of an IAIS *Standard on disclosure concerning technical risks and performance for life insurers*, in October 2006<sup>35</sup>. This third standard relates to disclosure of technical risks and performance of life insurers and reinsurers. Like

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33 [www.iaisweb.org](http://www.iaisweb.org)

34 [www.iaisweb.org](http://www.iaisweb.org)

35 [www.iaisweb.org](http://www.iaisweb.org)

the previous two standards the main aim of the standard is to facilitate the enforcement of market discipline. The standard requires an insurer and a reinsurer to disclose information that reflects the technical risks it is exposed to through its life insurance business. A life insurer or reinsurer may well have specific investment needs and strategies directly linked to its business. Hence, technical risk and performance should be seen in the light of the overall risk exposure of a life-insurance undertaking.

The three standards may be combined into a single disclosure standard in 2007.

### G30

In January 2006, the G30 published its report *Reinsurance and International Financial Markets*<sup>36</sup>. It suggests that concerns about lack of transparency have left counterparties to transactions, investors and supervisors unclear about the risks the industry is taking and the risk management methods and models it uses. The report notes that the risk information published by reinsurers varies significantly across firms and jurisdictions in both frequency and scope.

The report suggests a framework for disclosure of reinsurance risk by reinsurers with the intention of promoting the transparency of the industry by using the following principles:

1. Managing risks and evaluating their effects on assets and liabilities should be based on a realistic economic view.
2. Assessing the impact of risk factors (e.g. credit risk, market risk, liquidity risk and operational risk) on economic capital should involve an integrated evaluation of assets and liabilities.
3. This assessment should also take into account the relationships between risk factors rather than focus on their stand-alone impact.
4. Risk measurement methods and assumptions used should be consistent over time to facilitate trend identification and analysis.

Based on these principles, a framework for disclosure by reinsurers is developed. The areas covered in the framework are: firm governance and risk management; risk factors; the quality of risk management; the quality of risk models; stress testing involving an assessment of worst-case scenarios; financial risk exposures and non-insurance/reinsurance activities; and disclosure of available capital.

### Disclosure requirements under International Accounting Standards

See Section 4.4 below.

## **4.3 Supervisory reporting**

In participating jurisdictions, reinsurers are required to provide returns to their supervisors. Some of the information in those returns is available to the public and some is obtained on a confidential basis (see Appendix V on regulation and current level of disclosure by reinsurers in participating jurisdictions). The publicly available information ranges from financial statements (balance sheet, profit and loss account,

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36 Group of Thirty: *Reinsurance and International Financial Markets*, Washington, DC, 2006, [www.group30.org](http://www.group30.org)

and schedules containing informative notes and data such as the detailed list of investments) to the full list of supervisory reporting templates.

The non-public information required by supervisors is generally substantial when public disclosure is limited, including such items as detailed technical results, information on provisions, claims development triangles by class of business, or stress testing analysis on assets and provisions.

Where the regulation of pure reinsurers is more limited than the regulation of insurers which also accept reinsurance, pure reinsurers may not be asked to provide supervisors with the corresponding supervisory returns, such as those on capital adequacy and solvency requirements or asset-liability matching.

#### **4.4 Financial reporting**

##### Each jurisdiction is reporting in different GAAP

Currently, there are wide divergences in the level of financial reporting requirements applied to reinsurers across jurisdictions.

For purposes of producing the global reinsurance market statistics, the financial information included is consistent with Generally Accepted Accounting Principles, GAAP of the reporting jurisdictions or entities concerned or, in the case of US reporting reinsurers, consistent with supervisory reporting practice.

##### Introduction of IFRS<sup>37</sup>

Many jurisdictions have now started to implement International Financial Reporting Standards, IFRS. As a result of an EU Directive,<sup>38</sup> the application of IFRS is a requirement for the consolidated accounts of EU listed entities and publicly traded entities, with effect from 1 January 2005. Although the use of IFRS is generally not a requirement for non-listed reinsurers, a number of EU jurisdictions permit (or require) their use for the preparation of other types of financial statements. In addition, many non-EU jurisdictions have implemented IFRS or are planning to do so in the near term. There are also convergence projects with the accounting standards in both the US and Japan.

The introduction of IFRS has significantly changed at least the consolidated financial statements of reinsurers, and is expected to increase convergence of financial reporting requirements. For supervisory purposes, however, many jurisdictions are continuing to use local GAAP for the time being.

##### IFRS for (re)insurance contracts

The International Accounting Standards Board, IASB's accounting standard for insurance contracts is being completed in two stages. Phase I of the IASB's Insurance Contracts Project has resulted in IFRS 4 ('Insurance Contracts'), which is an interim standard. This standard applies to insurance contracts (including reinsurance contracts) that an entity issues and reinsurance contracts that it holds. However, it deals only partly with the accounting issues related to insurance contracts (such as definition,

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37 The International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB).

38 Regulation No. 1606/02 of the European Parliament and of the Council of 19 July 2002 on the application of international financial reporting standards, which relates to the consolidated accounts of EU listed entities and publicly traded entities.

disclosure and accounting policies) and does not include accounting for financial assets held by insurers or financial liabilities issued by insurers. As a result, until Phase II of the Insurance Contracts Project is completed, reinsurers reporting under IFRS are doing so under a regime which is not comprehensive insofar as the accounting for (re)insurance contracts is concerned. The major rules are currently to be found in IAS 39 ('Financial Instruments: Recognition and Measurement') and in the interim standard IFRS 4.

#### Disclosure requirements under IFRS

For jurisdictions adopting IFRS for public financial reporting purposes, IFRS 4 and IFRS 7 are the standards most relevant to disclosure by reinsurers:

- IFRS 4 ('Insurance Contracts') requires, in particular, disclosure that:
  - identifies and explains the amounts in an insurer's financial statements arising from insurance contracts; and
  - helps users of those financial statements understand the amount, timing and uncertainty of future cash flows from insurance contracts.
- IFRS 7 ('Financial Instruments: Disclosures') was issued by the IASB in August 2005 and supersedes IAS 30 ('Disclosures in the Financial Statements of Banks and Similar Financial Institutions') and the disclosure requirements of IAS 32 ('Financial Instruments: Disclosure and Presentation'). The standard is effective from 1 January 2007 with earlier application encouraged. The standard updates the disclosure framework for risks arising from financial instruments, as a result of ongoing developments in risk management, and gives rise to consequential amendments to the implementation guidance of IFRS 4 in respect of contracts which fall under the definition of 'insurance contract' rather than 'financial instrument'.

#### IAIS survey on implementation of IFRS

In late 2005, the IAIS conducted a survey on the implementation by insurers of IFRS, and published a report based upon the survey responses in May 2006.<sup>39</sup>

The main findings of the report highlight some of the concerns that exist in the absence of a comprehensive accounting standard for (re)insurance contracts. For example, there is concern over potential "mismatch" arising from different valuation bases between assets and liabilities. Mismatch occurs primarily where assets are reported on a fair value basis (IAS 39) while in most jurisdictions the corresponding (re)insurance liabilities are based on existing national GAAP (generally historical cost), leading to concern over volatility arising from inconsistent measurement bases for assets and liabilities.

The report also highlights areas where, or ways in which, supervisory measures are being applied to address these concerns.

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<sup>39</sup> The full IAIS survey report: *Impact upon supervisors of implementation of IFRS*, May 2006 is publicly available on the IAIS website, [www.iaisweb.org](http://www.iaisweb.org).

## Phase II of the IASB's Insurance Contracts Project

The IASB has now been working on Phase II for around two years. This has included input from an IASB Insurance Working Group (IWG) – a group created to analyse accounting issues relating to insurance contracts and to advise the Board thereon – as well as discussion at its regular Board meetings. A Discussion Paper on Phase II is expected to be released within the first quarter of 2007, which means that an international financial reporting standard on insurance contracts is unlikely to be issued before 2010.

### IAIS input into Phase II

Insurance supervisors are significant users of insurers' financial statements and thus have a particular interest in the development of international accounting standards that have an impact on insurers and reinsurers. The IAIS has intensified its work in providing input to the IASB in respect of Phase II, in its effort to promote the development of a high quality accounting standard for insurance contracts. The IAIS provides input to the IASB through meetings of the IWG, on which it has two seats as official observer, through membership of the IASB's Standards Advisory Council and through comment papers. In May 2006, the IAIS issued a second comment paper<sup>40</sup>, prepared as input to the IASB in respect of Phase II, following on from an initial comment paper of 2005.

The IAIS is concerned with both general purpose accounting and with reporting for solvency purposes. At this stage, the IAIS believes there should be no major conceptual differences between the methodologies used to generate both general purpose and regulatory financial reports. This would result in the two sets of reports being as similar as possible with any differences easily reconcilable. Indeed, there is widespread support for an effort to achieve a single set of accounts that can be used for both general purpose financial reporting and regulatory reporting, notwithstanding the potentially differing purposes of such reports. Achievement of this aim will help to maintain the credibility of the reporting regimes and is likely to reduce costs and workload for supervised insurers. The developments and progress on Phase II are therefore of great interest to insurance supervisors – as well as the industry – and monitoring and providing input on the project a high priority for the IAIS. The IAIS will continue provide input to, and work with, the IASB throughout the Phase II project.

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40 *Issues arising as a result of the IASB's Insurance Contracts Project – Phase II: Second Set of IAIS Observations*, May 2006 (known as the second 'Liabilities Paper'), publicly available on the IAIS website, [www.iaisweb.org](http://www.iaisweb.org)

## 5. Resilience of the reinsurance sector

This chapter provides information about various aspects of the resilience of the reinsurance sector. First, we review risk-related disclosure, based on publicly available information, which aids better understanding of the resilience of reinsurers.

The main conclusions of this review are:

- almost all reinsurers detail their exposure to their main risk classes (insurance, credit and market risk) at a high level and provide qualitative information on their risk management framework;
- a little more than half disclose detail on specific risk issues;
- qualitative and quantitative information focus mainly on market risks but also on insurance risk;
- information on risk mitigation and monitoring tools mainly focus on market risk, and little detail is provided on how risk management methodologies are incorporated within a broader risk control framework;
- market risk disclosure typically includes credit risk on reinsurers' investment portfolios, with only little information on currency risk, interest rate risk, liquidity risk and concentration risk;
- qualitative disclosure focus on scenario analysis rather than stress testing and sensitivity analysis; only a minority provides a higher degree of detail;
- quantitative information on the relationship between risks and available capital is provided only by a small number of reinsurers; and
- the review reinforces the need for continued effort within the industry, as well as by international bodies (such as the IAIS, the FSF and private sector groups looking into these matters such as the G30), to promote a more systematic framework for disclosure of both quantitative and qualitative risk information.

Second, we discuss recent trends towards increased severity and frequency of events that may affect the resilience of the reinsurance sector,<sup>41</sup>.

The main key point arising from this section is that the reinsurance sector proved able to absorb the impact of recent catastrophes, but has adjusted to some extent its approach to catastrophe risk for the future.

Finally, recent developments have affected weather modelling and rating agencies' risk-assessment frameworks and procedures, with indirect effects also on the reinsurance sector. The last section of this chapter takes stock of these developments, stressing the issues caused by unrealistically high levels of confidence in the modelling techniques which were exposed by 2005's catastrophic events.

Sections 5.2 and 5.3 discuss the impact and modelling of natural catastrophe risk on the reinsurance sector, because this is the major type of event occurring in 2005. However, it is not the only major type of risk that can affect the resilience of a reinsurer. Depending on the respective business focus, reinsurers can have significant risk, for example, from exposure to pandemic risk<sup>42</sup>, liability classes, claims inflation risk,

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41 See also section 3.1

42 See also box in Chapter 3

foreign exchange or equity risk. Some of these events can happen at a point in time whilst others have a more gradual effect over a longer period. The potential impact of the other risks should also be considered.

## **5.1 Review of risk-related disclosure by reporting reinsurers**

At present, information disclosed by reinsurers and the disclosure requirements they operate under vary significantly between reinsurers and jurisdictions in terms of frequency, detail and scope. For this reason, the review applies a mainly qualitative perspective. The actual figures on which the following discussion is based are provided in Appendix VIII. This section should also be read together with the information on the current level of disclosure by reinsurers in participating jurisdictions (Appendix V) and with the summary of regulatory requirements on stress testing in participating jurisdictions (Appendix VII).

Features and methodology of the review include:

- The review covers the 56 reinsurers reporting to the 2005 statistics;
- It is based on publicly available information disclosed by reinsurers on their respective websites, in the form of annual reports and annexed documents<sup>43</sup>;
- To ensure consistency with the reporting basis of the rest of the report, entity-level information has been used, where available. Where this information was not available, the review was based on group disclosure<sup>44</sup>;
- The review provides information on risk disclosure by reporting reinsurers using recommendations by international bodies<sup>45</sup> as a benchmark in establishing a matrix of available data, and comparison with other reporting reinsurers; and
- The review addresses disclosure of information on risk management in general, on catastrophes and natural disasters in particular, and tools used to measure, control and monitor the overall risk exposure.

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43 For UK reporting reinsurers, reference has also been made to the supervisory returns available on request from the reinsurers in question. Similarly, for US reporting reinsurers, reference has also been made to Schedules F and S available from the NAIC.

44 For nearly half of the reporting reinsurers at least some information at the entity-level is available. For other reinsurers, usually those belonging to an international group, annual reports on a consolidated basis have been used. This has four main consequences on the results of this survey:

- firstly, aggregation of quantitative data, although desired, is not consistent, since in many groups the consolidation of balance sheets involves not only reinsurance companies (insurance companies, banks, other financial and non-financial entities);
- secondly, often the information gathered refers to practices undertaken on a group-wide basis and it does not specifically apply to practices applied by the reinsurer;
- thirdly, in groups dominated by banking business disclosure will often focus primarily on banking risks rather than insurance risks;
- finally, our choice to examine information on a legal entity and group-wide basis could bias the outcome in the sense that where several legal entities of the same group are included, their figures will be counted several times. This would not be the case if they had been included as a group.

45 For instance, IAIS, *Standard on Disclosures concerning Technical Performance and Risks for Non-life Insurers and Reinsurers* (October 2004); IAIS, *Standard on Disclosures concerning Investment Risks and Performance for Insurers and Reinsurers* (October 2005); IAIS, *Standard on Disclosures concerning Technical Risks and Performance for Life Insurers* (October 2006); G30, *Reinsurance and International Financial Markets* (2006), chapter 5; the Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards*, (November 2005), Part 4; CEIOPS, *Answers to the European Commission on the third wave of Calls for Advice in the framework of the Solvency II project*, C.f.A. 21 – pp. 75-94 (May 2006).

Our main benchmarking reference for establishing an evaluation matrix is some of the provisions in the three IAIS Standards on Disclosure (see section 4.2 and footnote 45), especially the provisions on risk and resilience. They are:

- risk exposures and performance measurement of the company, both on the asset-side and the liability-side of the balance sheet;
- investment objectives, policies and management;
- asset class segregation, description and profiling;
- capital adequacy in relation to solvency requirements or to the risk profile of the company;
- information on risk concentration (exposure to catastrophic events);
- outline of the sensitivity, stress testing and scenario analysis that have been undertaken and the use of the results, both on the asset-side and the liability-side of the balance sheet;
- exposure, objectives and policies regarding technical risks.

### 5.1.1 Risk management practices of reporting reinsurers

The risks that reinsurers face and need to manage are mainly insurance (underwriting, provisioning and retrocession), investment, credit and operational risks<sup>46</sup>, although risk can arise from other areas, such as an entity's membership of a group.

Due to their role as insurers of insurers, reinsurers may face a higher level of risk exposures to certain events than primary insurers, but they are also likely to have a greater degree of diversification. Thus, reinsurers need to focus on their aggregate risk exposures and on the reliability of data collected from cedents. This underlines the need for internal risk management including measurement, control and monitoring tools. In addition to analysis for internal risk management purposes, reinsurers also need to meet supervisory requirements when considering their risk management approach, both at entity and group level. This would also apply to rating agencies' expectations and approaches.

### 5.1.2 Qualitative data disclosed by reinsurance companies

#### Methodology

This sub-section relates to the descriptive aspects of disclosure and is based on the following information<sup>47</sup>:

- presence or absence of a specific risk section in the annual report or publicly available supervisory return addressing risk management issues;
- information about the risk management framework and strategy in place, including the organisation of the risk management function;
- information about links between risk profiles and solvency requirements, and how this relationship is identified, measured, assessed, reported and controlled<sup>48</sup>;

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46 For definitions of these concepts see the IAIS *Glossary of terms* updated in March 2006, [www.iaisweb.org](http://www.iaisweb.org).

47 Figures in histograms in Appendix VIII refer to the percentage of reporting reinsurers that disclose that particular type of information. Since it is a Yes/No classification for each entry, it is not possible to identify the variability of quality and quantity of the information. It provides only a generic overview of the main players of the international reinsurance market.

- the extent to which there is explicit information on topics such as risk categorisation, main issues arising from each risk category, tools used in risk management and specific risk monitoring highlights (such as the impact of US hurricanes on the financial results and on internal modelling); and
- information about scenario modelling, sensitivity analysis and stress testing of the risk categories identified (including specification of the key parameters used).

A little more than half of the entities reviewed disclose separate information on risk-related topics. However, this information is provided in different sections of the annual reports, often in the Notes to the accounts, or in a general section. For these reasons, it is not always easy to achieve a comprehensive picture.

A significant number of reporting reinsurers or groups provide only the disclosure needed to comply with US Securities Exchange Commission requirements (SEC filings-10K<sup>49</sup>), given their listing on the York Stock Exchange. The primary purpose of the SEC filings is directed towards the needs of investors, focusing mainly on market risks and related issues.

Some reinsurers provide an explicit section describing how the risk management function is organised, while most other reinsurers describe their solvency and capital management and the threats posed to solvency by the risks faced. A smaller number of reinsurers and groups provide quantitative information on the relationship between risks and available capital<sup>50</sup>.

### Conclusion

Less than half the reinsurers and groups provide a discussion of specific risk issues (such as forecasted and actual major effects of events like avian flu, or Hurricane Katrina) and the relative impact on their business.

Using a risk categorisation limited to insurance, market (including the credit risk on their investment portfolio), operational risks and general business risks<sup>51</sup>, practically all reporting entities provide information on investment risk and (to a lesser extent) credit risk. On the other hand, operational risk and general business risks receive the lowest level of attention. On average, disclosure levels about general insurance risks are quite high, but only half of the reinsurers provide a more detailed description of risk management tools. As a general observation, the threats and challenges linked to all these risks are often mentioned, but there is less disclosure of information on managing, controlling and monitoring tools.

The review includes information on tools used for measuring the level of the risks faced by the reporting entities, including Value-at-Risk (VaR) and Expected Shortfall (ES), as well as Tail Value-at-Risk (TVaR) or Conditional Value-at-Risk (CVaR). Only a minority

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48 For further references to these concepts see the IAIS *Insurance Core Principles and Methodology* (October 2003), [www.iaisweb.org](http://www.iaisweb.org). For additional insights see for example: Bomhard, von N. (2005), *Risk and Capital Management in Insurance Companies*, The Geneva Papers on Risk and Insurance – Issues and Practice, 2005, 30, pp. 52-59.

49 For further information on SEC requirements for this report, see SEC's description of the contents of this report, available at [www.sec.gov/about/forms/form10-k.pdf](http://www.sec.gov/about/forms/form10-k.pdf)

50 The quantity and quality of disclosed information, as well as the level of detail at the legal entity level, are influenced by the requirements of local regulation. Nevertheless, we find in a significant number of reporting entities a higher degree of information, disclosed voluntarily. For further details on local supervisory systems and regulation, see Appendix V.

51 In this context, general business risks are risks related to unexpected changes to the legal conditions to which insurance undertakings are subject, changes in the economic and social environment, as well as changes in business profile and the general business cycle. For further reference, see IAIS *Glossary* (March 2006), [www.iaisweb.org](http://www.iaisweb.org).

of reporting reinsurers explain how these tools have been implemented in their risk management frameworks, which risks they are used in respect of and how the outcome of these measures is used by their Boards of Directors and Management.

In their annual reports<sup>52</sup>, reporting reinsurers disclose most information about their market risk profile and Value-at-Risk<sup>53</sup>. A description of expected shortfall and equivalent measures is provided only by one-fifth of the reinsurers. No information about more sophisticated and technical risk related measures has been provided by the reporting entities, such as those belonging to the Extreme Value Theory (EVT).

Scenario modelling, stress testing and sensitivity analysis are tools used within a risk management framework to assess the impact of alternative assumptions on the company and to develop contingency plans and other risk mitigation strategies. In this area, information disclosed by reinsurers varies widely. The most commonly discussed tools are scenario models, especially those covering catastrophe and market risks. Sensitivity analyses are less frequently used and often in connection with bond and equity markets. Stress testing data is found in the disclosure of about half of the reporting entities<sup>54</sup>.

### 5.1.3 Quantitative data disclosed by reinsurance companies and groups

The review of quantitative data covers areas such as:

- disclosure about investment policies, the level of credit risk of assets (usually splitting investments by rating classes) and the Value at Risk of the assets;
- quantitative data about results of scenario modelling, stress testing and sensitivity analysis, for both assets and liabilities (including any derivatives);
- information on the development of loss ratios<sup>55</sup> (especially in relation to past catastrophic events), giving an indication of the accuracy with which these are initially set;
- information on rates of risk retention, showing the levels of dependence on external reinsurance; and
- explicit calculation of solvency requirements or comparable risk-based capital measures, possibly including disclosure about the effects of diversification.

A small number of reinsurers and groups explain figures and quantify specific exposures and risk management tools. More than half of the reinsurers and groups disclose data about assets by rating class, in order to provide a simple measure about the credit risk exposure of their investments, but a minority is explicit about the investment and asset management policies adopted. Only a few reinsurers publish detailed figures about the Value at Risk of the investment portfolio.

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52 For those jurisdictions where supervisory returns are publicly available, information on insurance risk may be found in this source, cf. footnote 43.

53 VaR is most commonly used for market risks. This is mainly due to the volume of widely available data on financial markets, with a frequency that readily allows back testing. This is not the case for insurance risks. Other methods are more applicable to insurance risks because of the focus is on the tails of the distributions of events. To overcome this problem, disclosure about the use of more advanced tools has been examined.

54 For all these tools, a distinction has been made between reinsurers and groups that disclose only a short overview of the modelling and testing used - the majority - and those that examine company-specific factors in more detail. See Appendix VIII for details.

55 Consistent with other chapters of the report, we refer to the loss ratio as the ratio of claims incurred to earned premiums.

Quantitative disclosures about the results of scenario modelling, stress testing and sensitivity analysis processes also show a wide spectrum of outcomes depending on which part of the balance sheet is modelled, tested or analysed<sup>56</sup>. Most information is disclosed about sensitivity of investment portfolios. Sensitivity of liabilities is disclosed less frequently, notably the outcome of a change in actuarial assumptions or the impact of embedded options. In general, reinsurers and groups disclose more information about assets than liabilities. Disclosure on insurance risks focuses more on extreme stress testing (i.e. catastrophic events) than scenario modelling or sensitivity analysis.

After having identified the reinsurers that disclose figures related to catastrophic events and natural disasters for 2005<sup>57</sup>, the review tries to draw a picture of the connection between risk exposure and actual losses in the sector. However, it was not possible to aggregate the numbers collected in a consistent manner, since information about losses is not always detailed or clear enough to allow a comparison and the measures used for risk exposure vary widely among reinsurers<sup>58</sup>.

Generally agreed and applied risk measures such as loss ratios (regarding technical efficiency) and retention rates (about the overall level of risks retained) are disclosed by a number of reinsurers and groups. The majority of the entities examined disclose quantitative information about the levels of risk retention, but fewer disclose more detail on loss ratios than a single and simple company-wide number<sup>59</sup>.

Half of the reinsurers and groups disclose explicit figures about available and required capital, either from a supervisory or an economic point of view. Many of the remaining entities' notes appear to comply with the applicable supervisory requirements, without giving any further details. Only a handful of reinsurers mention the effects of risk diversification on solvency or economic capital requirements.

