

**THE FUTURE OF INSURANCE REGULATION
AND SUPERVISION IN THE EU**

NEW DEVELOPMENTS, NEW CHALLENGES

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FINAL REPORT OF A CEPS TASK FORCE

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The Centre for European Policy Studies (CEPS) is an independent policy research institute in Brussels. Its mission is to produce sound policy research leading to constructive solutions to the challenges facing Europe. The views expressed are entirely those of the authors.

This report is based on discussions in the CEPS Task Force on the Future of Insurance Regulation and Supervision in the EU. The members of the Task Force participated in extensive discussions over the course of several meetings since July 2003 and submitted comments on earlier drafts of this report. Its contents convey the general tone and direction of the discussions, but its recommendations do not necessarily reflect a common position reached by all members of the Task Force, nor do they represent the views of the institutions to which the members belong. A list of participants and invited guests and speakers appears at the end of this report.

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Preface

One of the most important functions of the insurance industry is to provide financial security in times of distress. Delivering that financial security to its clients is based on a sound portfolio approach and strict underwriting approaches. But it is also based on having sound financial buffers. How far can clients and investors judge that these buffers are really sound?

Insurance companies should be able to make it clear to clients and investors that they do have sound financial buffers. But to ask clients and investors to completely understand the underlying models and calculations would be expecting too much detailed knowledge of them. Hence, the case for regulation. Regulation helps standardise financial and risk information and improves understanding of how businesses work.

But when you have regulation and supervision, you must ensure that these functions stimulate proper business decisions while protecting clients and shareholders. This is where the current solvency Directive can and should be improved. The whole insurance industry agrees that a more risk-sensitive approach is in the interest of all stakeholders.

The industry can learn from the rapid advances that banks are making in the process of implementing Basel II. A new solvency directive could (and should?) learn from the Basel II approach. Having said that, however, it should also reflect the major differences between banks and insurers. Therefore, a lot of work is still expected on valuation, especially the valuation of insurance liabilities. Initiatives in some European countries have helped speed up the progress that is being made in this area.

The challenge will be to make significant progress in the coming years. The major pitfall to avoid is to try to make it too perfect at the expense of delaying cost-effective and manageable implementation. Trying too hard to achieve the best solution often acts to the detriment of efforts to find a better solution than the status quo.

This report summarises the debate in the industry and policy-makers and puts forward recommendations aimed at progress in the field of regulation and supervision. I hope that it serves its purpose. I would like to thank everyone that contributed to the Task Force discussions as well as Rym Ayadi and Christopher O'Brien for producing the report.

Johan Van Der Ende
Chairman

Executive summary and policy recommendations

Over the past few years, the European insurance industry has been undergoing fundamental changes. The difficult conditions experienced by the industry and the shortcomings of the current regulatory and supervisory framework have forced regulators to take action to change the way in which they regulate insurance companies' solvency. In 2000, European regulators began a fundamental and far-reaching review of the current solvency rules for insurance companies. Unlike the new capital requirement rules for banks, which came from the Basel II framework produced by the Basel Committee, the new solvency framework is a purely European creation. European regulators are indeed leading the field since the International Association of Insurance Supervisors (IAIS), which is the sister committee for insurance supervision of the Basel Committee for banking supervision, is well behind in producing a global solvency framework for insurance companies.

The new European solvency framework, which is due to be unveiled by the Commission in October 2007 and is likely to be implemented in the 25 EU member states by 2010, is a revolution in insurance companies' solvency regulation. Departing from the three mutually-interactive pillar structure of Basel II - financial requirements, supervisory assessment and supervisory reporting and public disclosure - Solvency II is expected to emphasise the importance of realistic balance sheet valuation as the foundation for the development of a risk-based capital regulatory framework. However, the 'risk-based capital' may be of dubious value in the absence of realistic liability valuation. For this reason, several national experiences such as that of the Swiss and the British may offer some lessons to EU policy-makers since they both chose to follow a market-consistent valuation of assets and liabilities.

The production of the new framework relies heavily on the input of the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS), which performs the functions of a Level 3

Committee for the insurance and occupational pensions sectors, following the extension to those sectors of the 'Lamfalussy Process'. CEIOPS's task is especially challenging as it must strike a balance between various political choices, particularly in terms of prudence in the valuation of insurance liabilities.

Since 2003, CEPS has attempted to contribute to the ongoing debate by organising a Task Force on The Future of Insurance Regulation and Supervision in Europe: New Developments, New Challenges.