## **5.2 Reinsurers' resilience and recent events**

### **5.2.1 Recent events and changes in reinsurance markets**

In recent years, the main events which have affected the viability of the (re)insurance market have been property catastrophe-related. This is in contrast to earlier years, where casualty exposures proved to be more potentially risky to a number of carriers. This recent trend means that this report focuses mainly on property (and, in particular, US property) exposures, but readers should bear in mind that future events may be caused by other sources of risk.

Whilst recent trends in property catastrophes seem to be showing a trend towards increased frequency and severity, it should be noted that levels of insured losses can

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56 There is no common definition of scenario modelling and stress testing among the examined entities. This means that sometimes disclosure about "internal models" involve both possible future scenarios and extreme resilience tests. This could have affected the figures of this review, but not the main results and the conclusions about the examined entities.

57 About 25% of reporting reinsurers at legal entity level, reduced to about 20% on a group-wide basis, disclose some data about the forecasted exposure to natural disasters, or the actual past losses, or both.

58 For example, exposures have been measured using from one-in-40-year up to one-in-200-year events.

59 The search for an explicit loss ratio related to catastrophe losses only, led to the conclusion that a small number of reporting reinsurers disclose this information, and the figure refers to the overall loss ratio for the company.

There are mainly two reasons that could explain a percentage differing from the expected outcome:

- the loss ratio is a measure that makes sense only in non-life business, but this review did not differentiate between the life and non-life business of reinsurers;
- a significant number of reporting reinsurers, mainly those with annual reports comprised of SEC filings only, provide only the data needed to calculate this measure.

be affected by other factors, such as inflation and population migration, as well as by pure increases in the severity of events.

As outlined earlier in this report, in particular in affected areas of the US there has been an underwriting as well as a capital response to 2005's losses and the increased perception of potential for future claims. This response has included changes in terms and conditions, increases in deductibles and attachment points, and a move towards excess-of-loss coverage, away from proportional contracts. Also, some (re)insurers have withdrawn capacity from certain areas, and have been declining to renew certain risks. All of these have contributed towards moves by most (re)insurers to reduce their aggregate exposures in catastrophe-prone areas, with current market conditions meaning that this has no impact on their top line. One possible effect of this trend is that the performance of reinsurers may become more volatile in the future, as their fortunes become more exclusively linked to increasingly extreme events.

In spite of unprecedented losses, no reinsurers have defaulted, although a small number have been forced into run-off. The final effect of the events of 2004 and 2005, however, will be fully understood only in the medium term.

## **5.2.2 Natural catastrophes and reinsurance resilience**

### US hurricanes

Recent trends in natural disasters show a concentration of losses in North America, especially due to the impact of US hurricane season.

Recent events have highlighted three main findings in respect of hurricanes:

- historical data show these occur in natural cycles over time;
- currently, there is a trend towards higher frequency and higher severity events; and
- recent events, even if not above 1-in-100-years threshold level, for many insurers and reinsurers exceeded the forecasted probable maximum loss at a 99% confidence level.<sup>60</sup>

### Natural disasters in other regions

During 2005, Europe was affected by two major natural catastrophes: the winter storm Erwin in Denmark, Sweden, the UK and Germany in January; and heavy rain, floods and landslides in Switzerland and Germany in August. These events rated fourth and fifth among the major natural catastrophes of 2005, measured by insured losses, with each accounting for US\$1.9 billion.

A major high-casualty event was the earthquake in Southern Asia (Kashmir) in October 2005 which resulted in 73,300 dead or missing persons and 74,000 casualties, as well as making 3.3 million people homeless. Overall losses are estimated at US\$ 5 billion, but the limited value of assets and the stage of development of insurance markets meant that there were few or no insured losses.

During 2005, Japan, South Korea and other adjacent countries reported only one major event (Typhoon Nabi/No 14), at the end of August and the beginning of September,

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<sup>60</sup> This was mainly due to loss accumulations in many insurance lines and to a narrow focus on catastrophe risks.

which was the tenth-largest event for insured losses of 2005, accounting for US\$0.5 billion insured losses and 34 dead or missing people.

Concerns have been raised about the ability of the reinsurance industry to withstand a major event like the Kashmir earthquake affecting an area with higher levels of insurance penetration.

### **5.3 Catastrophe modelling, rating agencies and reinsurance companies**

The risks that the reinsurance companies will face in the future are far from easily foreseeable. The most important certainty is linked to the sharply increasing cost the whole industry is facing year after year, mainly due to increased numbers and values of properties at risk, rather than due to higher frequency-higher severity events.

In this context, catastrophe modelling techniques, widely developed after Hurricane Andrew in 1992, showed their strengths and weaknesses. They helped the industry to cope with record-setting catastrophe losses. On the other hand, they proved to underestimate the size of losses of some events. Several commentators, including last year's edition of the IAIS Global Reinsurance Market Report<sup>61</sup>, noted that the events of 2005 underlined the limitations of the models used, as well as the importance of ensuring that they should not only be properly calibrated but also populated by good quality data.

A number of reinsurers have revisited their models and their use of the models in their risk management.

The main reaction of rating agencies to the 2005 events involved several reviews of the financial strength of reinsurers, as well as a small number of rating downgrades<sup>62</sup>. Also, the rating agencies have been involved in a comprehensive review of their approach to evaluation of reinsurance companies in the light of major natural catastrophes. For instance:

- A.M. Best will require the possibility of demand surge, storm surge, fire following earthquakes and secondary uncertainty estimates, as well as material sources of catastrophe risk, to be included in the loss estimates<sup>63</sup>. The agency is also reviewing the underlying assumptions of its stress-testing framework, adding a "stress-tested" capital adequacy analysis at a 1-in-250-years threshold level and after the add-on effect of two catastrophes in close succession;
- Fitch is updating its methodology and completely reviewing the underlying rationale for evaluating exposures to natural catastrophes: from evaluating only the 99<sup>th</sup> percentile loss from the simulated probabilistic loss curve, capital requirements will be based on Tail Value-at-Risk measurements, which could take into account all extreme events after the confidence level threshold<sup>64</sup>;
- Standard & Poor's is revising its criteria for rating natural catastrophe bonds that include U.S. hurricane risks<sup>65</sup>, as well as the evaluation model for capital adequacy.

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61 IAIS, *Global Reinsurance Market Report 2004*, December 2005, p. 14

62 Towers Perrin, *Hurricane Katrina: Analysis of the Impact on the Insurance Industry*, October 2005. See also section 3.3 above

63 A.M. Best, *Methodology: Catastrophe Analysis in A.M. Best Ratings*, April 2006.

64 FitchRatings, *Insurance, New thinking on Catastrophic Risk and Capital Requirements*, Special Report, 9 November 2005.

65 Standard & Poor's, Press release 2. June 2006.

As a result, it is most likely that some companies will need a higher level of capital to keep their current ratings. This may contribute to a further increase in (re)insurance prices for certain lines of business. But capital increases alone may not be sufficient to sustain reinsurance companies' ratings<sup>66</sup>: the main focus of rating agencies will be the risk management framework adopted by reinsurers, as well as the quality of data used as input and the effectiveness of monitoring and controls.

Modelled losses have proved to be significantly different from actual losses for many reasons: incomplete and inaccurate input data, non-modelled losses like those due to demand surge, particular vulnerabilities and dependencies for different lines of business in case of extreme events, and the impact of a period of increased frequency and severity of events<sup>67</sup>.

At the same time, the ultimate users of models have proved in some cases to rely too heavily on their widely varying outcomes<sup>68</sup>. Traditional risk management tools, better use of risk-adjusted performance measures and strengthened risk governance processes and controls are steps that could help to mitigate risks and thus improve reinsurers' resilience<sup>69</sup>.

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66 A.M.Best, Press Release, 15 September 2005.

67 Risk Management Solutions, *Hurricane Katrina: Profile of a Super CAT. Lessons and Implications for Catastrophe Risk Management*, August 2005.

68 In terms of variations in estimates for the same risk between models, and from one version of the model to the following one, according to FitchRatings, *Insurance Special Report: New Thinking on Catastrophic Risk and Capital Requirements*, 9. November 2005

69 Ernst & Young, *Katrina: Why Risk Management Failed*, CrossCurrents, Issue 25, spring 2006.

## 6. Cross-sectoral transfer of risk

### 6.1 Transfer of reinsurance risk to the capital market

Although the idea of the reinsurance industry transferring risk to the capital markets was first explored in the early 1970s, it did not take shape until many years later, with the progressive development of instruments such as Catastrophe Options, Catastrophe Risk Exchanges, and Catastrophe Equity Puts (CE Puts). Catastrophe Bonds (cat-bonds), and more recently sidecars, have joined the list of arrangements by which the reinsurance industry interacts with the capital markets.

#### Cat-bonds

Cat-bonds have been a feature of the market for approximately 10 years. Cat-bonds allow insurers and reinsurers to transfer their catastrophe exposure through ceding a portion of the risk to a Special Purpose Vehicle (or, in some cases, to a Segregated Account Company), which in turn, issues bonds to the capital markets. The risk profile of the cat-bond will depend, among other elements, on the type of trigger used to determine payment. Triggers can be broadly grouped into two categories: *Indemnity triggers* and *Index triggers*. In the case of Indemnity triggers, payouts are based on the actual loss incurred, while Index triggers' payouts are activated in reaction to constructed indices. Index Triggers can be further divided into *Industry Loss triggers* (payouts based on well-established indices of industry losses), *Modelled Loss triggers* (loss function based on modelled loss to a notional portfolio), and *Parametric Index triggers* (payouts based on observable parameters)<sup>70</sup>.

Cat-bonds have advantages both for issuers and holders, including: full collateralisation of losses, thus adding protection to policyholders; an alternative source of capital, contributing to the reinsurance industry's needs for added capacity; and an attractive investment opportunity, providing capital markets with an investment alternative not closely correlated to the traditional financial markets. To date, however, as the data discussed in the paragraphs below indicate, cat-bonds have enjoyed only limited appeal.

While there are some limitations over the consistency of aggregate data, it appears that the amount of risk securitisation to date has been relatively modest. From the mid-1990s to end-2005, no more than 100 cat-bonds were issued, raising just over US\$10 billion in total. However, some growth was seen in 2005 - to over US\$2 billion of new issuances in one year<sup>71</sup>.

This may indicate a broader developing interest in securitisation in the insurance and reinsurance industry. Looking, for example, at securitisation in the life insurance industry, recently published survey findings indicate that whilst only 4% of the consulted insurers have already used securitisation to meet capital needs, 50% expect to do so in

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70 For an overview of the structure and workings of Cat bonds see: MMC Securities (2005). The Growing Appetite for Catastrophe Risk: The Catastrophe Bond Market at Year-End 2004. Guy Carpenter & Company, Inc. [gcportal.guycarp.com/portal/extranet/popup/pdf/GCPub/Cat%20Bond%20Update%20Final%20032805.pdf](http://gcportal.guycarp.com/portal/extranet/popup/pdf/GCPub/Cat%20Bond%20Update%20Final%20032805.pdf); also, Financial Services Authority (2002). Cross-sector Risk Transfers. FSA Discussion Paper 11, May 2002. [www.fsa.gov.uk](http://www.fsa.gov.uk)

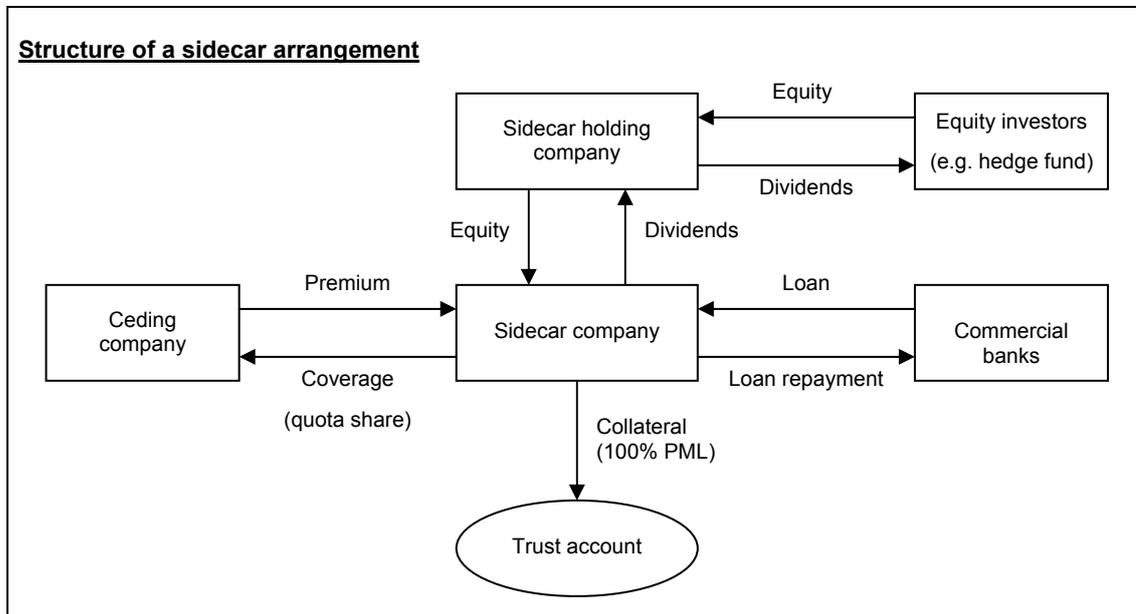
71 See, for example, Goldman, Sachs & Co (2006). *Catastrophe Risk in the Capital Markets*. [www.casact.org/education/reinsure/2006/handouts/millette.ppt](http://www.casact.org/education/reinsure/2006/handouts/millette.ppt); Lane, M. (2006) *What Katrina Hath Wrought*. Trade notes, Lane Financial L.L.C. [irm.wharton.upenn.edu/Lane%2013.pdf](http://irm.wharton.upenn.edu/Lane%2013.pdf); and MMC Securities (2006). The Catastrophe Bond Market at Year-End 2005: Ripple Effects from Record Storms. Guy Carpenter & Company, Inc [gcportal.guycarp.com/portal/extranet/popup/pdf/GCPub/CatBond\\_yr\\_end05.pdf?vid=1](http://gcportal.guycarp.com/portal/extranet/popup/pdf/GCPub/CatBond_yr_end05.pdf?vid=1);

the next two years<sup>72</sup>. It also appears that risk transfer to capital markets through securitisation is expanding in a range of market segments beyond that of property catastrophe, such as third-party liability, trade credit or auto insurance<sup>73</sup>.

### Sidecar arrangements

Sidecar arrangements provide for the transfer of risk from insurance companies to capital markets by enabling capital market institutions and their clients to underwrite particular risks directly. The word 'sidecar' is new, appearing only in 2005, although the concept has a longer history.

Most of the existing sidecar companies sell protection to only one ceding reinsurer. The ceding reinsurer, however, may be pooling risks from other reinsurers, and not necessarily limiting ceded risks to its own portfolio. Risks ceded to sidecar companies are most commonly property catastrophe risk. Other, less common, risks include auto insurance, and workers' compensation. The risks ceded extend for a defined and limited time, typically 12 to 24 months. The retrocession agreements are almost uniquely of a quota-share kind, and generally arranged under one contract only.



Sidecars, therefore, seem to be contributing to creating capacity in areas experiencing marked shortages. They have done so by innovatively enhancing the use of underwriting expertise, currently a particularly scarce resource. The tailor-made sidecar creation process has also helped to bring together investors and insurers in a way that cat-bonds have not. This seems to have helped better to address risk capital allocation in the reinsurance and capital markets as well as arguably reducing moral hazard.

However, a number of questions remain with respect to sidecars, including:

- the limiting effect of the short-term time horizon of retrocession arrangements - up to 24 months so far;
- the capital markets' appetite for sidecars once the hard part of the cycle ends;

72 Towers Perrin – Tillinghast, *Are Securitizations Good or Bad? 2006 Mergers and Acquisitions Roundtable Discussion*. Towers Perrin. [www.towersperrin.com](http://www.towersperrin.com)

73 Business Insurance, "Mad scramble" for capital fuels cat bond market', *Industry Focus*, 17 July 2006. [www.businessinsurance.com](http://www.businessinsurance.com)

- the working in practice of arrangements covering risks that to date have not materialised or generated claims; and
- the position that rating agencies will take vis-à-vis sidecars and the ceding companies<sup>74</sup>.

At the same time, a number of issues are clearly posed for supervisors, notwithstanding the risk-limiting effect of full cash collateralisation. These include the degree of independence from the ceding insurer and ensuring an appropriate level of expertise in the sidecar in initial risk acceptance decisions.

## **6.2 Transfer of credit risk to the reinsurance market (credit risk transfer)**

The Global Reinsurance Market Reports were initiated partly in response to concerns about a lack of information available to financial authorities about the sector's risk exposures. There remain limitations in the data coverage in the complex area of credit risk transfer (CRT). However, the data in the 2005 and previous reports show that at present levels, reinsurers' aggregate financial strength is not threatened by their involvement in CRT. The analysis of the 2005 data is found in section 7.3.

### New developments in reporting of insurance sector activity in credit derivatives

The Bank for International Settlements (BIS), in its OTC derivatives survey for the second half of 2005<sup>75</sup>, for the first time provided a breakdown of credit derivatives activity to show reporting dealers' transactions with insurance companies and financial guaranty firms. This data (reported below) provides additional survey evidence on aggregate insurance sector activity in credit derivatives to supplement that already provided by the annual Fitch Ratings survey<sup>76</sup>.

### Data on the overall size of the credit derivatives market

Data from a variety of sources suggest that the total amount of credit derivatives outstanding in the market doubled in 2005, continuing the rapid pace of previous years, and grew at an even faster pace in the first half of 2006. The latest data from the International Swaps and Derivatives Association (ISDA)<sup>77</sup> estimated that the notional amount of CDSs<sup>78</sup> outstanding rose by 103% to US\$17.1 trillion in 2005 and by a further 52% to US\$26.0 trillion in the six months to end-June 2006.

The BIS data<sup>79</sup>, which was reported by leading global dealers to the central banks of the G10 countries, show slightly smaller figures but a similar trend. The following

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74 See, for example, Moody's, *Reinsurance Side-Cars: Going Along for the Ride*. Moody's Investors Service, Inc. Report Number 96863, April 2006; and, The Insurance Journal, *Best States Position on Sidecars*. 19 June 2006. [www.insurancejournal.com](http://www.insurancejournal.com)

75 BIS, *OTC derivatives market activity in the second half of 2005*, May 2006, [www.bis.org](http://www.bis.org)

76 Fitch Ratings, *Global Credit Derivatives Survey: Indices Dominate Growth as Banks' Risk Position Shifts*, 21 September 2006, [www.fitchratings.com](http://www.fitchratings.com)

77 ISDA, *Mid-Year 2006 Market Survey*, 19 September 2006, [www.isda.org](http://www.isda.org)

78 *Credit Default Swap (CDS)* – A credit default swap is an instrument under which one party ('the protection seller') agrees to compensate another party ('the protection buyer') for the financial loss it may incur following the occurrence of a credit event in relation to a specified obligation in return for a premium. These are predominantly unfunded instruments and similar to guarantees.

79 Following publication of the Committee on the Global Financial System's report *Credit Risk Transfer* (January 2003) [www.bis.org](http://www.bis.org) the BIS began collection of statistics on credit default swaps as of end-2004 as part of its semi-annual publication on OTC credit derivatives market activity.

information on the aggregate notional amount and market value of credit default swaps outstanding has been extracted from the latest report<sup>80</sup>:

<b>Credit default swaps</b>			
	<u>Notional amounts outstanding</u>		Gross market value
	Bought	Sold	
<i>Total market size (US\$ bn)</i>			
End-December 2004	6,384	6,407	133
End-June 2005	10,215	10,207	188
End-December 2005	13,958	13,858	243
End-June 2006	20,414	20,291	294

Both the ISDA and BIS credit derivatives data cover only CDSs and not other types of credit risk transfer instrument such as CDOs<sup>81</sup>. Surveys by Fitch Ratings<sup>82</sup> and the British Bankers' Association (BBA)<sup>83</sup> (which include a wider range of credit derivatives but perhaps a smaller panel of dealers), show similarly rapid growth. According to Fitch, outstanding credit derivative contracts sold by reporting financial institutions rose 122% to US\$12.0 trillion during 2005. The BBA estimates that by end-2006 the global amount outstanding of credit derivatives will have grown to US\$20.2 trillion and predicts further growth to US\$33.1 trillion by end-2008. The Fitch and BBA surveys showed a fall in the credit ratings of credit derivatives. Fitch estimated that in 2005, 69% of credit derivatives were investment grade, compared with 92% in 2002, while the BBA found that the share of underlying assets used in CDSs that were investment-grade declined from 65% to 59% between 2004 and 2006.

#### Data on insurance sector activity in credit derivatives

During the last year, the BIS has begun reporting data for the amounts of credit derivatives held by the insurance sector, as part of an overall sectoral breakdown. The following table shows the data for the most recent period:

80 BIS, *OTC derivatives market activity in the first half of 2006*, November 2006, [www.bis.org](http://www.bis.org). The total notional amount of (bought/sold) credit default swaps outstanding in the market is calculated here as the sum of protection (bought/sold) by reporting dealers plus the sum of protection (sold/bought) by reporting dealers (to/from) non-reporting dealers. The difference between the total market bought and sold figures reflects reporting errors.

81 *Collateralised Debt Obligation (CDO)* – This is a credit portfolio product in which a portfolio of credit risk exposures is assembled, segmented into tranches of different risk exposure, and transferred to investors. Traditional products are asset-backed and use securitisation to transform the credit risk into an investment product. More sophisticated, synthetic products have characteristics closer to those of derivatives.

82 Fitch Ratings, *Global Credit Derivatives Survey: Indices Dominate Growth as Banks' Risk Position Shifts*, 21 September 2006, [www.fitchratings.com](http://www.fitchratings.com)

83 [www.bba.org.uk](http://www.bba.org.uk)

<b>Credit default swaps</b>			
	<u>Notional amounts outstanding</u>		Gross market value <sup>84</sup>
	Protection Bought	Protection Sold	
<i>Breakdown by institution (end-June 2006; US\$ bn)</i>			
Reporting dealers	15,729	15,232	294
Other financial institutions	4,360	4,657	142
<i>Banks and securities firms</i>	2,470	2,555	69
<i>Insurance and financial guaranty firms</i>	68	229	2
<i>Other</i>	1,823	1,873	72
Non-financial institutions	325	402	14
<b>Total</b>	<b>20,414</b>	<b>20,291</b>	
<i>of which: multi-name CDSs (% of total CDSs)</i>			
Reporting dealers	32%	31%	37%
Other financial institutions	30%	34%	39%
<i>Banks and securities firms</i>	38%	38%	41%
<i>Insurance and financial guaranty firms</i>	44%	61%	38%
<i>Other</i>	18%	24%	40%
Non-financial institutions	31%	32%	43%
<b>Total</b>	<b>32%</b>	<b>32%</b>	

The above data, although providing information on the insurance sector as a whole rather than the reinsurance sub-sector, and limiting its coverage to CDSs rather than other credit risk transfer products such as cash or synthetic CDOs, is consistent with findings of the Reinsurance Transparency Group's reports that reinsurers' participation in the rapidly growing credit derivatives market remains modest at present. However, the data, like that of the Global Reinsurance Market Report, only covers insurers on a legal entity basis.

The BIS data are also consistent with the findings of surveys by Fitch Ratings (below) that the insurance sector as a whole is a net seller of credit protection in the credit derivatives market and that a larger proportion of its activity is in multi-name products than is the case for other sectors. At the same time, the insurance sector's relatively low market value of its CDSs, compared with notional amount outstanding, both for total CDSs and in particular for multi-name products, is consistent with findings elsewhere that the insurance sector tends to be involved with higher-rated products, especially in the case of multi-name products, although this is likely at least in part to reflect the business mix of financial guarantors rather than reinsurers. The 2005 data collected by the Reinsurance Transparency Group indicates that reporting reinsurers contributed a relatively small proportion of the participation in CDSs by the insurance sector as a whole, by comparison with the BIS figures above. Consistent with the findings of the BIS and Fitch, the data shows reporting reinsurers to be a net seller of protection with a relatively low market value of CDSs compared with notional amounts.

The Fitch survey estimates activity in a variety of credit derivatives, including both CDSs and synthetic CDOs, in major worldwide financial institutions. It estimates at end-2005 US\$879 billion of gross protection sold and US\$234 billion gross bought by insurers and financial guarantors, around four times the size of exposures from the BIS survey. This is partly because Fitch captures a wider range of credit derivative

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84 The gross market value of contracts for a sector represents the total gross market value of contracts for which either the buyer or the seller of protection (or both) is a member of that sector.

products. Nevertheless, of the total, Fitch still estimates US\$354 billion gross sold of CDSs, around double the figure in the BIS survey. This may be because the Fitch survey aims to capture an insurer's entire financial group, rather than only the legal entity.

Despite Fitch's wider coverage of products and of insurers' financial groups than BIS, its survey reported only a small amount of CRT business by reinsurers. Of the US\$879 billion reported gross sold by insurers and financial guarantors, US\$ 365 billion is by financial guarantors and US\$ 485 billion by AIG, leaving just US\$29 billion gross sold by other insurers and by reinsurers. Similarly, only US\$14 billion is reported gross bought by other insurers and by reinsurers. (Data reported to the Reinsurance Transparency Group was US\$11 billion protection sold (notional) and US\$3 billion protection bought (notional) based upon combined figures for CDSs and CDOs.)<sup>85</sup> 53% of the positions of other insurers and reinsurers were in CDOs, 24% in index products and 17% in CDSs. As in its survey of end-2004 data, it noted that several reinsurance groups have significantly reduced their appetite for credit risk, moving away from credit derivatives and allowing their portfolios to run off over time. However, Fitch also noted that the response rate by insurers to its survey was mixed, with several of the larger European and Asian insurance groups in particular not responding.

### G30

The G30 report, *Reinsurance and International Financial Markets*<sup>86</sup>, found that the growth of an active secondary market for credit risk was one of the factors that had induced many insurers and reinsurers to assume a wider range of risks. It also noted that the larger companies had moved towards business models and risk management practices that seemed likely to be followed by a more active approach to retaining and transferring risk. The G30 study group did not find any convincing evidence of over-exposure to the credit derivatives market or of inadequate risk management of such exposures. It noted that reinsurers' share of the notional credit derivatives market was uncertain, but nevertheless estimated it to be below 1% of the market (as does the Reinsurance Transparency Group's own data).

The involvement of the reinsurance sector in world capital markets, including credit derivatives, did not appear to be large enough to cause systemic instability through that channel. This conclusion is in line with previous work on this subject (e.g. by Swiss Re)<sup>87</sup>. It also noted that the Reinsurance Transparency Group's data provided the most up-to-date picture available of the reinsurance industry's involvement in derivative financial instruments and credit risk transfer activity. Nevertheless, it recommended more generally the adoption of a standardised framework for risk disclosure by reinsurers including a focus on group-level disclosure and more information on credit risk exposures. In the case of credit derivatives, this would address some of the limitations of the currently available data on a legal-entity basis.

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85 Relates to six of the seven reporting jurisdictions. One jurisdiction reported around US\$5 billion for combined bought and sold positions. See also table 3.2 in Appendix I.

86 Group of Thirty, *Reinsurance and International Financial Markets*, Washington, DC, 2006, [www.group30.org](http://www.group30.org)

87 Swiss Re, *Reinsurance – A Systemic Risk?*, sigma, No. 5/2003, [www.swissre.com](http://www.swissre.com)

## 7. Analysis of global reinsurance market statistics

The concept of 'global reinsurance market statistics' was premised on the view that analysis and publication of global reinsurance market data would increase transparency and promote a better understanding of aggregate reinsurance risks and the relationship of the reinsurance market with other sectors.

The reinsurers selected have come from seven jurisdictions (Bermuda, France, Germany, Japan, Switzerland, the United Kingdom and the United States) in which the major reinsurance market participants are incorporated, and have participated in the statistics on a voluntary basis to the extent that data required to produce the statistics is not publicly available.

Further details on the methodology for producing the 2005 global statistics and the list of reinsurers whose data has been aggregated to produce these statistics is given in Appendix III.

As has been noted earlier, various challenges were faced in collecting and aggregating data from different jurisdictions which are subject to different accounting and regulatory reporting requirements. The main challenges are set out in Chapter 2 above, with further details in Appendices VI (Summary of major differences to US GAAP) and IX (Main assumptions and qualifications).

The 2005 analysis of the statistics (based on the tables in Appendix I) is organised in a similar way to that for the previous years and covers the following key aspects of the global reinsurance market:

1. Size of the global reinsurance market (section 7.1)
2. Structure and profile of reinsurance risk assumed (section 7.2)
3. Derivative financial instruments and credit risk transfer activity (section 7.3)
4. Counterparty risk and linkages to other sectors (section 7.4)
5. Investments, profitability and capital adequacy (sections 7.5 – 7.7)

The statistics in (1) and (2) relate to just the reinsurance business of the reporting entities.<sup>88</sup> Data in (3), (4) and (5) is in respect of the entire business of the reporting entities (i.e. including direct business).

Unless otherwise stated, the data covered by the statistics includes both affiliated and unaffiliated business.

### 7.1 Size of the global reinsurance market

#### Economic background

Despite the impact of higher oil prices, the world economy expanded by 3.4% in 2005, representing only a moderate slowdown from the 4% growth rate recorded in 2004. Global growth continued to be driven by strong consumer spending in the US and export-led growth in China. Given the uneven nature of the global economic expansion, however, large trade imbalances remained a feature of the world economy, particularly

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<sup>88</sup> In some instances an element of direct business is included. Where this is the case, a note has been made in Appendix I.

in relation to the record US current account deficit and the corresponding surpluses among oil-exporting countries and emerging Asian economies.

#### Note on types of available data

In analysing the size of the global reinsurance market it should be noted that there are a number of sources of global reinsurance market data. Some of these sources are based on group-level data and some on entity-level data. The size of the reinsurance market can be measured in a number of ways, for example:

- gross or net reinsurance premiums assumed in respect of non-affiliated and/or affiliated cedents;
- premiums ceded, by non-affiliated cedents and/or affiliated cedents;
- reinsurance recoverables;
- reinsurers' share of claims incurred;
- gross claims incurred and/or their share of reinsurance business assumed;
- reinsurance claims paid;
- gross claims provisions in respect of reinsurance business assumed; or
- aggregate market value of companies participating in the reinsurance market.

This report uses reinsurance premiums assumed, as reported in Table 1.1. Reinsurance premiums assumed could be viewed as a credible estimate of the market by most standards.

#### Developments in global reinsurance markets since 2004

Overall, the Reinsurance Transparency Group 2005 data indicate a small increase in gross reinsurance premiums assumed by the reporting reinsurers. At the same time, they show an increase in retrocession to both reporting and non-reporting entities, especially in life reinsurance<sup>89</sup>. Accordingly, the data show a decline in the net reinsurance premiums assumed by the reporting entities.

In 2005, the reporting reinsurers' assumed gross reinsurance premiums, life and non-life combined, were slightly under US\$ 173 billion. The premiums they retroceded worldwide reached almost US\$ 61 billion. Their net reinsurance premiums fell to US\$ 112 billion.

While global insurance premiums grew by 2.5% in real terms, gross reinsurance premiums assumed by the reporting entities (premiums of reporting reinsurers) increased by 1%.

In life insurance, global premiums increased by 3.9% in real terms, but the reporting reinsurers' premiums declined by 2%. In non-life insurance, real premium growth worldwide was 0.6%. Non-life premiums of the reporting reinsurers grew by 4%.

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89 Please refer to the qualifiers in the bullets under Table 1.1 in Appendix 1

### *Industrialised countries*

In North America, there was no growth in life premiums. Rapid growth in Canada (8%) did not compensate for the decline (-0.4%) in the U.S. At the same time, North American life insurers maintained strong earnings and profitability through continuing cost savings, innovation and focus on core and profitable lines of business. Their capital base further improved. Non-life premiums declined somewhat (-0.3%), after modest growth during the previous year. Non-life insurance profitability was high (with return on equity close to 12% in US and 17% in Canada), despite unprecedented hurricane losses, largely due to reinsurance and strong investment returns.

In Western Europe, growth in life insurance premiums accelerated to well over 7%, the best performance since 2000. Having overcome the 2001-2003 crises, the industry initiated a solid expansion phase while tax advantages shifted from life insurance products to individual and occupational pension products. Growth in non-life insurance premiums declined further to 0.6% in 2005.

In Japan, life insurance premiums grew by 4.9%<sup>91</sup>. Continuing expansion in private life insurance did not compensate for the decline in the postal (Kampo) business. Non-life insurance premiums decline was reversed, albeit merely to 1.0%<sup>92</sup> growth.

### *Emerging markets*

Overall, the insurance sector continued to expand strongly, with a 7% premium increase, on the background of real GDP growth of about 6%. Although incomes continued to increase rapidly in some regions, average premiums at 2% of GDP per capita remained a small fraction of those recorded in industrialised countries. Premiums as a percentage of GDP was about half that in industrialised countries. While insurance penetration decreased as the GDP grew faster than premiums, insurance density increased as nominal premiums increased faster than the population.

In life insurance, premiums continued to grow at around 7%, but below the ten-year average of close to 11%. In non-life, they increased by 6%, close to the ten-year average of about 7%.

Asia reported the fastest premium growth: close to 11% in life insurance premiums (China about 12%), and 7% in non-life premiums (China close to 13%). In Latin America, life insurance premium growth declined by 2% and growth in non-life premiums slowed down to about 5%. In Central and Eastern Europe, life insurance premiums fell by 15%, with decline in Russia overshadowing strong growth (three times GDP growth) elsewhere. Non-life premiums growth of 2.4% was driven by Russia (12%) but this was off-set by significant reductions elsewhere (e.g. Ukraine -44%).

## **7.2 Structure and profile of reinsurance risk assumed**

While risk may be defined as the probability of an occurrence times its effect, there is no direct measure of risk in insurance or reinsurance. Indicators - proxies - have to be used to quantify risk. The most common forward looking risk indicators in reinsurance

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90 Swiss Re sigma 5/2006, *World Insurance in 2005*, [www.swissre.com](http://www.swissre.com)

91 Source: [www.seiho.or.jp/english/publication/2005-2006/2006.pdf](http://www.seiho.or.jp/english/publication/2005-2006/2006.pdf)

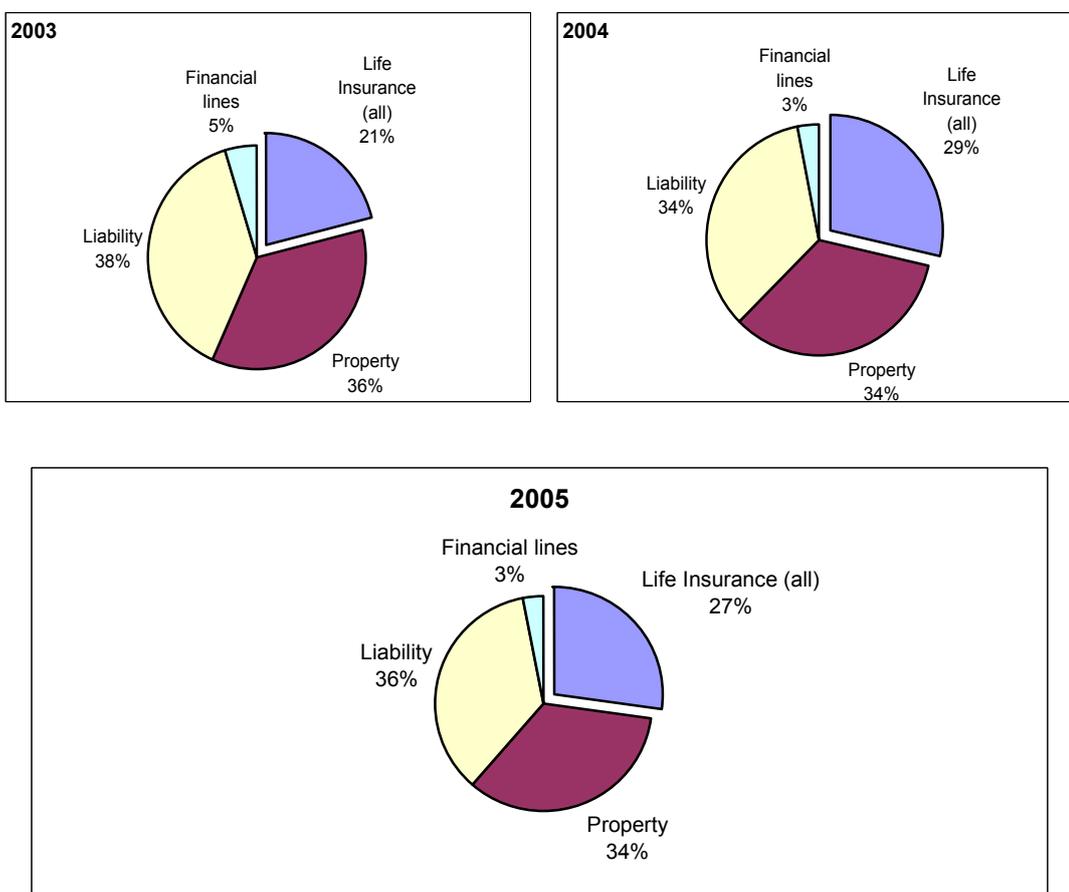
92 Source: [www.sonpo.or.jp/e/statistics/business\\_results/br\\_2005.html](http://www.sonpo.or.jp/e/statistics/business_results/br_2005.html)

are premium figures, typically further broken down by gross/net premiums, by lines of business, by geographical region and by type of treaty (proportional vs. non-proportional). After the event, claims may serve to assess the risk that had been assumed by reinsurers. Just as premiums can be biased by various factors which do not relate directly to the risks assumed (e.g. the market), claims may not be an accurate predictor of future losses. They may, however, be useful proxies for the risk being assumed. Nonetheless, risk profiles can change very quickly, loss patterns may shift and new risks may emerge, for example in casualty lines of business. In reinsurance of low frequency/high severity events (e.g. natural catastrophe) claims statistics alone are of little value and need to be supplemented by further expertise e.g. geosciences and actuarial opinion.

Data on claims provisions can be useful as a proxy for risk assumed, but it may be ambiguous. Low claims provisions of a reinsurer could indicate either a low level of incurred claims (for claims which have a short tail), or an understatement of ultimate losses (that is later adjusted). Nonetheless, statistics on aggregated liabilities in the form of sums insured could be used as an indicator for certain risk types. However, sums insured are not, by themselves, an indicator of a reinsurer's exposure, as they do not take into account the probability that incurred losses will reach the layer covered by the reinsurance contract. In some cases reinsurance policy limits could be used as a measure of maximum loss.

The data in Table 1.1 (Appendix I), which records gross reinsurance premiums assumed for the reporting entities, produces the following profile of gross reinsurance premiums assumed by class of business.

### Gross reinsurance premiums assumed by class of business

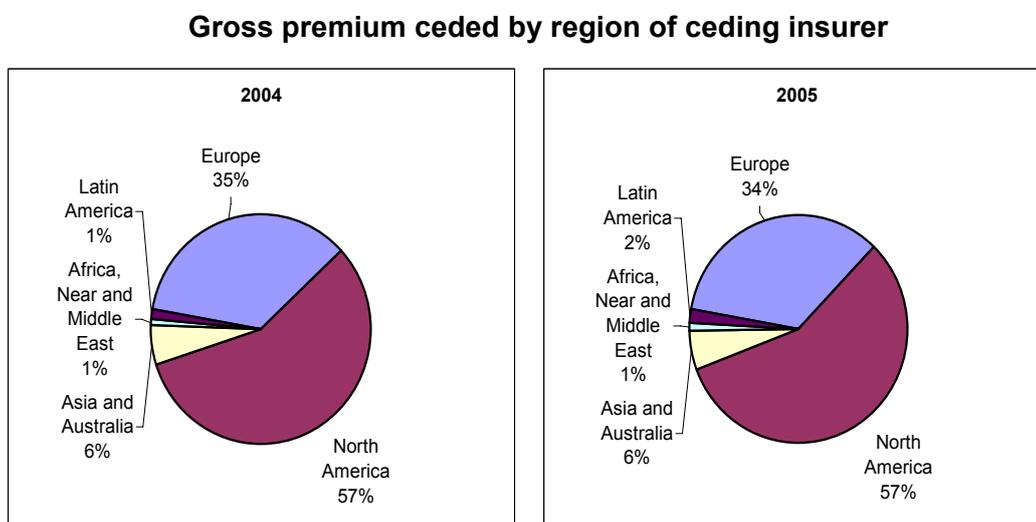


*Structure and profile of risk assumed by reporting entities; proxy: gross premiums written*

Any assessment of the net risk transfer among regions and the total risk assumed by the reporting entities should be undertaken with a degree of caution. Since the reporting entities deal with each other, sometimes in the same jurisdictions and often with their affiliates, when gross premiums written are used as a proxy for the risk assumed there may be multiple counting of the risk the reinsurance sector actually draws in from primary insurers. The actual initial risk that gets reinsured may thus be different from what the global statistics (C-level data) suggest. These problems would be alleviated if the global statistics were group-based, but this would present other problems, as discussed in Appendix IX.

Geographical structure

The diagram below shows by region the gross premiums ceded by direct insurers (and reinsurers) to the reporting reinsurers.



Origin of insurance risk as per premiums ceded

Insurance risk/premiums assumed by the reporting reinsurers were ceded by direct insurers and reinsurers (some of which may be reporting entities) located mostly in North America (57%), but also in Europe (34%), to a much smaller extent in Asia (6%) and marginally in Latin America and Africa and Near and Middle East.

Destination of risk as per premiums assumed

Insurance risk (premiums) ceded by insurers and reinsurers worldwide were assumed 53 % by the reporting reinsurers located in North America and 46% in Europe.

Net premium position, net risk position

The following additional analysis has been derived from the B-level statistics of Table 1.2:<sup>93</sup>

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93 The figures in column 1 ('Gross assumed') have been calculated from the B-level statistics within Table 1.2 and column 3 ('Net assumed/(ceded)') has been derived by comparing columns 1 and 2.

**Gross reinsurance premiums assumed/(ceded) by region:**

	(1) Gross assumed by reporting entities US\$m	(2) Gross ceded to reporting entities US\$m	(1) – (2) Net position US\$m	Net position 2004 US\$m
Europe	79,558	(59,444)	20,114	23,337
North America	91,563	(98,696)	(7,133)	(12,124)
Asia and Australia	1,823	(9,554)	(7,731)	(7,420)
Africa, Near & Middle East	-	(2,049)	(2,049)	(1,319)
Latin America	-	(3,201)	(3,201)	(2,474)

It must be stressed that interpretation of the 'net assumed/ceded' position is constrained by the fact that the number of reporting entities is limited, the distorting effect of intra-group transactions, and the inevitable approximation in the allocation of assumed premiums by region.

The table above shows in the 'Net position' column balances of gross written premiums assumed and ceded or the 'net risk positions'. Taken together, European reporting entities were a net recipient of risk, with the positive premium balance of US\$20.1 billion. In contrast, North American reporting entities were, as a whole, a net cedent of risk, with a negative premium balance of US\$7.1 billion. So were, combined, Asia and Australia – negative premium balance of US\$7.7 billion – and the rest of the world: negative US\$5.2 billion.

The above analysis shows a decreasing trend in the export of premiums/risk from North America (the net position in 2003 was US\$15,937 billion). This coincides with the growing prominence of Bermuda (included above in 'North America') as a reinsurance centre, largely servicing the US market.

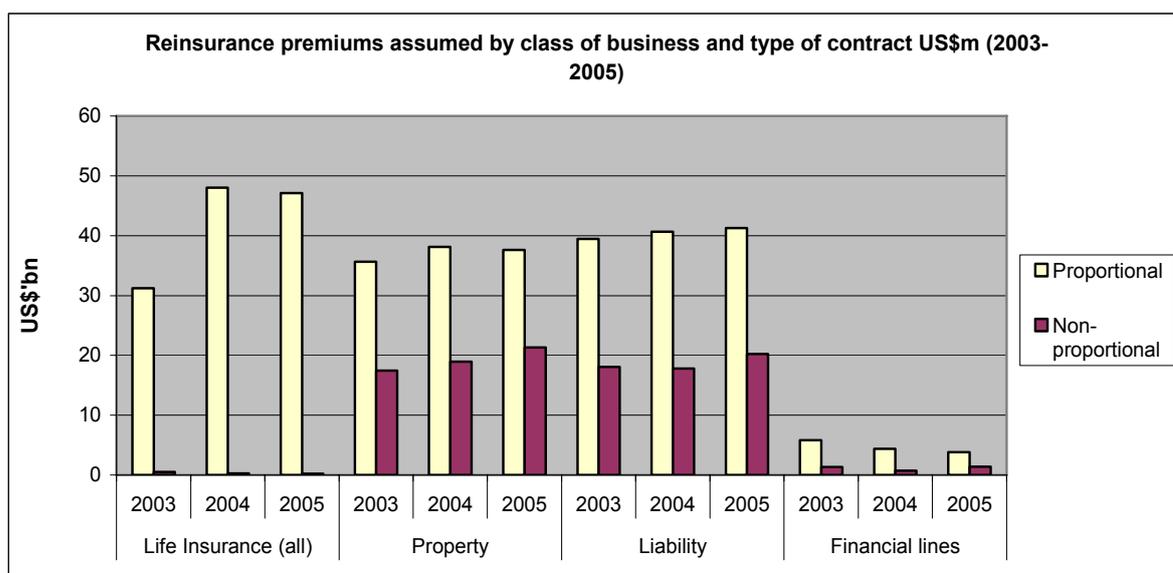
In addition, one should be aware that the above data may not show the actual extent of the risk transfer from the rest of the world to European reporting entities or, indeed from the rest of the world to Europe. Analysis of unaffiliated nationally-aggregated data (on a group basis) would be required to assess more accurately life and non-life risk transfers among regions, assuming there is no risk transfer among reporting groups located in the same jurisdiction, which may not be a valid assumption. Moreover, since risks differ by class and line, analysis of entity-level data would be necessary for completeness of such an analysis. Advanced analysis of geographical risk transfer is likely to be extensive, complex and difficult.

It should also be noted that cross-regional flows of funds in respect of claims payments are likely to show a different pattern.

**Insurance class structure**

As per tables 1.1 and 2.1 (Appendix I), proxy data of gross reinsurance premiums written suggests that the reporting entities assumed around two and a half times more non-life premium than life premium. In non-life, the reporting entities concentrated, almost equally, on property and liability risks. There was clearly much less risk assumed in financial lines of business.

The statistics in table 2.1 (Appendix I) can be presented as follows:



### Contract type

As per table 2.1, the reporting entities assumed life risks almost exclusively under proportional contracts.<sup>94</sup> For non-life, altogether they assumed under proportional contracts almost twice as much premium as under non-proportional contracts. Within that, the class split was: property: 78% more, liability: 104% more; financial lines: 173% more.

For life and non-life combined, a comparison of proportional and non proportional reinsurance coverage would not be meaningful.