The conclusions and policy recommendations of the Task Force are presented below.

1. The insurance business in Europe

Higher claims and lower investment returns have posed new challenges for insurers: rates of premiums and claim provisions need to be reviewed to ensure that they reflect the new conditions; the security of re-insurers must be checked; and, overall, insurers need to ascertain that they have adequate capital to continue operations. However, not all insurers have succeeded.

These conditions have rendered the task of regulators even more challenging. To respond to these challenges, insurers should continue to improve their data collection, and their efforts to model, measure and manage their risks, improving the disclosure of their individual risk profile and related risk-management practices in their annual reports.

In parallel, regulators need to be more careful in monitoring solvency and in ensuring that policyholders are protected when, in their jurisdictions, insurers' solvency levels are low.

In particular, they need to:

- check the basis used for the valuation of insurers' assets in regulatory reporting, noting that historic cost is no longer as prudent as it once was;
- ensure that there are appropriate mechanisms in place to monitor the adequacy of claim provisions; and
- investigate whether the rules on minimum solvency that have operated in the past need to be revised.

In certain relatively low-solvency jurisdictions, regulators also need to consider other elements of the regulatory framework, such as what they require insurers to do to manage risk, what they require insurers to do to be adequately capitalised and at what trigger points they should intervene. Regulators also need to consider what insurers should be obliged to

disclose to policyholders about their financial conditions and risks, given that solvency can no longer be taken for granted.

The data used in this report to assess the structural changes in the European insurance industry were provided by the Comité Européen des Assurances (CEA). CEIOPS also has its own statistical annexes on the European insurance industry. We stress the need for more accurately collected and comparable data to be published on the insurance and reinsurance industries, particularly data on assets, liabilities and solvency.

2. Global regulatory developments in insurance

With respect to solvency requirements, the International Association of Insurance Supervisors (IAIS) has developed a wide range of principles, standards and guidelines that have proved to be effective. Despite progress achieved in recent years and its present far-reaching work plan, the IAIS has not yet produced a global framework to regulate insurance and reinsurance companies. The architecture of the new solvency framework it recently put forward is unlike the Basel II and the European Solvency II three-pillar structure. This could be rightly justified on the grounds that banks and insurance businesses are fundamentally different. However, the recent trends towards conglomeration, in particular in Europe and to a lesser extent in the US, suggest the need for a consistent regulatory approach for banks and insurance companies to avoid arbitrage in this respect.

There is a need to increase communication, transparency, cooperation and coordination between the stakeholders involved in devising the new global solvency framework to avoid duplication of rules and high costs for the regulators and the regulated. This would also ensure the stability of the regulatory framework for insurance and reinsurance companies worldwide.

Further, being a leader in this field, the EU needs to continue influencing the IAIS to ensure international regulatory convergence in the field of insurance.

With respect to valuation standards, the International Accounting Standards Board (IASB) is likely to take some time to make a decision on the Phase II standard for insurance accounts. Therefore, the EU has little choice but to try to anticipate the likely outcome if it is to implement Solvency II as planned. Furthermore, the EU needs to keep firmly in mind that accounting standards on financial instruments are also relevant for insurers.

We believe that there is merit in using some form of current values for valuing insurers' assets and liabilities, and it is logical for this to be used in both insurers' accounts and in the valuation they provide for regulators. However, the European bodies need to continue its close liaison with the IASB, not only on the standard for insurance contracts but also more generally on the rules for financial instruments.

3. Towards a new European regulatory and supervisory framework

General issues addressed in the three-pillar structure of the new solvency framework for insurance companies

Solvency II should enable insurance/reinsurance companies to absorb significant unforeseen losses and give reasonable assurance to policyholders and beneficiaries. It should give an incentive to the supervised institutions to improve their internal risk management and assessment procedures through the enforcement of risk-adequate pricing of insurance products. And it should encourage a single European market for financial services, ensure a level playing field and contribute to a better managed and more competitive insurance industry that can better perform its key function of accepting and spreading risk.

European regulators need to develop a framework that provides a differentiated regulatory approach to life, non-life and reinsurance companies by taking into account their differences in terms of business and risks. The framework should correspond to a coherent and consistent risk-based approach founded on an economic valuation of the balance sheet and risks. It should allow a number of approaches that vary in terms of complexity to allow application for large groups as well as stand-alone entities irrespective of their size, while reflecting current market practices.