*Structure and profile of risk assumed; proxy: net earned premiums and net claims incurred.*

The statistics included in Table 2.2 (Appendix I) give the following profile of risk assumed, on the basis of net earned premiums and net claims incurred:

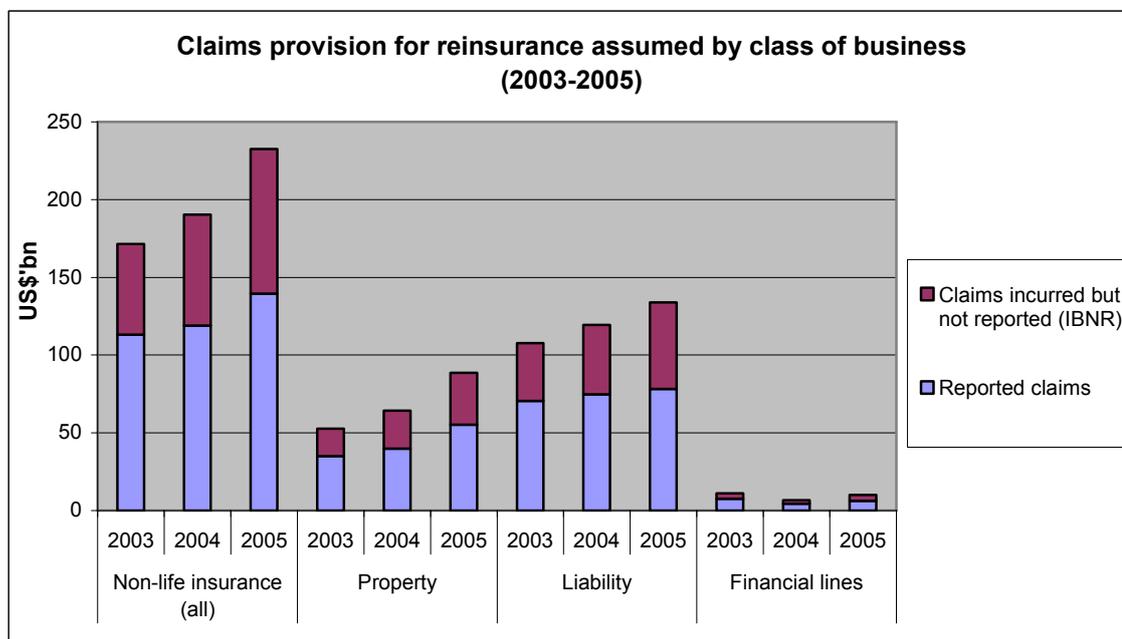
Class of business	Net earned premiums % of total			Net claims incurred % of total		
	2005	2004	2003	2005	2004	2003
Life insurance (all)	22	30	24	21	31	25
Non-life:						
- Property	39	31	34	44	27	26
- Liability	35	35	37	33	39	46
- Financial lines	4	4	5	2	3	3
	78	70	76	79	69	75

For the years 2003 to 2005 the analysis is fairly consistent with the ratio shown for gross reinsurance premiums assumed in Table 1.1. The 2004 figures show a higher proportion of life business, compared with both 2005 and 2003. Changes in the reporting entities from 2003 to 2005 may be a factor.

<sup>94</sup> However, see comment in Appendix I.

### Structure and profile of risk assumed; proxy: net claims provision

Table 2.3 gives a profile of claims exposures in respect of retained reinsurance risk. Based upon the reporting entities, it shows 41% (2004: 46%, 2003: 40%) of claims provisions related to 'life' business and 64% (2004: 54%, 2003: 60%) to 'non-life' business. The data for non-life insurance in the table can be presented as follows:



For non-life business, 58% of claims provisions related to liability business, 38% to property business and 4% to financial lines (2004 figures: 63%, 31% and 6%; 2003 figures: 63%, 34% and 3%). As noted above, reporting entities assumed fairly comparable gross and net reinsurance premiums in respect of property and liability lines. The much higher claims provision for liability lines reflects both the higher loss ratio for liability business and the longer-tail nature of liability business compared with property lines.

The proportion of provisions for claims incurred but not reported (IBNR) to the total of non-life claims provisions was 37% (2004: 38%, 2003: 34%) and, as for 2004 and 2003, showed little variation (property: 37%, liability: 42%, financial lines: 38%) in this ratio for the three lines of business.

### 7.3 Derivative financial instruments and credit risk transfer activity

Reinsurers use a variety of derivative financial instruments including swaps, options, forwards and exchange-traded financial futures.

The global statistics show data on the types of derivative transaction entered into by reporting entities. They represent transactions entered into in respect of the direct insurance business, as well as the reinsurance business, of the entities covered by this report. The information has also been collected according to whether the transactions are entered into for hedging or non-hedging purposes, and include both notional amounts and fair values<sup>95</sup>.

95 See Appendix I, table 3.1

It should be noted that the coverage of reinsurers reporting to the global reinsurance market statistics was determined with the intention of covering a large proportion of the global reinsurance market whose main business areas are reinsurance. The statistics may not therefore cover all reinsurers conducting significant amounts of derivatives or credit risk transfer business. It should also be noted that the statistics cover reinsurers on a legal entity basis; to the extent that derivatives or credit risk transfer activity is conducted elsewhere within a reinsurer's financial group (and there are indications that this is the case with some reinsurers), this wider activity will not be captured within the statistics.

The results are as follows:

**Extract from Table 3.1: Reporting entities' use of derivative financial instruments**

Type of contract	Held for hedging purposes		Held for non-hedging purposes		Total	
	Notional amount	Fair value (+/-)	Notional amount	Fair value (+/-)	Notional amount	Fair value (+/-)
	US\$m	US\$m	US\$m	US\$m	US\$m	US\$m
Interest rate contracts	105,061	455	20,725	51	125,776	506
Equity and index contracts	1,382	70	4,015	75	5,397	145
Foreign currency contracts	3,075	(149)	3,051	(112)	6,576	(261)
Credit derivatives	921	-4	36,545	(8)	37,466	-12
Other	41	3	2,637	(8)	2,678	(5)

The level of involvement in derivative transactions is indicated by the notional amounts<sup>96</sup> of derivative transactions. As in the two previous years, results show far greater involvement in hedging activity<sup>97</sup> (i.e. risk mitigation) than in non-hedging activities, and of this the vast majority relates to interest rate contracts (95% in terms of notional amount). Again, most non-hedging activity relates to credit derivatives, discussed below. The figures show some increase in interest rate contracts held for non-hedging purposes, which reflects investment activities of a limited number of reporting entities. However, it should be noted that the figure represents the gross amount of pay-fixed swap and receive-fixed swap which are not offset for the effective investment activities. This means that the net position is a smaller exposure.

### *Credit Risk Transfer*

In addition to looking at overall activity in derivatives, the global reinsurance market statistics look further at two types of instrument used for credit risk transfer, namely CDSs and CDOs, broken down according to whether protection is bought or sold. Data continues to show continued very rapid growth of the market for newer and more complex credit risk transfer products. It should also be noted that credit risk transfer activity can take place through other instruments than the CDSs and CDOs covered in this survey. Because of the limitations of survey information, it is useful to compare the global reinsurance market statistics with those from other surveys, in particular by the

96 The notional amount of a derivative represents a standard of measurement of the level of involvement in such transactions and is not a quantification of market risk or credit risk. It represents the amount used to calculate contractual cash flows to be exchanged. It does not generally represent an amount to be paid or received, except for certain contracts such as currency swaps.

97 Transactions which are primarily carried out for risk mitigation purposes represent 'hedging' activities. The objectives of using derivatives for hedging purposes include managing exposure to price, foreign currency and/or interest rate risk on planned or anticipated investment purchases, existing assets or liabilities. A reinsurer might engage in derivative transactions for other reasons ('non-hedging' activities). These might form part of an asset management strategy, with an objective of diversification, for example, or for income generation, such as locking in attractive investment conditions for future available funds.

BIS and by Fitch Ratings, and this is done in chapter 6. Both of these surveys provide data for the wider insurance sector rather than reinsurers specifically, and similarly neither captures all forms of credit risk transfer. Nevertheless they provide a useful point of comparison and help to build up a fuller picture.

#### Analysis of the 2005 reinsurance market statistics for credit risk transfer

##### *Credit default swaps*

The global reinsurance market statistics indicate participation in credit risk transfer through credit default swaps in respect of both protection bought (US\$3 billion notional) and protection sold (US\$10 billion notional), with amounts outstanding lower than at the end of 2004 (respectively US\$4 billion and US\$19 billion).<sup>98</sup> As in previous years, these figures largely represent a limited number of direct insurers which carry out a small amount of reinsurance business relative to the rest of their direct business.

In addition to credit default swaps, the figures representing credit derivatives in Table 3.1 include derivatives embedded in life reinsurance treaties for which bifurcation is required for financial reporting purposes.<sup>99</sup> Such derivatives arise because investment returns received by reinsurers on cedents' deposits are based on the cedents' return from either: (i) their general assets, or (ii) specified blocks of those assets.

##### *Collateralised debt obligations*

Outstanding amounts relating to CDOs were again minimal based upon the reported data of the reinsurers included in the statistics.

#### Conclusion

As in previous years, the Global Reinsurance Market Statistics indicate that reinsurers' use of derivatives is primarily for hedging purposes. Credit derivatives activity continues to be primarily for portfolio return and optimisation purposes, involving investment in credit risk and the provision of credit risk insurance (i.e. selling of credit protection). On the basis of these statistics, the participation in credit risk transfer by the reinsurers covered by this report is a growing, but still small, percentage of their balance sheets and of the overall credit risk transfer market. On the basis of this data, it seems that at present levels, reinsurers' aggregate financial strength is not threatened by their involvement in CRT. Nevertheless the limitations of the data coverage in this complex area mean that there remains some uncertainty over the scale and nature of reinsurance groups' activity in the credit risk transfer market.

#### **7.4 Counterparty risk and linkages to other sectors**

This section reports on counterparty exposure data provided by the reporting reinsurers. The full results are in Appendix I, Tables 4.1 to 4.4. The Reinsurance Transparency Group collected the data in these tables in order to consider the risk that any sector could be materially disadvantaged by adverse experience in the reinsurance sector, or vice versa. On the basis of the global statistics the Reinsurance Transparency Group found no evidence of undue concentration of assets in, or liabilities to, any one sector (other than other insurance entities) by the reinsurance market as a whole.

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98 See Appendix I, Table 3.2.

99 For the purposes of these statistics, CDOs are not included within 'credit derivatives' in Table 3.1.

## Reinsurers' exposure to other sectors

Table 4.1 in Appendix I records the exposures of the reporting reinsurers to different types of asset and counterparty, including other (re)insurers, banks, investment institutions, sovereigns and others.

The breakdown by asset type was as set out below:

	% of total <sup>100</sup>		
	2005	2004	2003
Debt securities	45	44	38
(Re)insurance recoverables and receivables	20	23	33
Equity investments	19	18	16
Cash	13	12	10
Others	3	3	3

Debt securities remain the largest single class of asset. Of those held, 34% were issued by sovereigns and 58% by non-financial sector counterparties. Only 8% had been issued by (non-insurance) financial institutions.

Amounts due in respect of insurance business (both recoverables from outwards reinsurance transactions and monies due in payment for assumed business) fell to 20%. As would be expected, the vast majority of this exposure was to other insurers. Of the recoverables 41% (2004: 54%; 2003: 41%) were covered by collateral.

Shares and other equity investments rose marginally to 19% of total. Of this 19%, 21% were in the insurance sector, 17% in other financial institutions and 62% outside the financial sector.<sup>101</sup>

Cash and cash equivalents, amounting to 13% of the total, were deposited predominately with banks and within the insurance sector.

Table 4.2 in Appendix I provides a breakdown of assets between affiliated and non-affiliated entities. Only 20% of assets related to affiliated entities, with the majority of these being (re)insurance receivables and recoverables, cash and equity investments.

## Other sectors' exposure to the reinsurance sector (selected liabilities and paid up capital)

Tables 4.3 and 4.4 examine levels of exposure of other sectors of the economy to the reporting entities. Table 4.3 sets out these exposures by type of counterparty, and Table 4.4 according to whether they are affiliated and non-affiliated entities.

The largest form of exposure arose from insurance liabilities, with 41% of the total (2004: 41%) arising from primary business and 46% (2004: 43%) from assumed reinsurance business. Counterparties to reinsurance transactions were all within the insurance sector, as would be expected.

With the exception of exposures to other insurance entities in respect of technical provisions (which would be expected given the nature of reinsurers' business), the

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100 Figures for 2004 and 2003 are included for historical comparison purposes. Please note that these figures have been adjusted to reflect new information which has come to light during the compilation of the 2005 data.

101 Some of these figures are approximations, as not all reporting entities were able to break down assets by sector in this way. See Appendix I for details.

Reinsurance Transparency Group found no evidence of undue levels of concentration to any one type of counterparty.

Exposures to reinsurers by affiliated entities amounted to 31% of the total (2004: 25%). The majority of these (96%) lay in paid-up capital and (re)insurance technical provisions, which is to be expected, given the number of reporting entities which are part of larger groups, where affiliate shareholdings are an obvious feature and intra-group reinsurance is often part of a wider risk management strategy.

## **7.5 Investments**

The investment activity of reinsurers is conducted to manage the company's asset-liability matching. It is central for a reinsurer to monitor the relationship between investments and the provision of reinsurance cover, for the period from receipt of premiums to payment of claims. Investment is not the actual goal of the production process for reinsurers. However, it represents an important element in the provision of reinsurance cover. Investment assets arise primarily from the investment of premium income and the reinvestment of profits. Investment management is a vital component in reinsurers' risk management as the investments of reinsurers place risk protection for direct insurers on a secure foundation.

### Investment principles and objectives

Reinsurance companies are major institutional investors. Asset management practice in the reinsurance industry largely involves the following objectives:

- maintaining adequate liquidity and quality of investments to allow fulfilment of obligations at all times;
- achieving the highest possible returns with the greatest possible security; and
- practising a long-term oriented investment policy employing consistent asset-liability management.

In some jurisdictions, investments by the reinsurance industry are subject to legal and administrative provisions, consisting mainly of general investment principles (security, profitability, liquidity, as well as mixture and diversification), qualitative investment categories, and quantitative limits on investments.

### Investment environment<sup>102</sup>

As mentioned in section 7.1 above, the world economy displayed continued resilience in 2005.

Long term interest rates remained at historically low levels during 2005. Benchmark 10-year bond yields were around 4.5% in the UK, 3.5% in France and Germany, and around 1.5% in Japan. Despite the Federal Reserve continuing to steadily raise short-term interest rates, the benchmark 10-year US Treasury bond yield also remained broadly unchanged at around 4.5%. This resulted in a gradual flattening of the US yield curve over the course of the year.

Global corporate credit spreads remained historically tight in 2005, although there was a slight widening from the start of the year. On the other hand, yields on emerging-

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102 Statistics discussed in this section have been drawn largely from IMF "World Economic Outlook", IMF April 2006, [www.imf.org](http://www.imf.org).

market debt reached record lows, emphasising investor appetite for high-yield fixed-income instruments and improved emerging market fundamentals.

Leading equity indices in Europe continued to strengthen over the course of 2005. However, the major Asian stock markets witnessed even larger increases, fuelled by foreign money in search of yields; notably Japan's Nikkei Index rose to a five-year high. One exception to this positive global picture, however, was the performance of the US stock market. Despite positive economic and corporate news, leading US Equity indices moved very little over the course of the year.

With respect to FX markets, there was a strengthening of the US Dollar vis-à-vis other major currencies. By end-2005, the Dollar appreciated by 12.9%, 10.4% and 14.5% against the Euro, the UK Pound and the Japanese Yen respectively.<sup>103</sup> The strong performance of the US economy, together with interest rate differentials, favoured the Dollar, despite the continued high level of the US trade deficit.

#### Impact on the investment activities of reinsurers

Rising interest rates in the US and Euro area as well as improved performance in equity markets appear to have played a part in investment decisions by reporting reinsurers. Reinsurers seem to have looked for higher yields and have reinvested fixed-interest securities elsewhere. Also, improved performance in equity markets seems to have impacted on the level of unrealised gains stemming from the stocks of equity held by reinsurers.

#### Results for 2005<sup>104</sup>

For reporting reinsurers, the balance sheet value of financial instruments held as assets totals US\$736 billion, 5% up from 2004, including market values where jurisdictions account for market value on the balance sheet.

In terms of balance sheet value, the proportion in which the reporting reinsurers invested in financial instruments is as follows:

<i>Financial instrument</i>	% of total		
	2005	2004	2003
Debt securities	60	59	57
Equity investments	21	22	24
Non-negotiable loans	2	2	2
Mortgage loans and real estate	3	4	4
Other	14	13	13

#### *Debt securities*

The market value of debt securities held is US\$436 billion, which includes an unrealised gain of US\$13 billion. While the market value of total assets grew in 2005 by almost 7% compared to 2004, the stock of debt securities held remained unchanged. The unchanged level in stocks of debt securities may be related to the rise in interest rates experienced in the US and Euro areas.

Investment in debt securities issued by affiliates is negligible, as has been the case in previous years.

103 2005 Central Bank of Malta Report, p. 20, based on Reuters data on FX, [www.centralbankmalta.com](http://www.centralbankmalta.com)

104 See Appendix 1, Table 5.1.

### *Equity investments*

The market value of shares and other equity investments for 2005 is US\$212 billion, that is, 9% higher than in 2004. US\$ 89 billion of these equity investments relate to own and affiliate equity.

### *Non-mortgage loans and mortgage loans and real estate*

Amounts invested in non-mortgage loans, mortgage loans and real estate in 2005 were US\$44 billion at market value, some 6% lower than in 2004.

### *Others*

'Other investments' includes a significant amount of cash and cash equivalents (including deposits), loans, which are not allocated either as 'non-negotiable loans' or as 'mortgage loans', investments in derivative financial instruments, loans to subsidiaries and affiliated companies, tangible assets (mainly equipment) and sundry investments which do not fall into the other categories within Table 5.1.

### Conclusion

As was the case in 2003 and 2004, nearly 60% of the asset portfolio held by reporting reinsurers in 2005 is made up of debt securities, a type of asset usually deemed to be conservative. In addition to these, reinsurers hold other assets, which are also considered to be conservative, such as mortgage-backed loans. Notwithstanding the fluctuations experienced by interest rate levels and equity markets during 2005, the composition of reporting reinsurers' asset portfolios does not appear to have changed significantly, pointing towards a long-term element influencing the investment decisions taken over 2005.

It is also again worth noting that in some cases, either for regulatory or contractual reasons, reinsurers have to deposit investments with their direct insurer clients. Under these circumstances, it may be the direct insurer, or its supervisory requirements, which determines the investment strategy.

## **7.6 Profitability indicators**

Profitability in 2005 was marked by the combination of global economic phenomena and severe catastrophe events. Against this background, the global reinsurance industry seems to have capitalised on favourable economic conditions and to have shown resilience in its ability to withstand particularly adverse events such as an exceptional hurricane season.

### Results for 2005

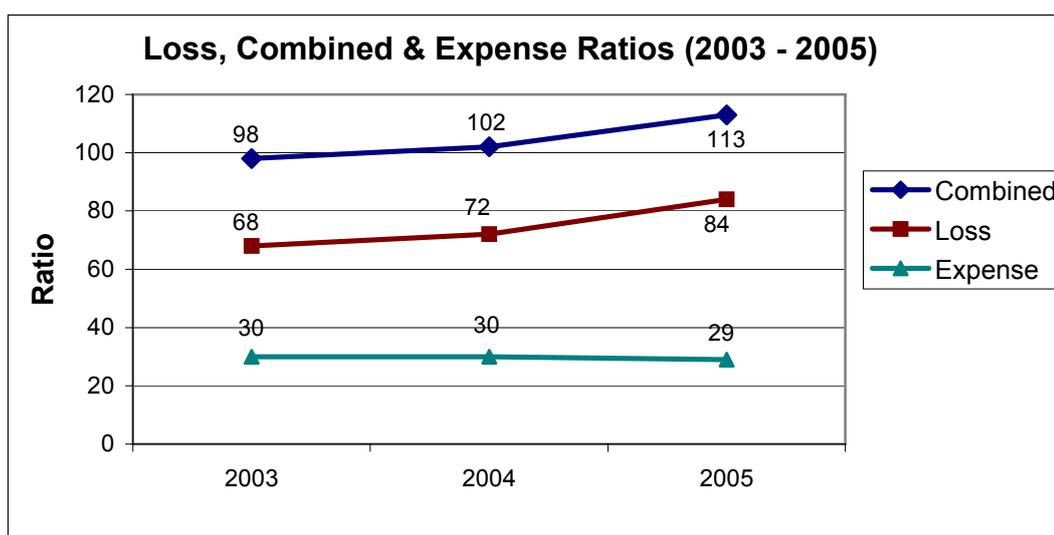
The global statistics show net earned premiums totalling US\$155 billion and a total result (before tax) of a profit of US\$9 billion<sup>105</sup>. This represents a pre-tax profit of 5.8% in terms of net earned premiums, which is a marked decrease from the 9.5% experienced in 2004 and the 14.2% in 2003.

Two of the main performance indicators for non-life underwriting are the loss ratio and the combined ratio. The loss ratio represents the ratio of claims incurred to earned premiums; the combined ratio is the sum of the loss ratio and the expense ratio (ratio of

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105 See Appendix I, Table 5.2

expenses to earned premiums), and gives an indication of the profitability of a (re)insurer's underwriting operations.<sup>106</sup> For non-life business, the global statistics show a weighted average loss ratio of 84% (2004: 72%; 2003: 68%) and a weighted average combined ratio of 113% (2004: 102%; 2003: 98%), which indicates that as was the case in 2004, although not in 2003, premiums did not cover both non-life claims and operating expenses<sup>107</sup>. As the graph below shows, the deterioration in the combined ratio for the period 2003 to 2005 appears solely related to a worsening of the loss ratio, as the expense ratio has remained unchanged. The trend in loss ratio appears among other things, influenced by the natural catastrophes that marked both 2004 and 2005 and commented on in sections 3.1 and 5.2 above.



The ratios for participating jurisdictions based upon those of the reporting entities are as follows:

Jurisdiction (listed in order of 2005 combined ratio)	Loss ratio %	Combined ratio %	Expense ratio %
A	63	97	34
B	84	98	14
C	84	111	27
D	84	112	28
E	96	114	18
F	98	121	23
G	78	122	44
Weighted average	84	113	29
Weighted average 2004	72	102	30
Weighted average 2003	68	98	30

The above ratios are calculated from statistics that include both reinsurance business and direct insurance business for those entities which also carry out direct insurance.<sup>108</sup> The weighted average loss ratio above may be compared with a ratio derived from the

<sup>106</sup> The use of combined ratios ignores capital costs and investment income.

<sup>107</sup> Subject to the qualifying notes to Table 5.2 in Appendix I.

<sup>108</sup> See Appendix I, Table 5.2.

data in Table 2.2, which gives an analysis of net earned premiums and net claims incurred by class of business in respect of the reinsurance business of the reporting entities.

### Profitability by line of non-life business

The statistics recorded in Table 2.2 allow us to look in further detail at profitability of non-life reinsurance according to broad line of business<sup>109</sup>:

Line of business	Net premiums earned US\$m	Net claims incurred US\$m	Loss Ratio %		
			2005	2004	2003
Property	46,462	43,895	94	59	55
Liability	41,576	32,725	79	78	87
Financial lines	4,252	2,151	51	56	43
Weighted average for non-life	92,290	78,771	85	68	70

In 2005, as was the case with 2003 and 2004 data, reporting reinsurers concentrated the vast majority of their non-life business in property and liability lines, that is, 50% and 45% respectively (46% and 50% in 2004; and 44% and 49% in 2003).

The weighted average loss ratio for 2005 shows deterioration compared to the previous two years, from 70% and 68% in 2003 and 2004 respectively, to 85% in 2005. Importantly, and probably not surprisingly, the main factor underpinning this decline is the steep change in the loss ratio in property lines, from 55% and 59% in 2003 and 2004, to 94% in 2005. As extensively discussed throughout this report, the impact of the natural catastrophes that took place in 2005 accounts largely for this trend. Finally, the loss ratio in liability lines appears not to have varied significantly between 2004 and 2005, from 78% to 79%.

### Investment returns

Investment returns were US\$36 billion, 9% up from the previous year (2004: US\$33 billion; 2003: US\$32 billion). In relation to total premiums earned, 2005 data show that investment returns amount to 23% of total net premiums, higher than 2004 and 2003 data, which were 18% and 20% respectively. The contribution from investment income was necessary to achieve a break-even result for non-life business, as was the case in 2004.

### Conclusion

Although in 2005 profitability of reporting reinsurers suffered the impact of natural catastrophes in an extraordinary way, on average the industry succeeded in posting profits. In the light of the unprecedented financial effect of events such as Hurricane Katrina, the level of profit experienced in 2005 (pre-tax profit of 5.8% in terms of net earned premiums, against 9.5% in 2004 and 14.2% in 2003) appears to speak positively on the resilience of the global reinsurance industry. To conclude, in 2005, as in 2004, the contribution from investment income was a key factor underpinning profitability figures.

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<sup>109</sup> The data in Table 2.2 intends to include only the reinsurance business of the reporting entities. Nevertheless, it includes an element of direct business for reasons explained in Appendix I. However, this is not believed to have significantly impacted these loss ratios.

## 7.7 Capital adequacy

### Risk management and capital

From the supervisor's perspective a solvency regime should take into account not only the sufficiency of technical provisions to cover claims and associated expenses, but also the sufficiency of capital to absorb significant unexpected losses, to the extent not covered by the technical provisions, on the risks for which capital is explicitly required. It should also require additional capital to absorb losses from risks not explicitly identified<sup>110</sup>.

### *Increasing focus on risk management*

From a supervisor's perspective, it is important to know whether capital available is sufficient. The more capital that is available, the greater the likelihood of reinsurers being able to withstand unexpected losses. The assessment of the required amount of capital is highly technical and will often utilise actuarial techniques. However, risk management is acquiring increasing prominence in the assessment of capital, and in this regard the reinsurance industry has to prepare for fundamental changes in capital requirements (such as Solvency II for European insurers)<sup>111</sup>. A number of jurisdictions already adopt a risk-based approach to capital requirements (see Appendix IV for summary of regulatory capital requirements in participating jurisdictions). An effective internal risk management system already is, and will increasingly become, a key factor in the assessment and management of capital.

### Capital adequacy in 2005

Within the context of capital adequacy, the security of reinsurance cover is also an important consideration. In this section we look at regulatory capital required in comparison with total capital available of the reporting reinsurers, and also consider the degree of dependence by reinsurers on reinsurance (retrocessions) recoverables.

Reporting reinsurers show regulatory capital required<sup>112</sup> of US\$71 billion and total capital available of US\$286 billion<sup>113</sup>. The corresponding figures for 2004 were US\$72 billion and total capital available of US\$274 billion (2003: US\$65 billion and US\$244 billion respectively). In making any comparison with the figures for 2004 and 2003, it should be born in mind that 2005 data capture a larger number of reinsurers (56 compared with 53 in 2004, and 43 in 2003 – see Appendix III).

As the bases for calculating the required regulatory capital differ between jurisdictions, the aggregation of such data at the global level is not particularly meaningful. The national level data is therefore also provided in Table 5.4 (Appendix I), and shows that capital available exceeds capital required for all participating jurisdictions, which can be illustrated as follows:

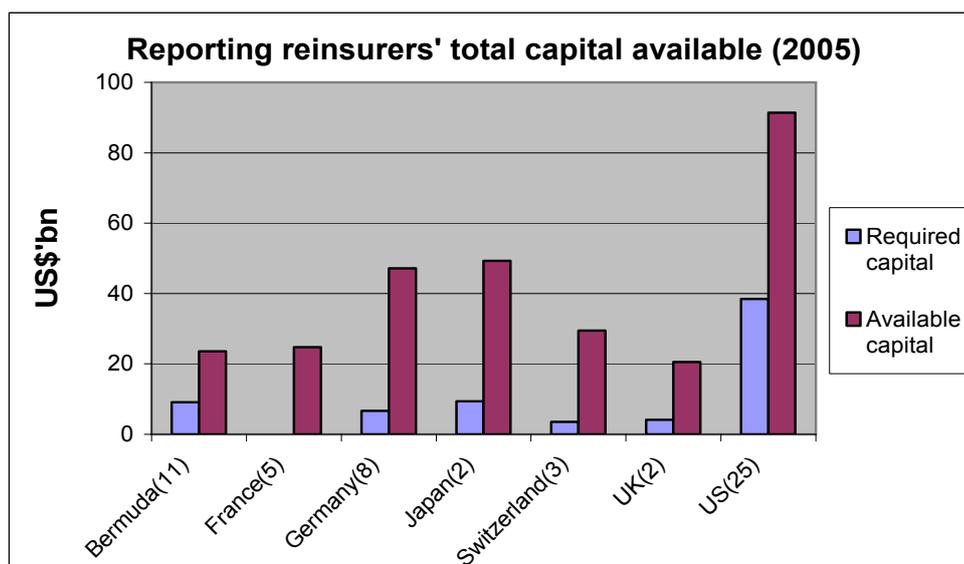
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110 See ICP 23 of IAIS *Insurance core principles*, October 2003, [www.iaisweb.org](http://www.iaisweb.org).

111 See section 4.1 for further discussion on Solvency II.

112 Note that data on regulatory capital required for 2003, 2004 and 2005 excludes France.

113 See Appendix I, Table 5.4



\* number of reporting reinsurers from each jurisdiction indicated in brackets.

Direct comparison between jurisdictions should not be made due to differing regulatory capital requirements across jurisdictions<sup>114</sup>, differing requirements within jurisdictions for pure reinsurers and those reinsurers which write some direct business and differing accounting principles.

### Gearing

Table 5.3 in Appendix I compares the capital base with the size of recoverables arising from the reinsurance of direct business and the retrocessions of assumed reinsurance business of the reporting entities: 'gearing'. This ratio gives an indication of the degree of exposure of the reinsurance sector to reinsurance assets failing to be recovered. Recoverables are looked at both gross and net of collateral and other offsetting items. The results are as follows:

Recoverables as a percentage of capital	2005 %	2004 <sup>115</sup> %
- Gross	50	35
- Net of collateral and offsetting items	29	15

The above figures do not take into account security provided via letters of credit (which are not a balance sheet item) for all jurisdictions. If taken into account this would reduce the 'net' ratio further.

Recoverables as a percentage of capital, both gross and net of collateral and offsetting items, show an increase.

### Conclusion

Data for 2005 show that available capital in reporting reinsurers has continued to grow, and importantly, it has done so in a year that experienced the extraordinary impact of natural catastrophes.

114 Representing in some cases the minimum regulatory requirement. For further information on regulatory capital requirements in participating jurisdictions, see Appendix IV. In France, there is currently no capital requirement for pure reinsurers.

115 2004 figures have been restated for consistency with the analysis provided for 2005 data.

## 2005 global reinsurance market statistical tables

The figures included in the tables below represent the aggregated results of the reporting reinsurers listed in Appendix III. Except where indicated otherwise below the relevant table, the data in tables 1.1 – 2.3 relates to the reporting entities' reinsurance business only; in tables 3.1 – 5.4 data relates to reporting entities' reinsurance and direct business.

Due to variations in jurisdictions' reporting requirements, most of the reporting entities do not compile data in the format or using the categorisations of the tables in this report, nor are they required to do so by their supervisors. In certain circumstances reporting entities have submitted estimates, or the Reinsurance Transparency Group has itself made estimates in order to produce the tables. In some cases, not even estimates could be made so that there are some omissions from some of the tables.

Comments and explanatory notes relevant to specific tables have been included below each table. The main general assumptions and qualifications are included in Appendix VIII.

**Table 1.1**

Table 1.1 analyses gross reinsurance premiums by class of business (life/non-life, with non-life analysed into property, liability and financial lines). The Table also shows how much of these premiums are retained and how much is retroceded both to other reporting reinsurers and to non-reporting reinsurers.

Table 1.1: Gross reinsurance premiums assumed by class of business and retrocessions by class of business and reporting status of retrocessionaire						
Gross reinsurance premiums assumed by class of business and retrocessions by class of business and reporting status of retrocessionaire (US\$m)						
Class of business		Gross reinsurance premiums assumed	Of which retroceded to reporting entities	Of which retroceded to non-reporting entities	Net reinsurance premiums assumed	
Life insurance (all)		47,305	8,613	16,911	21,781	
Non-life insurance		125,639	7,842	27,355	90,442	
of which	Property	58,925			45,799	
	Liability	61,506			40,022	
	Financial lines	5,208			4,621	
Total Life and Non-Life		172,944	16,455	44,266	112,223	

- For the US, the annual statements do not collect information in a manner which enables the retrocession of reinsurance business assumed to be distinguished from the reinsurance of direct business assumed. This table therefore includes an element of reinsurance of direct business within the figures relating to retrocessions, with a corresponding understatement of 'net reinsurance premiums assumed'.
- Because of the above, conclusions on the levels of retrocession and net premiums assumed have not been drawn from this data.

## Appendix I

**Table 1.2**

Table 1.2 analyses gross reinsurance premiums assumed according to the regions of ceding insurers. Aggregated results indicate the origination of ceded risks at a global level. Further analysis of jurisdiction level information also enables information on net cross-regional transfer of reinsurance premiums to be produced.

Table 1.2: Gross Reinsurance premiums ceded to reporting reinsurers by region of ceding insurer	
Gross Reinsurance premiums ceded to reporting entities by region of ceding insurer (US\$m)	
Region of ceding insurer	Gross reinsurance premiums ceded
Europe	59,444
North America	98,696
Asia and Australia	9,554
Africa, Near and Middle East	2,049
Latin America	3,201
Total	172,944

**Table 2.1**

Table 2.1 shows gross reinsurance premiums assumed by class of business, and according to whether the business relates to proportional or non-proportional contracts.

Table 2.1: Reinsurance premiums assumed by class of business and type of contract		
Gross reinsurance premiums assumed proportional/non-proportional by class of business (US\$m)		
Class of business	Proportional	Non-proportional
Life insurance (all)	47,095	210
Non-life insurance	82,686	42,953
of which		
Property	37,604	21,321
Liability	41,270	20,236
Financial lines	3,812	1,396
Total	129,781	43,163

- For the US, the annual statements do not collect information in a manner which enables analysis of 'life' business to be split between 'proportional' and 'non-proportional' types of contract. All has been included as 'proportional'.

**Table 2.2**

Table 2.2 is a high level overview of technical performance, showing 'net premiums earned' and 'net claims incurred' by class of business.

Table 2.2: Technical performance by class of business			
Net premiums earned and net claims incurred by class of business in respect of reinsurance business assumed (US\$m)			
Class of business		Net premiums earned	Net claims incurred
Life insurance (all)		25,826	20,644
Non-life insurance		92,290	78,771
of which	Property	46,462	43,895
	Liability	41,576	32,725
	Financial lines	4,252	2,151
Total Life and Non-Life		118,116	99,415

- US data included in this table is in respect of both reinsurance and direct business. The annual statements do not collect information in a manner which distinguishes between direct and reinsurance business for 'net premiums earned'. The US data for 'net claims incurred' is included on a similar basis for purposes of comparability. For all other jurisdictions the data relates to just the reinsurance business of the reporting entities.

**Table 2.3**

Table 2.3 gives a profile of claims exposures in respect of retained reinsurance risk ('net claims provision') by class of business and, where possible, making a distinction between reported claims and incurred claims which have not yet been reported to the reinsurer, for which the degree of uncertainty may be higher.

Table 2.3: Claims provision for reinsurance assumed by class of business						
Net claims provision for reinsurance assumed, by class of business and reporting status of claim (US\$m)						
Class of business		Net claims provision for reported claims	Net claims provision incurred but not reported (IBNR)	Total claims provision for incurred claims	Net life assurance provision	Total net claims provision and net life assurance provision
Life insurance (all)					161,075	161,075
Non-life insurance		139,481	93,062	232,543		232,543
of which	Property)	55,187	33,389	88,576		88,576
	Liability	78,090	55,756	133,846		133,846
	Financial lines	6,204	3,917	10,121		10,121
Total Life and Non-Life						393,618

## Appendix I

**Table 3.1**

Table 3.1 analyses derivative financial instruments held by reinsurers, by type of contract. Additional analysis indicates whether the contracts relate to hedging activity or not. The information includes both notional amounts and fair values.

Table 3.1: Reporting entities' use of derivative financial instruments						
Derivative financial instruments by type of instrument (notional and fair values) (US\$m)						
Type of contract	Held for hedging purposes		Held for non-hedging purposes		Total	
	Notional amount 13)	Fair value +/-)	Notional amount	Fair value +/-)	Notional amount	Fair value +/-)
Interest rate contracts	105,051	455	20,725	51	125,776	506
Equity and index contracts	1,382	70	4,015	75	5,397	145
Foreign currency contracts	3,075	(149)	3,501	(112)	6,576	(261)
Credit derivatives	921	-4	36,545	(8)	37,466	-12
Other	41	3	2,637	(8)	2,678	(5)
Total	110,470	375	67,423	(2)	177,893	373

**Table 3.2**

Table 3.2 records information on credit default swaps and collateralised debt obligation (CDO) investments, in respect of both protection bought and protection sold positions, including both notional amounts and fair values.

Table 3.2: Reporting entities' participation in credit risk transfer (CRT) activity			
Participation in credit default-swaps and CDOs by notional and fair value (US\$m)			
Type of contract		Total (notional amount)	Fair value +/-)
Credit default swaps			
of which	Protection bought	3,124	(18)
	Protection sold	10,276	9
CDO investments			
of which	Protection bought	294	308
	Protection sold	797	694
Total Protection bought		3,418	290
Total Protection sold		11,073	703

One jurisdiction was unable to provide the analysis according to bought and sold positions but provided the following figures in total:

- CDSs: notional value of US\$4,286 m; fair value of US\$42 m
- CDOs: fair value of \$248 m

The data in Table 3.2 above does not include these figures and hence represents six jurisdictions.

## Tables 4.1/4.2

Tables 4.1 and 4.2 deal with exposures of reinsurers to counterparties, the former by sector of counterparty (insurers, financial institutions, split where possible between banks and investment institutions, sovereigns and others) and the latter according to whether the counterparty is affiliated. These tables record information on selected assets covering the major asset categories as well as the extent to which recoverables from ceded reinsurance and retrocessions, as well as derivatives, are covered by collateral.

Table 4.1

Table 4.1: Key counterparty exposures (selected assets) by sector of counterparty							
Key counterparty exposures (selected assets) by sector of counterparty (US\$m)							
Selected assets	Total*	Insurers (1)	Financial institutions (2)	Of which		Sovereigns (3)	Other sectors (4)
				Banks	Investment institutions		
Recoverables from ceded reinsurance and retrocessions	142,615	142,615					
of which covered by collateral	58,832	58,832					
Debt securities	420,771	1,500	32,835	15,279	13,958	141,729	244,707
Cash and cash equivalents deposited	121,217	66,900	54,030	53,843	187	64	223
Shares and other equity investments	181,572	38,406	31,366	3,888	14,946	3	111,797
Derivative financial instruments with positive fair value	2,166	101	1,846	1,132	40	0	219
of which covered by collateral	747	0	591	464	39	0	156
Receivables arising from insurance and assumed reinsurance business	48,378	47,219	0	0	0	0	1,159
Other loans and receivables	24,160	9,965	3,290	565	1,709	336	10,569
Total	940,879	306,706	123,367	74,707	30,840	142,132	368,674

\* 'Total' represents the total of selected assets allocated by sector in (1) to (4), plus those which could not be allocated by sector.

- Figures relating to 'financial institutions' have been analysed, where possible, according to whether they relate to banks or to investment institutions.

## Appendix I

**Table 4.2**

Table 4.2: Reporting entities' counterparty exposure (selected assets) by affiliation of counterparty				
Key counterparty exposures (selected assets) by affiliation of counterparty (US\$m)				
Selected assets	Total*	Affiliate entities	Non-affiliate entities	
Recoverables from ceded reinsurance and retrocessions	142,615	50,134	92,481	
of which covered by collateral	58,832	25,208	33,624	
Debt securities	420,771	1,869	418,902	
Cash and cash equivalents deposited	121,217	44,691	76,526	
Shares and other equity investments	181,572	72,041	109,531	
Derivative financial instruments with positive fair value	2,166	128	2,038	
of which covered by collateral	747	0	747	
Receivables arising from insurance and assumed reinsurance business	48,378	9,965	38,413	
Other loans and receivables	24,160	9,702	14,458	
Total	940,879	188,530	752,349	

**Tables 4.3/4.4**

Tables 4.3 and 4.4 deals with exposures of counterparties to reinsurers, the former by sector of counterparty and the latter according to whether the counterparty is affiliated. The tables record information on selected liabilities and capital items covering the following major categories as well as the extent to which reinsurers have provided collateral in respect of liabilities.

**Table 4.3**

Table 4.3: Counterparties exposed (selected liabilities and paid up capital) by sector of counterparty							
<b>Counterparties exposed (key liabilities and paid up capital) by sector of counterparty (US\$m) – balance sheet values</b>							
Selected liabilities and paid up capital	Total*	Insurers (1)	Financial institutions (2)	Of which		Sovereigns (3)	Other sectors (4)
				Banks	Investment institutions		
Gross claims provision and gross life assurance provision – primary business	332,233						
Gross claims provision and gross life assurance provision – assumed reinsurance business	374,341	374,341					
of which covered by collateral	158,049	158,049					
Derivative financial instruments with negative fair value	1,928	241	1,379	692	74	0	308
of which covered by collateral	357	2	355	261	0	0	0
Debt – lender identifiable	25,686	14,107	8,608	2,378	6,230	50	2,921
of which subordinated debt	7,038	116	6,828	1,891	4,937	0	94
Debt – lender unidentifiable	739						
of which subordinated debt	490						
Paid up capital	80,118						
of which shareholder identifiable	70,163	42,734	12,965	2,303	10,662	72	14,392
<b>Total</b>	<b>815,045</b>						

\* 'Total' represents the total of selected liabilities and paid up capital allocated by sector in (1) to (4), where relevant, plus those which could not be allocated by sector.

- Figures relating to 'financial institutions' have been analysed, where possible, according to whether they relate to banks or to investment institutions.
- Lloyd's central assets and members' funds, whilst providing its capital base, are not included in 'paid up capital' in tables 4.3 and 4.4 as, for the purposes of these tables, doing so would not be valid.

## Appendix I

### Table 4.4

Table 4.4: Counterparties exposed (selected liabilities and paid up capital) by affiliation of counterparty				
<b>Counterparties exposed (key liabilities and paid up capital) by affiliation of counterparty (US\$m) – balance sheet values</b>				
Selected liabilities and paid up capital	Total	Affiliate entities	Non-affiliate entities	
Gross claims provision and gross life assurance provision - primary business	332,233	63,384	268,849	
Gross claims provision and gross life assurance provision – assumed reinsurance business	374,341	132,810	241,531	
of which covered by collateral	158,049	69,832	88,217	
Derivative financial instruments with negative fair value	1,928	417	1,511	
of which covered by collateral	357	1	356	
Debt – lender identifiable	25,686	10,714	14,972	
of which subordinated debt	7,038	5,053	1,985	
Debt – lender unidentifiable	739	0	739	
of which subordinated debt	490	0	490	
Paid up capital	80,118	46,951	33,167	
of which shareholder identifiable	70,163	46,436	23,727	
<b>Total</b>	<b>815,045</b>	<b>254,276</b>	<b>560,769</b>	

**Table 5.1**

Table 5.1 looks at reinsurers' invested assets. It records financial instruments held by reinsurers at balance sheet value and at market value, by major type of financial instrument held. It also records the unrealised gains and losses on investments where there is a difference between balance sheet value and market value. Also included is the extent to which financial instruments are represented by investment in the affiliates or in the company's own shares.

Table 5.1: Reporting entities' investments				
Investments by type of financial instrument (US\$m)				
Financial instrument		At balance sheet value	At market value	Unrealised gains/ losses on potential sale
Debt securities		423,040	436,436	13,396
of which	issued by affiliates	723	744	21
Shares and other equity investments		150,814	211,891	61,077
of which	Own and affiliate shares	70,528	89,484	18,956
Non-negotiable loans (including non mortgage loans)		11,985	12,018	33
Mortgage loans and real estate		25,602	32,217	6,615
Other		99,056	100,177	1,121
Total invested assets		710,497	792,739	82,242

- Where jurisdictions account for investments at market value, the market value has been used in both columns.
- For investments where no market value was available book value has been included as a proxy for market value.

**Table 5.2**

Table 5.2 gives a high level overview of reinsurers' profitability, both in overall terms and for 'life' and 'non-life' business.

Table 5.2: Reporting entities' profitability indicators and ratios			
Reporting entities' profitability indicators and ratios (US\$m)			
Revenue account items	Non-life	Life	Total
Net premiums earned	119,619	35,311	154,930
Net claims incurred	(100,599)	(33,398)	(133,997)
Net operating expenses	(34,590)	(10,004)	(44,594)
Non-technical operating expenses*			(505)
Investment income			36,162
Other income/expenses (+/-)			(3,376)
Total result			8,620
Loss ratio %	84		
Combined ratio %	113		

- Some jurisdictions allocate income and expenses which are not directly related to underwriting activities to a separate account.

## Appendix I

- Note that the figures in table 5.2 include the direct and reinsurance business of reporting reinsurers and therefore differ from those in table 2.2 which are intended to reflect the reinsurance business only.

**Table 5.3**

Table 5.3 compares the capital base with the size of recoverables arising out of reinsurance operations (direct business) and retrocessions (assumed reinsurance business). This is looked at both gross and net of collateral (and any other offsetting items).

Table 5.3: Global gearing of reporting entities (reinsurance and retrocession dependency)					
Recoverables from reinsurance (direct business) and retrocessions (assumed reinsurance business) and reporting entities' gearing ratio (US\$m)					
Recoverables from reinsurance and retrocessions		Total capital available	Gearing	Gearing net of collateral	
Gross	Net of collateral and offsetting items				
142,516	82,840	286,229	50%	29%	

- 'Recoverables from reinsurance and retrocessions' which are net of collateral and offsetting items do not include deduction for letters of credit (which is not a balance sheet item) for all jurisdictions. If taken into account, this would reduce the ratio.

**Table 5.4**

Table 5.4 provides an analysis of capital. Capital represents the capital available to cover losses, and the components included are discussed below. Participating supervisors have consented to the data for this table being published at the national level; due to differences in accounting conventions and regulatory requirements between jurisdictions the information is more meaningful at this level.