The new risk-sensitive regime should provide the right level of prudence that ensures a safe, sound and stable insurance market while promoting its competitiveness. An inappropriately high level of solvency requirements as a price for double counting of prudence would jeopardise the competitiveness of European insurance companies worldwide.

Close cooperation with the insurance industry at the development stage of the new solvency regime is needed in the light of industry initiatives taken so far to ensure that the new regime is in line with market practices while ensuring the right level of prudence.

There should be a balanced focus between the three pillars of the new framework. It seems that a considerable effort has been devoted so far to the content of the first pillar but much less attention dedicated to pillars II

(needs further refinements) and III (is barely addressed). The financial requirements under pillar I may, however, be undermined by discretionary behaviour of supervisors under pillar II and the ineffectiveness of pillar III. We strongly advocate clear-cut principles to define the relationships between insurance companies and supervisors plus strong and credible forms of market discipline.

Overall, a future solvency system in the EU should not be overly prescriptive, avoid undue complexity for institutions and their supervisors, be flexible to reflect market developments and, where possible, be based on common accounting principles.

Legislative process

While drafting the new directive, it is crucial to differentiate clearly between principles and implementing measures to allow the latter to address issues where it is important to retain flexibility to adapt to changing circumstances.

A formal new agreement between the three institutions that defines and secures the 'call-back' right for the European Parliament is highly welcomed and should pave the way for a first, true Lamfalussy-style, high-level principles-based directive in the field of insurance.

Impact assessment of the new solvency regime

We strongly support the European Commission's commitment to provide an impact assessment of the new solvency regime, which is in line with their better regulation approach. The potential economic and social impact of the new rules is substantial but also unclear as there are likely to be changes in how insurers operate. We therefore suggest that the Commission carefully examines the expected economic and social impact of proposed solvency rules on the operations of insurance markets.

Outstanding issues

There is a need: a) to ensure fair competition between large, small and medium-sized insurance companies; b) to address the pro-cyclical effects of the new solvency rules and the potential measures to counter them; c) to monitor developments in credit risk transfers between insurance, re-insurance and banks to preserve financial stability; and d) to ensure a consistent implementation of the new rules in the 25 member states.

Weaknesses in the current regulatory and supervisory framework for insurance groups and financial conglomerates

The lead supervisor model in the capital requirements Directive (CRD) should serve as a starting point for the supervision of insurance groups.

There is a need to amend the financial conglomerate Directive in the wake of Solvency II and to promote transatlantic dialogue on insurance supervision.

4. Lessons from national regulators' experiences

The UK, Switzerland and the Netherlands are introducing approaches along the lines of market-consistent techniques for the valuation of assets and liabilities, together with a minimum solvency margin that reflects the risks that insurers are running.

In the UK experience, the results of the realistic valuation are included in the information that insurers send to the regulator and that is made publicly available. Also included is a report on the valuation, which contains details on e.g. assumed returns and volatilities of the assets, the correlations between returns on different asset classes, together with the justifications for these assumptions and also the management actions undertaken and the number of projections done.

In Switzerland, the Swiss Solvency Test (SST) uses the cost of capital approach to assess the market value margin, and hence market value of liabilities, for use in Solvency II. It was felt that the cost of capital approach has a number of theoretical and practical advantages compared with a rule specifying that the liabilities should be valued at a specified percentile in the probability distribution.

CEIOPS should carefully examine the British and the Swiss experiences on insurance solvency regulation given that these countries have already introduced these changes.

Building on the UK experience, we believe market disclosure can be helpful without being damaging (disclosure should not always be made confidential).

As shown in the Swiss Solvency Test, there is growing recognition that a market-consistent valuation of assets and liabilities is feasible. Therefore the cost of capital approach should be further examined in the European context.

Overall, Solvency II must be built on an approach that is applicable to both life and non-life insurance and is capable of adapting to changed circumstances without undue delay.

Introduction

The insurance industry must operate on a sound financial basis to contribute to economic growth, the efficient allocation of resources, management of risk and the mobilisation of long-term savings. A well-developed insurance sector also helps to enhance the overall efficiency of the financial system by reducing transaction costs, creating liquidity and facilitating economies of scale in investment.

An effective and sound regulatory and supervisory system is necessary to protect policyholders, maintain efficient, safe, fair and stable insurance markets and promote growth and competition in the sector.