**Table 5.4 – global level**

Table 5.4: Reporting entities' total available capital <sup>(1)</sup>	
Total available capital (composition) US\$m	
Capital items	Total
Paid up capital	104,306
Hybrid capital <sup>(2)</sup>	10,704
Retained earnings	63,113
<i>Other capital items:</i>	
Contingency reserves <sup>(3)</sup>	26,172
Unrealised gains/losses on potential sales <sup>(4)</sup>	78,871
Other items <sup>(5)</sup>	3,063
<b>Total available capital</b>	<b>286,229</b>
<b>Total regulatory capital required<sup>(6)</sup></b>	<b>71,228</b>

Table 5.4 – by jurisdiction

Table 5.4: Reporting entities' total available capital <sup>(1)</sup>							
Total available capital (composition) US\$m							
Capital items	Bermuda	France	Germany	Japan	Switzerland	UK	US
Paid up capital	15,482	3,557	11,613	1,963	5,341	20,880	45,470
Hybrid capital <sup>(2)</sup>	2,186	1,847	1,732	0	2,804	0	2,135
Retained earnings	4,261	1,872	5,407	6,442	5,735	(483)	39,879
<i>Other capital items:</i>							
Contingency reserves <sup>(3)</sup>	0	1,677	13,150	10,288	942	115	0
Unrealised gains/losses on potential sales <sup>(4)</sup>	480	15,843	14,606	28,679	15,270	0	3,993
Other items <sup>(5)</sup>	1,177	0	672	1,872	(551)	0	(107)
<b>Total available capital</b>	<b>23,586</b>	<b>24,796</b>	<b>47,180</b>	<b>49,244</b>	<b>29,541</b>	<b>20,512</b>	<b>91,370</b>
<b>Total regulatory capital required<sup>(6)</sup></b>	<b>9,143</b>	<b>Nil</b>	<b>6,649</b>	<b>9,356</b>	<b>3,533</b>	<b>4,110</b>	<b>38,437</b>

**Note:**

- (1) The figures in this table estimate the total capital of the reporting entities included in these statistics, which is available to meet losses. The figures do not necessarily represent capital as defined either by participating jurisdictions' national GAAP or by their national regulations. They include unrealised gains/losses according to national GAAP. Such a measure could be viewed as a proxy for capital available in the case that reserves/provisions including IBNR do not cover future claims payments. It must be taken into consideration that – depending on national statutory valuation rules – unrealised gains is an allowable component in assessing margin of solvency. The measure "total available capital" in this table is based on a legal entity view and is not to be compared with respective measures on a consolidated group basis as eventually published in other reports or studies or sources.
- (2) 'Hybrid' capital is as defined as eligible by the supervisor or regulation and relates to non-share (stock) capital which is "permanent" in nature, such as long-term debt issued.
- (3) 'Contingency reserve' arises where the event giving rise to the loss has not occurred; it includes 'equalisation provision' and 'catastrophe reserve'.
- (4) 'Unrealised gains/losses on potential sale' represents the potential gains or losses on sale of investments which would have been realised had sale occurred at the reporting date, by comparing the balance sheet value with market value. The total differs from that in Table 5.1 due to restrictions on the extent to which such items are allowed for purposes of assessing regulatory capital.
- (5) 'Other items' include adjustments in respect of taxation, dividends, general bad debt provisions and treasury stock.
- (6) It should be noted that regulatory capital requirements differ between jurisdictions. See Appendix IV for a summary of regulatory capital requirements in participating jurisdictions. In France there is currently no capital requirement for pure reinsurers.

## Appendix II

### Participants in Reinsurance Transparency Group

#### Participating jurisdictions

Bermuda  
France  
Germany  
Japan  
Switzerland  
United Kingdom  
United States

#### Reinsurance Transparency Group members

Julian Adams (Chairman)	Financial Services Authority, United Kingdom
Jeremy Cox	Bermuda Monetary Authority, Bermuda
Hervé de Villeroché	Ministère de l'Economie des Finances et de l'Industrie, France
Florence Lustman	Commission de Contrôle des Assurances, des Mutuelles et Institutions de Prévoyance, France
Lutz Janke	Federal Financial Supervisory Authority (BaFin), Germany
Ken Baba	Financial Services Agency, Japan
Kurt Schneiter	Swiss Federal Office of Private Insurance, Switzerland
David Johnston	Financial Services Authority, United Kingdom
Alessandro Iuppa	Maine Bureau of Insurance/NAIC, United States

#### Representatives of RTG members

Pat Phillip-Bassett	Bermuda Monetary Authority, Bermuda
François Tempé	Commission de Contrôle des Assurances, des Mutuelles et Institutions de Prévoyance, France
Guillaume Autier	Ministère de l'Economie des Finances et de l'Industrie, France
Sebastian Aschenbrenner-von Dahlen	Federal Financial Supervisory Authority (BaFin), Germany
Shinya Kobayashi	Financial Services Agency, Japan
Piotr Andrzejewski	Swiss Federal Office of Private Insurance, Switzerland
Jonathan Griffiths	Financial Services Authority, United Kingdom
Bryan Fuller	NAIC, United States

Industry representatives

Emmanuelle Rousseau	Scor, France
Hans-Jürgen Säglitz	GDV, Germany
Ralph Vogelgesang	Munich Re, Germany
Masaaki Nagamura	Tokio Marine & Nichido Fire Insurance Co. Ltd, Japan
Katsuo Matsushita	General Insurance Association of Japan
Debra Hall	Swiss Re, Switzerland
Patricia Hakong	Lloyd's, United Kingdom
Beth Grossman	ACORD, United States
Brad Smith	American Council of Life Insurers, United States
Brad Kading	Association of Bermuda Insurers and Reinsurers
Tracy Laws	Reinsurance Association of America, United States
Martin Carus	AIG, United States
Michael Eves	International Association of Actuaries

Secretariat

The IAIS Secretariat provides secretariat support to the Reinsurance Transparency Group, with involvement, as necessary, from the FSF Secretariat and IMF staff, and staff of other financial stability organisations.

## Appendix III

### Methodology and list of reporting reinsurers

#### *Structure of the statistics*

As for the previous report, the method of gathering, processing and releasing the data submitted by reporting reinsurers is based on a three-level approach, with each level of data requiring different treatment and confidentiality rules:

- A-level data (legal entity-based information)
- B-level data (nationally aggregated data)
- C-level data (global data).

Using reinsurer-specific information (A-level data), and using a consistent template, participating supervisors have compiled aggregate reports (B-level data) for their respective jurisdictions. Supervisors have then transmitted the aggregate reports (B-level data) for their respective jurisdictions to the IAIS Secretariat. Based on the aggregate reports received from the supervisors the IAIS Secretariat has compiled the data into global tables (C-level data).

#### *Coverage and selection criteria*

To obtain a significant coverage of the global reinsurance market, criteria were agreed upon for the selection of globally significant reinsurers ("reporting reinsurers") to be included in the statistics.

The selection criteria, which are unchanged from the previous year, are based upon unaffiliated business only, to avoid the inclusion in the statistics of those reinsurers whose significant reinsurance transactions are intra-group only. The criteria are as follows:

- Gross unaffiliated reinsurance premiums assumed of US\$800 million (US\$20 million for monolines); or
- Gross unaffiliated technical reserves of US\$2 billion (not applied to monolines); with
- Discretion of the national authority to recommend certain entities to be excluded, with a final decision by the group.

This has resulted in a total of 56 major reinsurers from the seven participating jurisdictions meeting the selection criteria for inclusion in the 2005 global reinsurance market statistics are as follows:

**Bermuda**

Allied World Assurance Company Ltd  
Arch Reinsurance Ltd  
Axis Specialty Ltd  
Endurance Specialty Insurance Ltd  
Everest Reinsurance (Bermuda) Ltd  
Max Re Ltd  
Montpelier Reinsurance Ltd  
Partner Reinsurance Company Ltd  
Platinum Underwriters Bermuda Ltd (new)  
Renaissance Reinsurance Ltd (new)  
XL Re Ltd

**France**

Axa France Vie  
Axa Re  
Caisse Centrale de Réassurance  
Scor  
Scor Vie

**Germany**

Converium Rückversicherung (Deutschland) AG  
Swiss Re Frankona Rückversicherung AG  
E&S Rückversicherung AG  
Hannover Rückversicherungs-AG  
Kölnische Rückversicherungs-Gesellschaft-AG  
Münchener Rückversicherungs-Gesellschaft-AG  
Revios Rückversicherung AG  
Swiss Re Germany AG

**Japan**

Toa Reinsurance Company  
Tokio Marine & Nichido Fire Insurance Co. Ltd

**Switzerland**

Converium AG

European Reinsurance Company of Zurich  
Swiss Reinsurance Company, Zurich

**United Kingdom**

Aspen Insurance UK Ltd (new)  
Lloyd's

**United States**

Ace Property & Casualty Insurance Co (new)  
Ambac Assurance Corp (new)  
Employers Reinsurance Corporation  
Everest Reinsurance Company  
Federal Insurance Company  
Firemans Funds Insurance Company  
Folksamerica Reinsurance Company  
General Reinsurance Corporation  
Lincoln National Life Insurance Company  
Munich American Reassurance Company  
Munich Reinsurance America Inc.  
National Indemnity Company  
Odyssey American Reinsurance Corporation  
Partner Reinsurance Company of the US  
Platinum Underwriters Reinsurance Company  
Radian Asset Assurance Inc (new)  
RGA Reinsurance Company  
Scottish Re US Inc  
Security Life of Denver Insurance Company  
Swiss Reinsurance America Corporation  
Swiss Re Life & Health America Inc  
Transamerica Financial Life Insurance Company (new)  
Transamerica Occidental Life Insurance Co.  
Transatlantic Reinsurance Company  
XL Reinsurance America Inc

## Appendix IV

### Summary of regulatory capital requirements in participating jurisdictions

#### Bermuda

In Bermuda, the most significant professional reinsurance business is undertaken by companies falling into the Class 4 category, and these are required to have a statutory capital and surplus of at least US\$100 million.

The Minimum Solvency Margin is the amount the statutory assets (i.e. admissible assets under the Insurance Act) of the reinsurer must exceed the statutory liabilities (as determined pursuant to the Insurance Act) by the prescribed amount. The minimum solvency margin for a Class 4 company is the greatest of Figures A, B and C below:

- Figure A: US\$100,000,000;
- Figure B: 50% of the net premiums written in its current financial year or projected to be written on premiums ceded by the Class 4 company for reinsurance (not exceeding 25% of gross premiums written), of the premiums written in that year in respect of general business of the Class 4 company;
- Figure C: 15% of the aggregate of the reinsurer's loss expense provisions and other general business insurance reserves.

A class 4 reinsurer which fails to maintain its solvency margin requirement is prohibited from declaring or paying dividends until the deficit has been made good. The Insurance regulations require prior regulatory approval before making a material reduction to statutory capital and surplus (for example, through the declaration of a dividend). In addition, where a class 4 reinsurer's statutory capital and surplus fall below US\$75 million, the Insurance legislation confers wide powers on the supervisor.

The Bermuda Monetary Authority is currently developing a risk-based capital model for the quantification of capital requirements among Class 4 insurers in Bermuda. The model is expected to be in operation by the end of the year 2007.

The reporting reinsurers for Bermuda all fall into the class 4 category.

#### France

Insurance and reinsurance companies in France are supervised by the Commission de Contrôle des Assurances, des Mutuelles et Institutions de Prévoyance (CCAMIP). The CCAMIP ensures that undertakings are in a position to meet (financial supervision) and do meet (performance supervision) their underwriting liabilities.

Direct insurers assuming reinsurance are subject to full direct supervision of their whole business. French direct insurers are subject to licensing requirements, minimum solvency (i.e. capital requirements), reporting requirements and investment restrictions (based on EU directives – coverage of technical liabilities with admitted assets).

For the time being, French professional reinsurers are subject only to limited direct supervision. There is currently no solvency margin requirement, nor any obligation to cover regulated commitments.

However, there is a near-obligation for reinsurers — whether French or foreign — to collateralise their debts towards French ceding companies, in the sense that otherwise these debts are not eligible for covering ceding companies' technical provisions. This device should

be given up as regards reinsurers in the European Economic Area when the reinsurance directive comes into force; it should be maintained towards other reinsurers.

The reinsurance directive is currently being enforced and will lead to the submission of all reinsurers to an agreement procedure, and to the introduction of a solvency margin requirement.

### Germany

Pure reinsurers have to meet the same standards as primary insurers concerning capital requirements. A respective amendment (§§ 119 to 123c) of the German Insurance Supervision Law (Versicherungsaufsichtsgesetz - VAG) was adopted at the end of 2004. Pursuant to § 53c in connection with § 123b VAG, reinsurance companies have to have an amount of free equity capital, which enables them to fulfil their contractual obligations at any time. This amount has to be, as a minimum, at least as high as the solvency margin requirements; whereas the solvency margin requirements are determined by the overall business volume. With respect to defining solvency margin requirements, § 53c (2) 1 VAG refers to the respective European Community Directive ('Solvency I'). Insurance undertakings that carry on both reinsurance and primary insurance business also have to subject their entire technical insurance business to the solvency requirements applicable to primary insurers – also based on the above mentioned paragraphs of the VAG and on the Solvency I Directive.

The supervisory authority may take any precautions and make any orders which are necessary to ensure that reinsurance undertakings are able to meet their obligations arising from reinsurance relationships at all times. The funds of reinsurers have to be adequate in order to fulfil all obligations under the existing reinsurance contracts. In addition, if a pure reinsurer is part of an insurance group the guidance on reinsurance group solvency pursuant to EC Directive 98/78 already applies.

### Japan

Insurance companies (including reinsurance companies) are required to have capital (foundation in the case of mutual companies) of no less than one billion yen. Japan adopts a risk-based approach to regulatory capital requirements, which focuses on the major risks: insurance risk, assumed interest risk, asset management risk and operational risk (life and non-life business), and additionally catastrophe risk (non-life business).

Insurers are expected to maintain a regulatory minimum capital of 200% of the estimated value of the risks.

### Switzerland

Pursuant to the Insurance Supervision Law (2004) and Regulations (2005), Swiss-domiciled reinsurers must comply with capital adequacy requirements under the Swiss Solvency Test (SST). The SST determines the amount of the available capital ("risk bearing capital") and the required capital according to the risks ("target capital"). Capital adequacy is secured when the risk bearing capital is no less than the target capital.

The SST defines a boundary in which insurance companies can develop and run their own risk models (the so called internal models) to quantitatively evaluate their risks in a manner which is useful to them. Additionally a publicly available standard risk model is defined by the supervisor.

## Appendix IV

### United Kingdom

The underlying UK requirements are that authorised firms must as a minimum meet the European Community Directive requirements. However, a new key principle set out in the FSA's Prudential Sourcebook is that "A firm must maintain adequate financial resources". UK does not differentiate between insurers and reinsurers for these purposes.

The minimum EC level for the capital resources requirement is based on the higher of a percentage of premiums or a percentage of claims calculation, together with an additional loading of 50% for all liability classes with a minimum amount. This amount is considered by the FSA to be too low for most firms, and therefore it requires each firm to maintain its own assessment (an **Individual Capital Assessment** or 'ICA') on an ongoing basis of the capital it needs given the nature of risks and risk mitigation that the firm has. The FSA may then give guidance to the firm as to the amount of capital the FSA considers it should hold if it considers the firm's own assessment is too low. If the firm does not meet this level of capital, the FSA is able to restrict the amount of business the firm writes, or take other regulatory action. In addition firms are required to report the result of a risk based capital calculation (an **Enhanced Capital Requirement** or 'ECR') with percentages applied to premiums, claims, and assets, with the percentages depending on the line of business, and generally expected to be able to justify where their own capital assessment differs from the ECR. Individual capital guidance is usually expressed as a percentage of this ECR.

Lloyd's is also subject to this capital assessment framework the same principles apply, but the nature of this unique market means that there are differences in application. Each member has to hold a level of capital as assessed by Lloyd's annually. Each managing agent is required to assess, for each of the syndicates, the amount of capital required to support the risks that the syndicate is exposed to. Lloyd's centrally is required by the FSA to scrutinise each syndicate ICA and to satisfy the FSA that the Lloyd's review process is robust and may be relied on. As part of the review, Lloyd's actuaries assess and review the modelling methodology and assumptions. The FSA is kept informed of Lloyd's conclusions for each syndicate ICA and FSA actuarial teams perform sample check reviews of syndicate ICAs.

The syndicate ICA as agreed and where appropriately increased by Lloyd's, is then used to calculate the regulatory capital requirement for each member. Each member has to hold a level of capital in excess of the regulatory requirement as assessed by Lloyd's annually. The level of capital is subject to the EC minimum and regulatory review.

### United States

In the US individual States require reinsurers to maintain a minimum level of capital and surplus in order to establish and continue operations.

In addition, the NAIC has adopted a risk-based capital approach, which applies to both direct insurers and reinsurers, and requires a risk-based capital ratio of not less than 200%. Financial solvency is also monitored through the use of financial profile reports, prioritisation tools and financial analysis. Separate risk-based capital formulae exist for life (re)insurers, property/casualty (re)insurers and health (re)insurers, using a four-tier system to indicate the severity of any capital deficiency. These formulae include components to assess risks related to reinsurance.

Where the risk-based capital requirement is lower than a State's minimum capital requirement, the higher figure is required.

## Summary of regulatory reporting and current level of disclosure by reinsurers in participating jurisdictions

A study was carried out, originally by Task Force Re and now updated, to look at the public disclosures of a sample of groups including significant reinsurance operations, covering the jurisdiction represented within the global reinsurance market statistics. Reference was made to publicly available consolidated financial statements and website information. This has been supplemented by further information from national supervisors within participating jurisdictions, including comments relating to regulation of reinsurers generally as well as specifically to disclosure.

It may be noted that EU listed groups need to prepare consolidated financial statements in accordance with International Financial Reporting Standards with effect from 1 January 2005.

### Bermuda

In Bermuda, the most significant professional reinsurance business is undertaken by companies falling into the Class 4 category.

Under the Insurance Act, every Class 4 insurer is required to file annually a statutory financial return and statutory financial statements within four months of the insurer's financial year end. Penalty fines may be incurred if filings are not made as required. The statutory financial return includes:

- Audit opinion from an auditor approved by the Supervisor, stating that the auditor carried out a proper examination of the insurer's statutory financial statements, and that the examination was conducted in accordance with an accepted auditing standard;
- Cover sheet describing the types of business conducted, whether it is written on a direct/reinsurance basis, premium by related/unrelated categories, description of stop loss reinsurance cover, whether loss reserves are discounted; and listing of license conditions and of effected permitted modifications to accounting provisions, as laid out in the Insurance Act 1978;
- A declaration of statutory ratios, which includes a premium to statutory capital and surplus ratio, a five-year operating ratio, and a change in statutory capital and surplus ratio;
- A Loss Reserve Specialist Opinion from a fully qualified actuary in respect to the insurer's loss and loss expense provisions;
- Schedule of Ceded Reinsurance, a list of the reinsurers the company has contracts with, including their jurisdiction, rating, premium ceded, amounts owing to the reinsurer and a listing of aged recoverables owed from the reinsurer.
- Form 1 – Statutory Balance Sheet – general business, a prescribed line-by-line listing of all assets, liabilities and statutory capital & surplus;
- Form 2 – Statutory Statement of Income – general business, a prescribed line-by-line listing of all revenues and expenses;
- Form 8 – Statutory Statement of Capital and Surplus, a detailed breakdown of the amounts that make up the statutory capital and surplus;
- Notes to the Statutory Financial Statements.

At present, the regulations do not require any of the information submitted to be made available to the public. However, the Bermuda Monetary Authority ("BMA") is currently

## Appendix V

engaged in a project aimed at introducing public disclosure requirements for Class 4 insurers. Importantly, most of the Class 4 insurers licensed in Bermuda form part of publicly traded companies on US Stock Exchange, and file extensive financial disclosure statements with the U.S. Securities Exchange Commission ('SEC'). The generally high level of financial security in Bermuda, coupled with very stringent solvency margin requirements for the Class 4 sector, has allowed most of the Class 4 companies to achieve A ratings from the internationally recognised rating agencies.

Insurers prepare audited financial statements and obtain ratings from one or more of the following agencies: A M Best's, Standard & Poor's, Moody's, and/or Fitch Ratings, to which they submit extensive financial disclosure materials including both material quantitative and qualitative information.

Reinsurers present consolidated financial statements (balance sheets, income statements, cash flow statements, and statements of changes in equity). In addition, SEC rules require the comprehensive disclosure regarding the use of financial instruments including their use of derivatives and other hedging activities. Further, the publicly traded companies are required to provide 'market risk' disclosures, both quantitative and qualitative about all financial instruments presented 'outside' the financial statements.

Moreover, market analysts such as Goldman Sachs and Merrill Lynch review detailed financial data and provide extensive reports on company performance and forecast for the future.

### France

The current supervisory framework for reinsurance and insurance companies in France is based on a single set of accounts that is used for both accounting and supervisory purposes. These accounts - balance sheet, profit and loss account and annex, including a detailed list of investments – are public documents. Firms usually provide financial statements (balance sheets, income statements, cash flow statements and the complete list of investments with their localisation, market and book value) with notes which provide details on their premiums, assets, investments, liabilities and debt. Some information is also provided in the annual report (technical result with premiums, claims, provisions and expenses by class of business, and also premiums and claims by region, information on risk management, business strategy corporate management and retrocession). Some firms also disclose information on their share capital, alternative risk transfer, derivative financial instruments and claims development triangle. All these documents are publicly available.

Parent companies also have to publish consolidated financial statements with notes on their consolidation methods and list of consolidated entities.

More detailed information is reported to the supervisor in the form of CCAMIP returns, referred as 'C reports' (annual) and 'T reports' (quarterly), which are not publicly available. The information provided by insurers and reinsurers in these returns includes:

- C1 : detailed technical results by insurance category and sub-category
- C2 : liabilities and technical results by country
- C3 : reinsurance accepted and ceded (with a distinction between intra-group and external reinsurance)
- C4 : premiums per type of guarantees
- C5 : insurance liabilities and assets backing those liabilities (not for pure reinsurers)

- C6 : solvency margin : required margin and eligible equity components (not for pure reinsurers)
- C6 bis : projection of the solvency requirement of the society for the next 5 years (not for pure reinsurers)
- C8 : description of the reinsurance covers (not for pure reinsurers)
- C9 : detailed list of the reinsurers and stress testing of the reinsurance cover (not for pure reinsurers)
- C10-C11-C12 : loss development triangle by insurance category and sub-category (non-life)
- C20-C21 : detailed information per contract (life)
- T1 : information on activity (premium, number of contracts sold, amount and number of claims occurred)
- T2 : list of investment by class of assets (at book value and market value) ;
- T3 : stress testing analysis on assets and technical provisions
- A 'solvency report' where the society demonstrate its future solvency (where the society have to explain both their internal control and process to maintain their solvency but also the results of their balance sheet projection under different scenarios).
- A 'report on the investment politics'
- A 'report on reinsurance politics' (not applied to pure reinsurers)

### Germany

#### *External Accounting*

Reinsurers and insurers have to prepare external, which generally means publicly available, accounts in accordance with general rules and a specific regulation. These annual statements are based on the German accounting standard set out in the German Commercial Code and other regulations. These focus very much on the creditor, in particular the policyholder, rather than the investor. The principle of prudence has top priority.

Within 10 months of the financial year end, reinsurers have to draw up their annual accounts as well as the status report<sup>116</sup>. This generally happens much earlier. These documents must be submitted to the supervisor as soon as they have been drawn up, i.e. before they are made public.

The consolidated financial statements (balance sheet, income, cash flow, stockholder equity, comprehensive income, and retained earnings) include informative notes with details on reinsurers' assets, market value of investments, and liabilities; premiums, investment results and expenses. For the sample of reinsurers reviewed, companies offer information on their financial products business, including useful comments on their market, credit and liquidity risks, including ratings. Fair value of financial instruments is also available.

According to the Corporate Sector Supervision and Transparency Act (KonTraG) reinsurers have to set up a risk management system which identifies potential risks. Companies have an obligation to disclose information about such risks and the structure of the system.

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<sup>116</sup> These consist of the balance sheet, the profit and loss account and the notes to the accounts.

## Appendix V

Additionally all reinsurers have to meet the requirements of the German Accounting Standard 5-20. Reinsurers have to prepare a risk report under the rules of this standard.

For the sample of reinsurers reviewed, disclosure includes details on the type, maturity, currency, and regional allocation of assets and investments. Information on provisions, debt (with some information on the characteristics of the instruments), and other liabilities is provided. Details on the class, claims, ratios, and regional allocation of premiums are available.

General information on risk management, business strategy, affiliated and subsidiary companies and principal officers can also be found.

### *Auditor's report*

Reinsurers and insurers must have their annual accounts and the status report checked by an auditor. BaFin has to be informed before his appointment and before the audit takes place. The contents of audit reports are stipulated in the 'Regulation on Auditor's Reports' published by BaFin. Two copies of the audit report are to be sent to BaFin, together with the related comments of the managing and the supervisory boards. Finally, the auditor's report on the managing board's statement about the relations with affiliated companies also needs to be presented.

### *Internal accounting*

The term internal accounting refers to information an insurer has to submit to the supervisory authority only. The provisions applying to internal accounting are similar to the provisions for non life insurers. They were laid down in a regulation in 1995<sup>117</sup> and last amended in 2005. The changes are part of a continuous improvement process at the BaFin aiming at a reduced administration effort and further risk oriented supervision. For this purpose some statements were omitted (compare the Global Reinsurance Market Report 2003) and some newly introduced (see below). The present provisions require all reinsurers to submit the documents mentioned below, which are required in a prescribed format. The documents which insurers have to put forward provide not only a more detailed break-down of the external accounts; they also allow a closer look into the reinsurer's business.

The following documents are to be submitted:

- balance sheet (statement 100)
- profit and loss account (statement 200) - (excerpts for the technical account)
  - for the entire insurance business
  - for the entire reinsurance business accepted by domestic ceding insurers
  - for the entire reinsurance business accepted by foreign ceding insurers
  - for each class of insurance – (very detailed split)
- development of investments (statements 101)
- income from and expenses for investments (statement 201)
- statement 203 (newly introduced) additional information with respect to reinsurance, including details about individual technical profits and losses relating to the accepted

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117 Accounting in accordance with the ordinance concerning the reporting by insurance undertakings to the Federal Insurance Supervisory Office.

reinsurance business (former statement 250). And information on inward and outward reinsurance business, by every direct insurer and reinsurer dealt with (former sample 1).

- statement 251 (newly introduced) information about covering technical provisions.
- statement 252 (newly introduced) information about the insurance business and the contracts and in particular details about technical claims provisions
- statement 604 (newly introduced) quarterly information about the technical reinsurance business
- Statement 671 (newly introduced) every six months information about technical provisions and details about the assets of reinsurers.
- Statement 688 (newly introduced) forecasting with a yearly cut-off date (30.06.) the respective development of the following six months.

Finally, reinsurers also have to supply informal statements such as an outline of the methods they use for setting up the provision for claims outstanding.

If applicable the Reinsurer has to present the consolidated annual report, which may be prepared on the basis of either IAS or US GAAP, including an auditor's report.

The reinsurer is subject to the rules applicable to group supervision, if a primary insurer is involved also.

In addition to information delivered on a regular basis, the supervisor may request from the reinsurer any other information it requires.

### Japan

Insurance companies in Japan, including reinsurance companies, are subject to the disclosure requirements of the Insurance Business Law and relevant Enforcement Regulations. The industry association sets out further standards on disclosure. These result in highly comprehensive and standardised disclosures by Japanese insurers, including reinsurers.

In addition to the set of primary consolidated financial statements (balance sheets, income statements, cash flow statements, statement of retained earnings), companies disclose general information on business strategy, organisational structure, senior management and shareholders, as well as detailed information on investment activities, insurance activities, risk and solvency.

Information on investment activities includes, for example, asset management policy (qualitative), investment by class of asset, return on investment by class of asset, information on maturity (for securities and loans), information on debtors (for loans) etc. Information on insurance activities includes, for example, details, by line of business, on policy liabilities, premiums, claims paid, insured amounts, underwriting profit, etc.

Also disclosed is information on derivatives such as the policy on the use of derivatives (qualitative) and notional and market values of derivatives by type of transactions. Information on risk includes a description on the risk management system and risk management policy. As for quantitative information, 'insurance risk', 'assumed interest risk' and 'asset management risk' are calculated and disclosed based on a formula set by the Financial Services Agency. The overall risk based capital adequacy ratio (solvency margin ratio) is also disclosed.

## Appendix V

Moreover, insurance companies are required to submit 'Financial statements', 'Business reports' and 'Periodical monitoring reports' (from monthly to yearly), which include quantitative risk information with regard to liquidity risk, market risk, credit risk and other risks to the Financial Services Agency.

### Switzerland

Swiss reinsurers publish balance sheets, income statements, shareholders' equity statements, and cash flow statements with informative notes to them. The consolidated information is complemented with information on business segments. These notes include information on investments (type of instrument, country, currency and maturity), derivative financial instruments (interest rate contracts, equity and index contracts, foreign currency and other instruments), acquisitions and dispositions, and debt in some detail.

Premiums are detailed by geographic allocation and line of business. Additional information on subsidiaries and equity investments is also available. General notes on the firms' risk management and business strategy complement the quantitative information.

### United Kingdom

Insurers and reinsurers (including Lloyds) are both regulated by the Financial Services Authority (FSA) in the UK. For regulatory reporting purposes, no distinction is drawn between an insurer and a reinsurer.

The FSA requires UK authorised insurers and reinsurers to complete and submit an audited return on an annual basis (the FSA return).

The return comprises, among other things, the revenue account, profit and loss account and balance sheet at the end of the year together with the annexed notes, statements, reports and certificates and it must be audited. The regulatory return must be submitted to the FSA within 2 months, 15 days of the year end or if submitting electronically (on FSA Approved software) within 3 months.

The FSA return comprises a number of standard forms, numbered 1 to 39 which must be completed.

Forms 1 to 17 and 20A are at company level and report capital resources compared with solvency requirements, assets and liabilities (including derivatives) and profit and loss figures and a summary of premiums and reserves by class.

The general business revenue (forms 20 to 25) largely comprises analyses of premiums and claims and expenses by high level classes of insurance business (known as combined categories). There are eighteen combined categories broken down into fifteen for direct and facultative business and three for treaty reinsurance. These forms show amounts gross and net of reinsurance.

The general business statistical forms (26 to 34) comprise analyses of premiums and claims reserves by category of business, currency and year of origin. There are 60 categories of business – 41 relate to direct business & facultative reinsurance business and 19 to treaty reinsurance business. The year of origin may be the accident year or the underwriting year, firms may choose which type of origin to report by. These forms show gross of reinsurance amounts for direct & facultative business and both gross & net of reinsurance amounts for treaty reinsurance. Form 30 is different to the others in that it reports the interest rate and mean term used in any discounting of reserves.

Form 36 shows currency exchange rates used elsewhere in the return, and forms 37 to 39 show the derivation of the equalisation provision.

The return for Lloyd's is slightly different to that required for companies in order to take account of the Lloyd's structure of members, syndicates and central Fund.

This information included in the forms above is to allow the FSA (and other users of the return – as the return is a public document) to analyse, compare and monitor the performance by class of business and to make some assessment of adequacy of capital resources and claims provisions.

Companies writing long-term insurance business are required to complete forms 40 to 45, which give fuller details supporting the revenue forms and forms 46 to 61 give details supporting the valuation report by the appointed actuary.

The following details must also be provided:

1. additional information on general insurance business reinsurance ceded;
2. statements of major treaty reinsurers and cedents and facultative reinsurers (general insurers);
3. statement of additional information on derivative contracts
4. statement of information on controllers (UK insurers only)
5. statement of information about the appointed actuary (life insurers)
6. supplementary notes to the return to amplify the information given on the forms; and
7. the certificates and auditors' report required by the regulations.

Companies in the UK generally adopt UK GAAP which requires a significant amount of disclosure (detailed in Schedule 9a to the Companies Act 1985) and comply with applicable accounting standards, the ABI SORP as well as the Combined Code on Corporate Governance. In addition to the substantial information publicly available in the FSA returns, a considerable amount of information is also provided in the annual report (such as the segmental analysis usually provides an analysis of premiums, claims and expenses by region and major class of business). The Lloyd's return is also reported under UK GAAP. Information on assets and investments is normally summarised in the CEO's report, and details of the type of assets, their currency and investment returns are provided in the notes to the accounts. Information on risk the management framework and the management of key risk areas is included in the Statement of Corporate Governance.

### United States

In the United States, from a regulatory standpoint, reinsurers are subject to the same regulatory template as employed for direct writing insurers. That means that they are required to disclose the same level of extensive information as direct writers and that information is completely available to the public.<sup>118</sup> Moreover, the information is uniform notwithstanding the state-by-state regulatory system because of the use of a uniform annual statement template, uniform instructions therefore and uniform accounting standards. The statement templates and instructions are specific to property and casualty insurance, life insurance, and health insurance.

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<sup>118</sup> See the NAIC website at [www.naic.org/insprod](http://www.naic.org/insprod).

## Appendix V

The disclosures include a balance sheet, income statement, statement of cash flows, underwriting schedules showing direct, assumed and ceded premiums, losses and loss adjustment expenses by line of business (about 30 lines of business are included). Many of the financial schedules also include subtotals for affiliated/non-affiliated, authorised/unauthorised and pooling arrangements. Investments schedules detailing each investment held as of a reporting date by type of investment (i.e., real estate, mortgage loans, bonds, preferred stocks, common stocks, other invested assets and derivative type investments with approximately 30 data items per investment, including statutory values and fair values), historical paid and incurred loss and loss expense development experience by line of business including reserve performance and detailed reinsurance information showing the source of all assumed premiums and the destination of all transferred business through cessions (facultative and treaty). In addition, the disclosures require answers to numerous regulatory questions and detailed and formatted footnote disclosures. The statements disclose all investment activity in the interim of reporting periods and those interims are quarterly. Profit and loss per investment transactions are readily discernible.

Additionally, companies are required to file statements prepared by independent certified public accountants that disclose differences between their findings and those presented by companies in their filed statements. Also, companies are required to file, in the case of life companies, actuarial opinions and memoranda, and in the case of property/casualty insurers, loss reserve opinions, from qualified actuaries. The independent certified accountants' reports and the actuarial opinions are publicly available.

Publicly traded companies are also required to file additional information of the type noted above with the securities regulators. This information is also publicly available.

The regulatory system in the United States also provides that all material holding company transactions require filing prior to engagement. Some of those transactions above a relatively modest threshold actually require prior approval. Such transactions are disclosed to the public in the filed statutory statements. Mergers, acquisitions, changes in domicile, changes in form of an entity, changes in control, etc. all require prior regulatory approval. Sales of blocks of business require prior approval and appropriate disclosures. Dividends to stockholders are limited.

## Financial or regulatory reporting – summary of major differences to US GAAP in participating jurisdictions

The items below are the identified areas, in the financial statements (in respect of US entities the regulatory returns) of reporting reinsurers, where a material difference between national GAAP and US GAAP could arise:

### Bermuda

Bermuda reinsurers report according to the provisions laid out in the Insurance Act 1978 and amendments. The Insurance Act 1978 is, in general, more conservative than US GAAP. Provisions include:

Non-admitted assets:

- Intangibles generally
- Goodwill
- DAC (expensed as incurred)
- Deferred tax assets
- Prepaid expenses

Liabilities:

- Discounting of loss reserves permitted only under prescribed specific conditions (e.g. certainty in timing and amount of payment)

Reinsurance recoverables:

- Amounts relating to unpaid losses are offset against loss liabilities instead of being included as an asset.

### France (French GAAP)

- Investments (carried at historical cost or amortised cost)
- Impairment provisions (valuation allowances) may be reversed if market conditions improve
- Realised gains/losses on fixed maturities sold before maturity are taken to capitalisation reserve
- Embedded derivatives are not recognised
- Treasury shares included as an asset
- No deposit accounting (no concept of financial reinsurance)
- Cost of reinsurance recorded in year in which reinsurance arrangement placed
- DAC (life) – significant difference in definition
- DAC (non-life) – acquisition costs are deferred (rather than may be deferred); commission on reinsurance ceded not credited to DAC
- Provision for premium deficiency – based on historical benefits / losses; DAC is not offset
- Equalisation reserves
- Universal life/investment contracts – total premiums recorded as revenue

## Appendix VI

- Non-life technical/claims provisions (more prudent and not discounted)
- Life technical provisions (prudent tables and rate of discount)

### Japan (J-GAAP)

- Contingency reserves (including 'catastrophe' and 'price fluctuation' reserves)
- DAC (expenses as incurred)
- IBNR (Minimal impact)

### Germany (German GAAP - HGB)

- Financial assets (largely at market value under US GAAP)
- Premium income (for life products only premiums related to risk transfer treated as premiums under US GAAP)
- Provision for premium refunds (higher under HGB)
- Equalisation reserve (under HGB)
- Technical/claims provisions (more prudent under HGB)
- Acquisition costs (capitalised and amortised under US GAAP)
- Depreciation and valuation write-downs (not applied to temporary diminutions under US GAAP)
- Equity accounting for interests in associates under US GAAP (dividend distributions only under HGB)
- Goodwill (written off direct to reserves under HGB)

### Switzerland (Swiss GAAP)

- Equalisation reserves allowed under CH GAAP
- Fixed income securities available-for-sale may be measured at amortised cost for CH GAAP
- Goodwill may be amortised under CH GAAP
- Reversal of impairment charges allowed under CH GAAP under certain conditions

### United Kingdom (UK GAAP)

- Substantially the same as US GAAP
- Loss reserves are not discounted, as they are under US GAAP
- Catastrophe reserves held as additional provision (for Lloyd's these are held at global level)

### United States (US SAP)

Non-admitted assets:

- Fixtures and fittings
- Computer hardware and software(> 3% capital and surplus)
- Intangibles generally

- Goodwill > 10% capital and surplus
- DAC (expensed as incurred)
- Premiums/agents' balances outstanding for more than 90 days
- Deferred tax assets > 10% capital and surplus
- Investments > statutory maximum holdings
- Prepaid expenses

Liabilities:

- No discounting of loss reserves (exception for WCI)
- Provision for uncollectible reinsurance (per prescribed calculation)
- Dividends may be recorded earlier under GAAP than SAP
- Asset valuation reserves (against credit related investment losses)
- Interest maintenance reserve (deferral of realised gains/losses over remaining life of investments)

Reinsurance recoverables:

- Amounts relating to unpaid losses are offset against loss liabilities instead of being included as an asset.

## Appendix VII

### Summary of regulatory requirements on stress testing in participating jurisdictions

#### Bermuda

The Bermuda Monetary Authority has issued guidance on risk management that requires insurers to:

- a. implement and maintain sound and prudent risk management policies and systems, and have integrated policies that, taken together, apply to the insurer's significant activities regarding the corporate philosophy on risk management, the insurer's permissible exposure to risk, objectives of risk management, delegation of authorities and responsibilities, and processes for identifying, monitoring and controlling/managing risk;
- b. identify all material risks, financial and non-financial, that they face, assess their potential impact and have policies in place to manage them effectively;
- c. establish an appropriate tolerance level or risk limit for material sources of risk; and
- d. regularly review the market environment in which they operate, draw appropriate conclusions as to the risks posed and take appropriate actions to manage adverse impacts of the environment on the insurer's business.

Class 4 companies in Bermuda conduct stress testing on various aspects of their business, including on the underwriting and investment cycles. As many of these companies deal with catastrophe reinsurance, catastrophe modelling is a key component for the pricing of property policies. Models are usually developed so that the company can monitor both its overall exposure to certain types of events (windstorms, floods, etc.) and to monitor its overall exposure in a given geographic area. Companies conduct scenario testing to calculate the impact on loss reserves and capital under a series of hypothetical disasters, in order to gauge the impact of such scenarios on their various lines of business.

Companies also conduct stress tests on assets such as investments to determine how fluctuations in interest rates or market conditions could affect the Company's assets.

In addition, Class 4 companies submit information to analysts and rating agencies such as AM Best and Standard & Poor's. These agencies also conduct stress testing on the company/group's capital as part of their assessment of a company.

#### France

All French insurers and reinsurers are asked to send to the CCAMIP the following non-public information:

- on a quarterly basis, quantitative results on quite rudimentary stress testing performed on both assets and technical provisions (sensitivity analysis);
- on an annual basis, detailed quantitative results on stress testing performed on the reinsurance cover of the society;
- on an annual basis, detailed quantitative results and qualitative information on stress testing performed on the global financial situation of the society.

During on-site inspections, supervisors assess the quality and adequacy of the models, assumptions and scenarios used in stress testing.

Germany

The Federal Financial Supervisory Authority (BaFin), Germany, is experienced in inducing and conducting stress tests at different companies and sectors. The aim of these stress tests is an early identification of potential vulnerabilities.

Stress tests are one of several early warning indicators in the context of insurance supervision in Germany. BaFin stress tests include both qualitative and quantitative elements. The growing importance of qualitative elements is due to increased requirements concerning the management of assets. A negative stress test result would not automatically imply a concrete danger for the financial obligations of the tested insurance company.

Such BaFin stress tests typically provide information about the risk-carrying-capacity of an insurance company. Among the factors which determine the risk-carrying-capacity of an insurance company are, for example, hidden reserves with respect to assets and equity capital. A higher risk-carrying-capacity allows the utilisation of riskier investments. Stress tests induced by German insurance supervisors also review whether an insurance company would be able to cover its liabilities during a lasting capital market crisis – without implementing countermeasures.

Different rules oblige reinsurers in Germany to disclose potential major risks. First of all, reinsurance companies provide financial statements, including detailed information on their assets. Reinsurers' risk management systems have to meet demands of the Corporate Sector Supervision and Transparency Act (KonTraG) in identifying potential risks. Companies have to disclose the structure of their risk management system and information about identified potential risks. In addition to that, reinsurance companies have to prepare a substantial risk report under the rules of the German Accounting Standard 5-20, in which scenario and sensitivity tests as well as stress tests are required.

German insurance supervisors have always been observing the excellent financial strength of reinsurers. In a recent<sup>119</sup> revision of the insurance supervision law (Gesetz über die Beaufsichtigung der Versicherungsunternehmen [Versicherungsaufsichtsgesetz – VAG]) the legal base of reinsurance supervision in Germany has been extended. The respective BaFin circular with respect to insurance undertakings (Rundschreiben 6/2005) clarifies the execution of stress test with respect to reinsurers. This circular clarifies that reinsurance companies have to carry out a quarterly stress test with respect to their fixed reserves<sup>120</sup>. BaFin receives and reviews these internal stress test results either on demand or during on-site inspections. Additionally, BaFin has the power to request all relevant information, including stress tests etc., in order to ensure that reinsurers maintain sufficient risk management.

Japan*Regular reporting requirements*

As supervisory requirements on stress testing related to market risk including interest rate risk, foreign exchange risk, and stock price risk, the FSA requires insurance companies to regularly submit information concerning changes in the present market value of the invested assets under assumptions related to the underlying assets. The bases for these assumptions, such as BPV for interest rate risk, percentage of currency fluctuation for foreign

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119 21 December 2004

120 Compare also: Circular letter (Rundschreiben) 29/2002.

## Appendix VII

exchange risk, TOPIX for stock price risk, used by each insurance company in its own internal management shall be applied for the estimation of the present market value.

### *Through the on-site inspection*

The FSA carries out on-site inspection of insurance companies and examines if their risk management could execute appropriate analysis of risk and use of analytical results. Through the inspection, the FSA notifies that it is desirable for insurance companies to regularly perform stress testing and use the result in their risk management division.

### *Disclosure requirements*

The FSA announced the Comprehensive Guideline for Supervision that could impose upon insurance companies the disclosure of the outline of their own stress testing management and how to use the result. This has been enforced from the fiscal year 2005.

### Switzerland

The Insurance Supervision Law (2004) and Regulations (2005) mandate the application of the Swiss Solvency Test in which Swiss Federal Office of Private Insurance (FOPI) will require the reinsurers to perform both scenario tests based on company specific scenarios and stress tests based on a standard set of events defined by FOPI.

The set of events used for standard stress tests is comprehensive and is meant to cover all major risks to which a reinsurance company operating on a worldwide basis in all lines of business might be exposed. It thus should allow FOPI to verify whether a reinsurer's internal model is reliable and takes into account all material risks incurred by the company. Since the set of events is the same for all reinsurers, the stress test also makes it possible to draw comparisons between different reinsurance companies. It also enables the FOPI to ascertain systemic risks.

The set consists of approx. 25 events, which fall into six broad categories: financial events, life insurance events (which includes the flu pandemic), property catastrophes, special lines catastrophes, other man made catastrophes and other events. Certain events, such as financial events, are defined very precisely by FOPI. For other events, such as the property catastrophes, reinsurers are asked to provide their PML based on a 100 years recurrence period for a given peril region, say European Storm. FOPI however does not define the footprint of the storm and does not specify which tools have to be used to assess the PML. For other events, such as terrorism events, reinsurers have to define their own tests.

For each event, reinsurers must provide estimates of their gross and of their net loss together with a breakdown of recoveries by major retrocessionaires. Where relevant, the gross loss must be broken down by line of business. For those events which are not fully specified by FOPI, reinsurers must provide a narrative describing their assumptions.

### United Kingdom

The Financial Services Authority ('FSA') requires all insurers and reinsurers to comply with the Integrated Prudential sourcebook ([fsahandbook.info/FSA/html/handbook/PRU](http://fsahandbook.info/FSA/html/handbook/PRU)).

Under the FSA's rules, a firm must at all times maintain adequate financial resources, both as to amount and quality, to ensure that there is no significant risk that its liabilities cannot be met as they fall due. The firm is required to conduct its own assessment of the resources required, based on the risks that it faces. Firms have to identify the major sources of risk in each of the following categories:

- credit risk;

- market risk;
- liquidity risk;
- operational risk;
- insurance risk; and
- group risk

The firm must carry out stress tests and scenario analyses that are appropriate to the nature of each of the major sources of risk. The firm must take reasonable steps to identify an appropriate range of realistic adverse circumstances and events in which the risk identified crystallises, and estimate the financial resources the firm would need in each of the circumstances and events considered in order to be able to meet its liabilities as they fall due.

The FSA indicates that such work should be carried out at least annually or more frequently if appropriate.

Through these requirements, the FSA has introduced a comprehensive framework which ensures its regulated entities undertake stress testing within a capital assessment process.

### United States

Risk-based capital is a method of measuring a minimum amount of capital appropriate for a company to support its overall business operations in consideration of its size and risk profile. The Risk-based capital analysis begins with reported financial data based upon the accounting requirements that apply to the insurer. A company's risk-based capital is calculated by applying factors to various asset, premium, claim, expense and reserve items. The factor is higher for those items with greater underlying risk and lower for less risky items. The adequacy of a company's actual capital can then be measured by a comparison to its risk-based capital as determined by the formula. Risk-based capital standards will be used by regulators to set in motion appropriate regulatory actions for insurers that show indications of weak or deteriorating conditions. It also provides an additional standard for minimum capital requirements that companies should meet to avoid being placed in rehabilitation or liquidation. The formulaic method has been modified recently for certain products to require scenario testing using a principles-based approach. Within this new approach there is modelling of a significant number of scenarios (approximately 1,000) that test changes to the market environment, such as changes to interest rates and equity returns that is used to calculate the capital requirement.

In addition to the capital requirements, insurers are required to establish the position of 'Appointed Actuary' who is responsible for expressing an actuarial opinion concerning the reserves and related liabilities on each company's books. For life insurance the responsibilities of this position are codified in the NAIC model 'Actuarial Opinion and Memorandum Regulation'. This regulation requires the actuary to include in the actuarial opinion several statements including: "The reserves and related items, when considered in light of the assets held by the company with respect to such reserves and related actuarial items including, but not limited to, the investment earnings on the assets, and the considerations anticipated to be received and retained under the policies and contracts, make adequate provision, according to presently accepted actuarial standards of practice, for the anticipated cash flows required by the contractual obligations and related expenses of the company". It is likely that the appointed actuary will need to consider multiple scenarios regarding economic environment and policyholder behaviour in order to make that statement. The actuarial profession has developed Actuarial Standard of Practice 22 (ASOP 22) to provide guidance to the actuary in complying with this regulation. For property/casualty

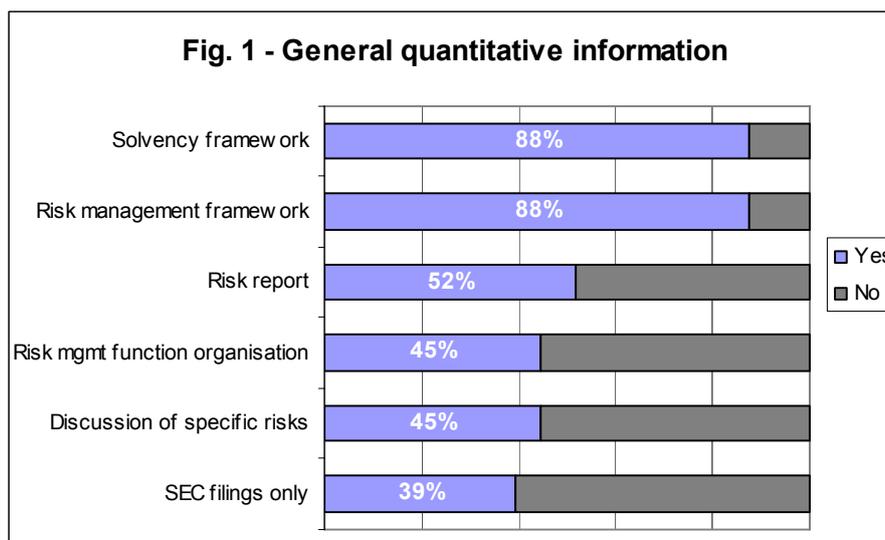
## **Appendix VII**

insurance, the actuary must similarly opine on whether the identified liabilities make a reasonable provision for all unpaid loss and loss expense obligations of the Company under the terms of its contracts and agreements. To be considered reasonable, the stated reserve amount would need to be within the actuary's range of reasonable reserve estimates. The actuary also must provide relevant comments that would include whether or not there is a risk of material adverse deviation in the reserves. The actuary should explicitly state whether or not he or she reasonably believes that there are significant risks and uncertainties that could result in material adverse deviation. If such risk exists, the actuary should include an explanatory paragraph to describe the major factors, combination of factors, or particular conditions underlying the risks and uncertainties that the actuary reasonably believes could result in material adverse deviation.