The European insurance industry, like other components of the financial system, is changing in response to a wide range of economic and social forces. For example, the liberalisation and deregulation of insurance and capital markets, rapid advances in information technology and financial innovation and the growing inter-linkages between financial activities and changing demographics have created new challenges for European insurance companies and regulators. In response to these developments, the former have dedicated considerable effort and resources to build up internal risk measurement and management capacities to overcome the risk of failure while the latter are trying to upgrade their rather unsophisticated and obsolete regulatory and supervisory framework (known as Solvency I). Recognising the shortcomings of the current framework, EU policy-makers have been working on a fundamental review of solvency requirements since the beginning of 2000. Ultimately, the review seeks to protect policyholders, ensure the harmonisation of rules at EU level and create a level playing field within the insurance industry and across financial sectors. At national levels, the inherent weaknesses of Solvency I have forced several national regulators to upgrade their regulatory and supervisory frameworks. In particular, the UK and Switzerland introduced new approaches based on market-consistent techniques for the valuation of assets and liabilities, together with a minimum solvency margin that reflects the risks that insurers are running.

Insurance supervisory systems and practices must be continually upgraded to cope with the changing environment. Furthermore, insurance and other financial sector supervisors should understand and address financial and systemic stability concerns arising from the insurance sector as they emerge. The nature of insurance activity – covering risks for the economy, financial and corporate undertakings and households – has both differences and similarities when compared to other financial sectors. Insurance, unlike most financial products, is characterised by the reversal of the production cycle insofar as premiums are collected when the contract is entered into and claims and costs arise only if a specified event occurs. Insurers intermediate risks directly. They manage these risks through diversification along with a range of other techniques.

Aside from the direct business risks, significant risks to insurers are generated on the liability side of the balance sheet. These risks are referred to as technical risks and relate to the actuarial or statistical calculations used in estimating liabilities. On the asset side of the balance sheet, insurers incur market, credit and liquidity risk from their investments and financial operations, as well as risks arising from asset-liability mismatches. Life insurers also offer life cover products with savings content and pension products that are usually managed with a long-term perspective.

The supervisory framework must address all these aspects. Further, it needs to reflect the increasing presence in the market of financial conglomerates and groups. The importance of the insurance sector for financial stability has been increasing. This trend has implications for insurance supervision as it requires a sharper focus on a broader set of risks. Supervisory authorities at national and international levels must work together to ensure that these entities are effectively supervised so that business and individual policyholders are protected and financial markets remain stable; to avoid contagious risks being transferred from one sector or jurisdiction to another; and to avoid supervisory duplication.

By addressing these issues, the purpose of this Task Force report is to provide an overview of the developments and challenges facing insurance companies and their regulators in Europe. It focuses particularly on the role of the international insurance regulators through the International Association of Insurance Supervisors (IAIS) and links with the accounting rules through the International Accounting Standards Board (IASB). Further, it addresses the provisions and weaknesses of Solvency I, examines the state of play of the Solvency II project and provides a set of

policy recommendations. It also gives a thorough assessment of the regulatory and supervisory framework for insurance groups and financial conglomerates. Finally, it sets out the lessons learnt from the UK and Swiss regulatory experiences, which need to be taken into account for the ongoing Solvency II project.

1. The insurance business in Europe

Global economic and environmental conditions have generated a series of challenging issues for the insurance industry. Insurance companies face changes driven by the liberalisation of the insurance and capital markets, rapid advances in information technology and financial innovation, changing demographics, volatile stock markets, the shifting of climate patterns and rising numbers of natural and man-made disasters and subsequent losses. Not only must they carefully screen, define and manage their risks but they must also cope with their regulators, who must also take the changing environment as a challenge to review their outdated rules.

This chapter begins with a review of the principal changes affecting the European insurance industry. It then looks at the main trends in terms of market structure, growth in insurance premiums, financial activities and strength observed in the industry over the last decade, in view of the weak and volatile bond and equity markets and the growing number of natural and man-made disasters. Against this background, risk, risk management and failure occurrence in insurance companies will be examined and the rationale of insurance regulation explained. Finally, the chapter will conclude with the challenges facing insurance companies and regulators in Europe.

1.1 The changing European insurance environment

Over the past few years, the European insurance industry has been undergoing a deep transformation. The changes have been driven by the liberalisation of the insurance and capital markets and rapid advances in information technology and financial innovation. The switch from price and product control to solvency control and the opening up of national insurance markets within the EU have merely contributed to intensifying competition but not necessarily towards reaching full integration. Since January 1999, the euro capital market has also contributed to the blurring of national boundaries, creating new opportunities for insurance companies

to expand across borders. New information technologies and financial innovation are helping to boost efficiency, diversify risk, improve customer service and expand outsourcing possibilities.