## Review of risk-related disclosure by reporting reinsurers – Figures of reference.

This appendix includes the figures that have been compiled as part of the review and on which section 5.1 is based<sup>121</sup>.

After having identified the amount and degree of information disclosed by reporting reinsurers on the major issues identified, the number of reinsurers disclosing the specific information is calculated as a percentage of the population of 56 reinsurers<sup>122</sup>

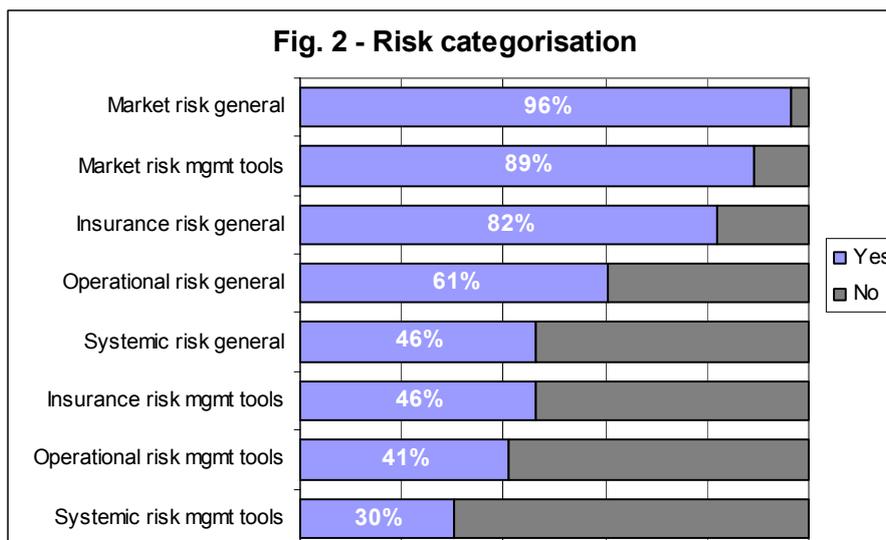


Description:

- *Risk management framework* refers to information on processes and procedures adopted to manage risks;
- *Solvency framework* refers to information related to the connection between capital and risks, from a supervisory and/or an economic capital point of view;
- *Risk report* refers to the presence of a separate section in the annual report specifically devoted to risk-related disclosure;
- *Discussion of specific risks* refers to special disclosure provided annually by reinsurers and group regarding specific risk exposures, as f.i. asbestos, avian flu and Hurricanes;
- *Risk management function description* refers to disclosure related to managers responsible for this function and position of the function in the internal organization of the entity;
- *SEC filings only* refer to companies that include in their annual report only the information to be provided to the US' Security Exchange Commission.

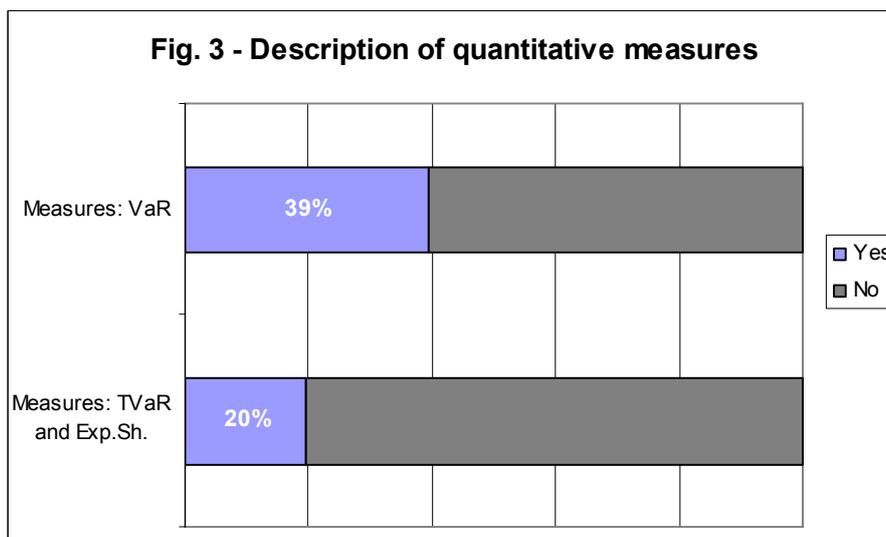
121 Figures in histograms in this Appendix refer to the percentage of reporting reinsurers that disclose that particular type of information. Since it is a Yes/No classification for each entry, it is not possible to identify the variability of quality and quantity of the information. It provides only a generic overview of the main players of the international reinsurance market.

122 To avoid possible misinterpretation or distortion of results based on too much impact of a few big reinsurers, the figures are not weighted. This is done despite the differences in size of assets, market share, premiums written and other parameters of the reporting reinsurers. The reader should bear this fact in mind when reading the results.



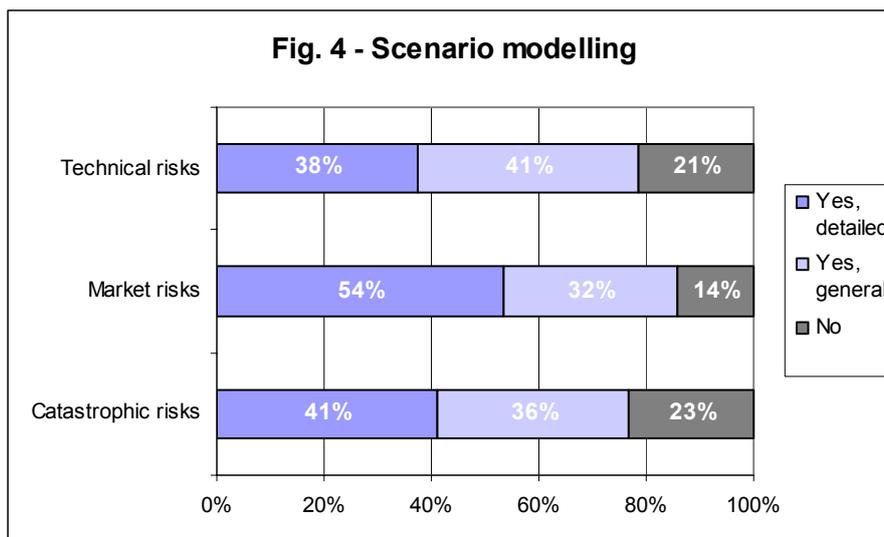
Description:

- *Market risk, Insurance risk, Operational risk and General business risks* are the main risk categories that have been looked for in reinsurers' annual reports;
- *General* refers to generic disclosure of the main issues related to those risks that affected or could affect the financial statements of the company;
- *Management Tools* refer to specific disclosure of methods and tools used to manage, mitigate, assess, monitor and control those risks.



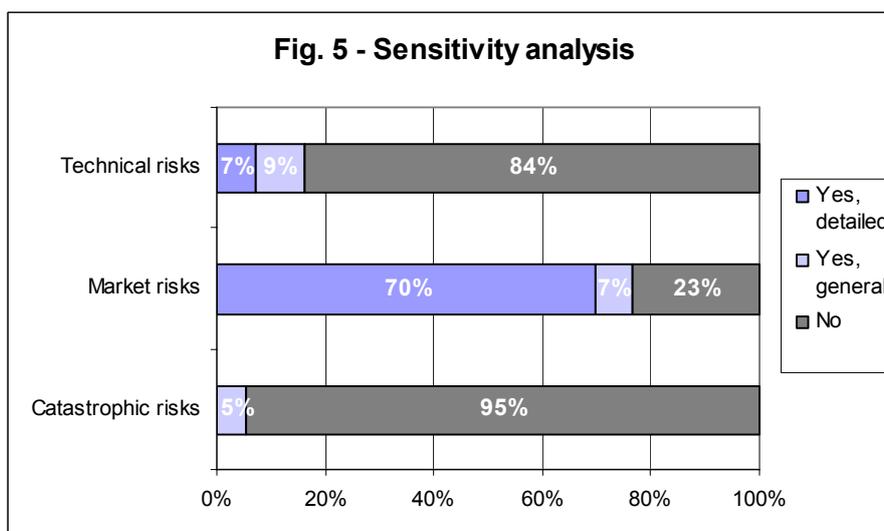
Description:

- *Measures: VaR* refers to the disclosure of where and how specific measures of Value-at-Risk are used by the entity;
- *Measures: TVaR and Expected Shortfall* refers disclosure of where and how specific measures of Conditional Value-at-Risk, or Tail Value-at-Risk, or Expected Shortfall are used.



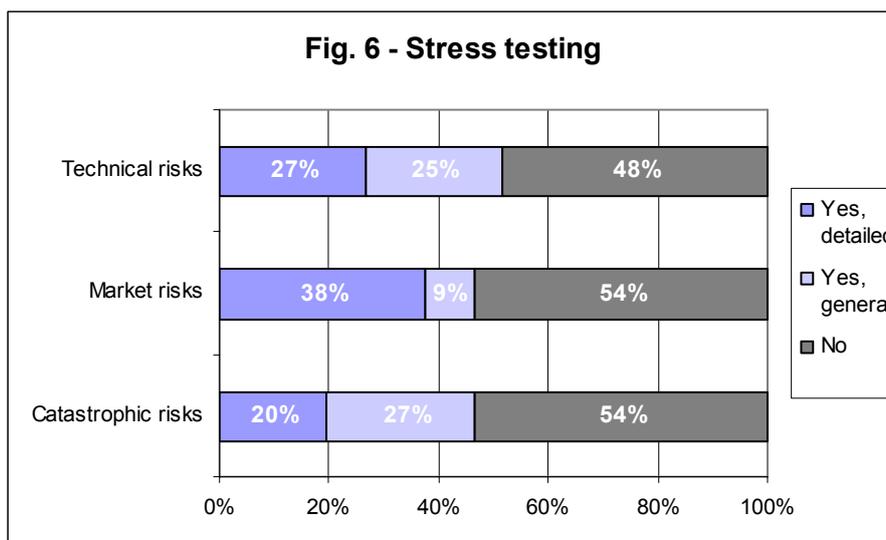
Description:

- *Market risks, Technical risks* and *Catastrophic risks* are the risk categories that have been identified when examining the annual reports for practices regarding scenario modelling;
- *General* refers to generic disclosure about the existence of specific modelling involving that particular risk;
- *Detailed* refers to specific disclosure of the features of the models, how they have been built and how they are revised, and the underlying assumptions.

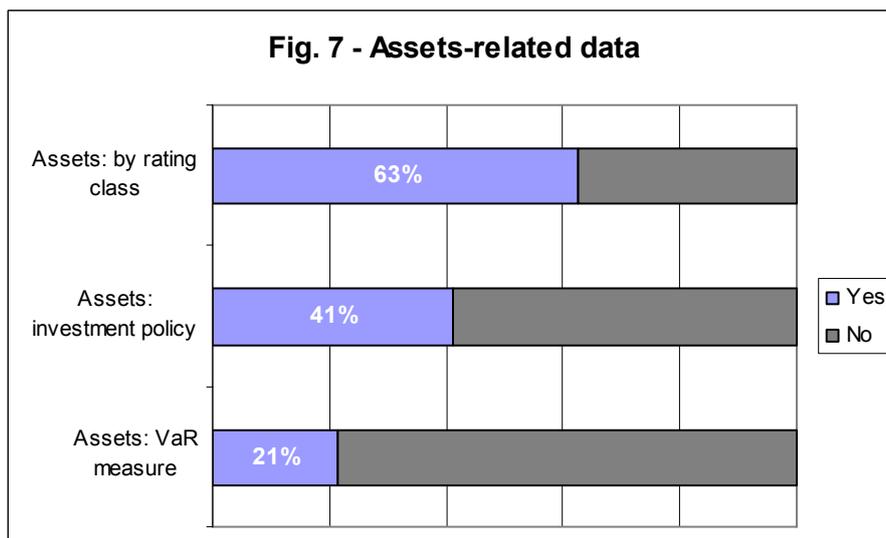


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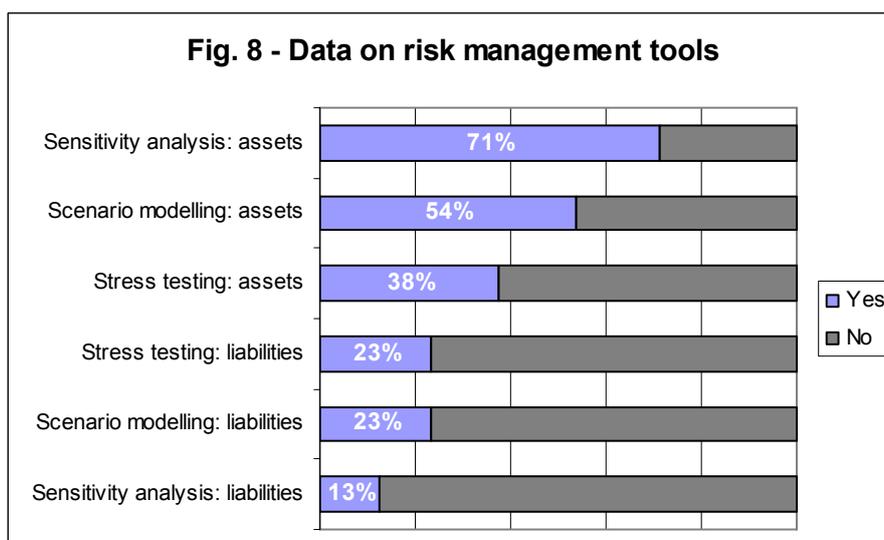
- same meaning of the previous figure, but related to sensitivity analysis.



Description:  
 - same meaning of the two previous figures, but related to stress testing.

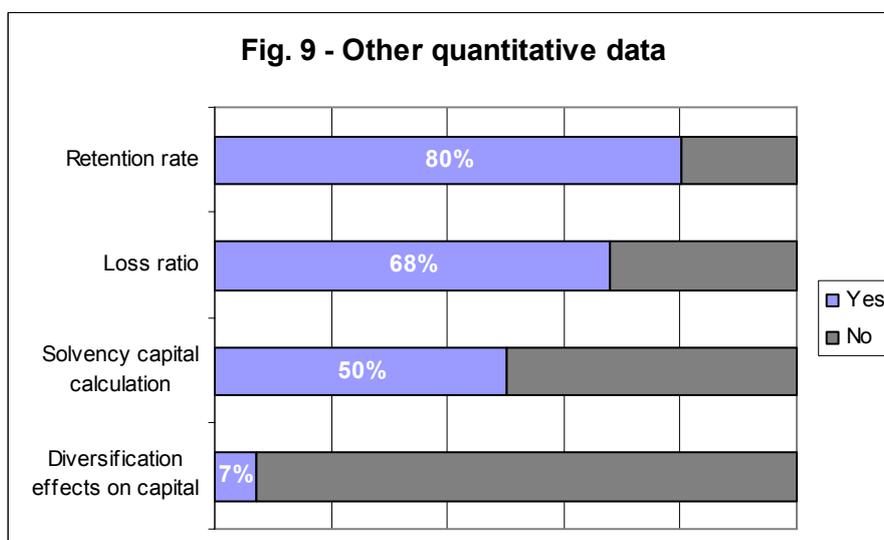


Description:  
 - *Assets: by rating class* refers to disclosure of figures covering a summary of the entire investment portfolio divided by rating class;  
 - *Assets: investment policy* refers to specific disclosure about the asset policy, risk tolerance levels, limits to certain securities, and so on;  
 - *Assets: VaR measure* refers to explicit disclosure about Value-at-Risk of the portfolio of investments held by the entity.



## Description:

- *Sensitivity analysis*, *Scenario modelling* and *Stress testing* refer here to quantitative disclosure on tools examined under a qualitative perspective in Figures 4, 5 and 6;
- *Assets* refers to the use of the related tool for measuring, modelling and testing the asset-side of the balance sheet;
- *Liabilities* refers to the use of the three tools regarding the liability-side, especially for technical risks embedded in technical provisions.



## Description:

- *Retention rate* refers to explicit disclosure of the ratio of net premiums written to gross premiums written;
- *Loss ratio* refers to explicit disclosure of the ratio of claims incurred to earned premiums;
- *Solvency capital calculation* regards explicit figures regarding the relationship between capital and risk borne by the company, from a supervisory and/or economic capital point of view;
- *Diversification effects on capital* refers to explicit effects on the required risk-capital deriving from the diversification of business carried out at the entity or group level.

## Appendix IX

### Main assumptions and qualifications

The main data challenges mentioned in chapter 2 can be summarised as follows.

#### Different accounting conventions, regulatory requirements and accounting year

The tables have been compiled from data from reinsurers supervised in different jurisdictions that employ different accounting and reporting conventions. This inevitably leads to distortions, some of which (e.g. the treatment of deferred acquisition costs) may be material. It was not possible to adjust all the data in each jurisdiction to a consistent accounting basis as this would require access to underlying individual entity and even transactional accounting records. The resources required to make such aggregation of data fully consistent would be enormous. Until such time as accounting conventions are harmonised across the world, it will not be possible to overcome this issue within the scope of the work of the Reinsurance Transparency Group. It is noted that the International Accounting Standards Board is currently working on convergence in accounting and reporting standards and is interacting with local and international accounting standards setters and regulators.

Similarly, regulatory requirements differ, sometimes significantly, and this also means that data which might otherwise be available to supervisors on a consistent basis is not publicly available. The IAIS is attempting to reinforce standards regarding the supervision of reinsurers<sup>123</sup> and is evaluating ways that supervisors might be able to seek financial information based on general accounting and reporting standards that are, however, generally directed towards the needs of investors.

Also, while most reinsurers use the calendar year as the reference for accounting purposes, Japanese reinsurers' financial statements refer to the 1<sup>st</sup> April – 31<sup>st</sup> March period.

#### Legal Entity Basis

The Reinsurance Transparency Group has compiled the data on a legal entity basis. This was necessary in order to consider cross-jurisdiction transactions and because different entities fall under different supervisors and confidentiality could have been compromised by using a method based on financial groups. Moreover, group failures are triggered by failures at legal entity level and therefore dependencies and exposures need to be considered at this level. However, basing the statistics on legal entities causes some problems. As an example, intra-group reinsurances or guarantees which are used to mitigate risks may be robust at group level, and indeed lead to improved financial stability. However, it may appear from these statistics that there is a dependence on retrocession which may not reflect the true risk outside of the particular group. In this regard, the statistics are likely to overstate risk exposures. This would have been addressed by compilation from consolidated group data but this would not have dealt with the other issues highlighted above.

#### Overall comment

There are many developments in international accounting standards currently underway which will lead to greater consistency among jurisdictions and will address many of the challenges faced by the Reinsurance Transparency Group in compiling the Global Reinsurance Market Report and lead to exercises such as this being much easier, once in place.

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123 See section 4.1 'Regulation of reinsurance' in which the papers are discussed under the heading 'IAIS initiatives'.

These statistics, although lacking some of the exactitude normally sought in exercises of this nature, nevertheless demonstrate progress which makes a considerable step forward in terms of transparency, sufficient to address the major issues which the Reinsurance Transparency Group has considered.

It is important that all users of this report use it as intended – i.e. at a high level and with awareness of the challenges and issues described in this appendix.

### More specific comments

- In this report the Reinsurance Transparency Group uses the aggregated statistics of 56 significant reinsurance entities as a proxy for the global reinsurance market as a whole.
- For reasons described, in particular in Chapter 2, this annex and elsewhere in the report, the global statistics are an aggregation of entity level data. Results would differ had group-level data been used.
- The statistics in tables 1.1 to 2.3 (which relate to premiums and claims) are in respect of the reinsurance business of the reporting entities.

The statistics in tables 3.1 to 5.4 relate to the direct and reinsurance business of the reporting entities; the areas covered by these tables are more applicable to the reporting entity as a whole.

- Not all entities or jurisdictions have been able to complete all of the information in all tables. Where tables, or parts of tables are not fully complete for all reporting reinsurers, a note on the level of completion has been made below the relevant table in Appendix I.
- Not all entities or jurisdictions have been able to extract or analyse the data as originally intended. Where tables, or parts of tables, include data which is given on a different basis to that of most other participating jurisdictions, if this gives rise to a limitation within the data a note on the limiting factor has been made below the relevant table in Appendix I.
- Except where otherwise indicated, data is consistent with participating jurisdictions' national GAAP (or US Statutory Accounting Principles).
- Some analysis has required manual extraction and/or estimates to be used.
- Certain data used to complete the statistical tables may not originally have been produced for the same purposes as those of these statistics.
- Participating jurisdictions are not responsible for the accuracy of the tables submitted to them by reporting entities; the IAIS Secretariat is not responsible for the accuracy of B-level data submitted to it by participating supervisors.

### Aggregation of global (C-level) statistics

- The C-level statistics have been aggregated from the national level (B-level) statistics by simple addition of the B-level statistics submitted by participating jurisdictions to the IAIS Secretariat.

### Jurisdiction specific points

- For the UK, inward facultative reinsurance is excluded from the statistics, consistent with the fact that it is reported together with 'direct' business for local regulatory reporting. The impact upon the global statistics is not material (i.e. significantly less than 5% of gross reinsurance premiums assumed).

## Appendix IX

- For the US, the national-level tables have been produced by the NAIC, based primarily upon information held in the Financial Data Repository, and not through aggregating entity-level tables produced by the selected reinsurers.

### Selection criteria for reporting reinsurers

- Reporting reinsurers have been selected for the 2005 global reinsurance market statistics, based upon the agreed criteria and, for practical reasons, upon their 2004 data.<sup>124</sup> Entities meeting the selection criteria for the first time on the basis of their 2005 data will, however, be asked to participate the following year. For this reason there is a potential time delay in the impact of growth markets being reflected in the statistics.

### Financial year end

- Reporting reinsurers in all participating jurisdictions have a financial reporting year end of 31 December, except for those in Japan, which have a financial reporting year end of 31 March.
- The global reinsurance market statistics for 2005 include the financial results of reporting reinsurers from Japan for the financial year ended 31 March 2006, and from elsewhere for the year ended 31 December 2005.

### Exchange rates

- Exchange rates used to translate jurisdictions' data denominated in local currency to US Dollars for the purpose of completing the tables are as follows:

Sterling:           £1       to       US\$1.72

Euro:             €1       to       US\$1.18

Japanese Yen:   US\$1   to       ¥117.4

This applies only to those entities/jurisdictions where the data necessary to prepare the statistical tables was not already available on a US Dollar basis.

- Exchange rate movements between local currencies and the US Dollar may over time cause fluctuations in the global statistics, which are not a factor of the underlying business activities.

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<sup>124</sup> Except the US, where the selection is based upon 2005 data