A changing regulatory context

The creation of a single EU insurance market started in 1973 for non-life insurance with the First Council Directive 73/239/EEC of 24 July 1973 on the coordination of laws, regulations and administrative provisions relating to the taking-up and pursuit of the business of direct insurance other than life assurance. The early stages of a single EU insurance market for life insurance began with the First Council Directive 79/267/EEC of 5 March 1979 on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of direct life assurance. These two directives (known as first-generation directives) provided for administrative authorisation delivered by each of the member states concerned, under comparable legal and financial conditions and according to a uniform procedure. They also harmonised prudential control by introducing a solvency margin and a minimum guarantee fund. However, this harmonisation was limited since certain conditions were still those provided by the host country, such as the rules governing technical provisions and the allocation of assets. The first-generation directives represented considerable progress but they did not yet create a single EU market. An insurance company domiciled in one member state wishing to operate outside its home country was required to obtain authorisation in each member state. Its activities were thus supervised by the insurance regulators in the country where these activities were pursued, a system called 'host country control'. Branches continued to be subject to dual home and host supervision.

Amending and supplementing the first-generation directives, the second generation of insurance directives for non-life and life insurance aimed to establish the freedom of insurance companies to provide services. The directive for life insurance is Council Directive 90/619/EEC of 8 November 1990 on the coordination of laws, regulations and administrative provisions relating to direct life assurance, laying down provisions to facilitate the effective exercise of freedom to provide services and amending Directive 79/267/EEC. The directive for non-life insurance is Council Directive 88/357/EEC of 22 June 1988 on the coordination of laws, regulations and administrative provisions relating to direct insurance other than life assurance and laying down provisions to facilitate the effective

exercise of freedom to provide services and amending Directive 73/239/EEC.

For life insurance, the directive drew a distinction between active and passive freedom to provide services. The active or passive aspect was respectively determined depending on whether the insurer or the policyholder was the one taking the initiative of the first contact. For non-life insurance, the directive drew a distinction between two categories of risks according to the size and the policyholder's status: large risks or industrial and commercial risks, and mass risks or individual consumers.

The second insurance directives only achieved partial liberalisation of the insurance business in the European Union. While they had a significant impact on the large risks market (industrial and commercial insurance), by increasing cross-border service provision and therefore competition, no impact was observed on the mass risks market (personal lines) and active services provision in life since the freedom to provide services was subject to an administrative authorisation from the country of risk. Indeed, most EU member states continued to apply the principle of host country control and a system of regulated tariffs.

The most important milestone for European insurance and in particular the mass risks market was the implementation of the third generation of insurance directives in 1994. Their key elements were:

- The introduction of a single European passport that allows any undertaking with its head office in one of the member states of the European Economic Area (EEA) and authorised in that state to offer its products for sale through agencies/branches. The single European passport also allows any undertaking with its head office in one of the member states of the EEA but without an agency or branch in the country where the services are being sold to provide its services throughout the EEA under the initial authorisation and technical and financial supervision of the country where the services are being sold.
- The mutual recognition of the authorisation and supervision arrangements applied by the various states of the EEA.
- The abolition of dual authorisation systems in the case of active freedom to provide services in life insurance and the freedom to provide services for mass risks.

The combination of a single insurance licence and home country control means that once insurers have obtained a licence in their home

country, they can conduct business in any EU member state. Supervision of the insurance activities depends on whether the business is conducted through a branch, subsidiary or via a direct cross-border provision of services (see Table 1 below).

Table 1. Regulation of foreign insurance business (EU/non-EU)

	Business of subsidiary	Business of branch	Direct cross-border insurance business
Country responsible for insurance supervision	Subsidiary's domicile (host country)	Parent company's domicile (home country)	Parent company's domicile (home country)
Country whose taxation and accounting rules apply	Subsidiary's domicile (host country)	Branch's domicile (host country)	Parent company's domicile (home country)

Source: CEA (2000).

The abolition of price and product controls has allowed insurers to introduce new, more tailored products. The rigid tariff structures of the past have been abandoned, allowing premiums to be set at a level that is more commensurate to real risk. The price of insurance cover has become a key factor in a competitive environment.

Price setting depends on the supply and demand dynamics in the industry, costs for competitors to enter or withdraw from the market, market transparency, customer loyalty and the speed with which established providers respond to market changes. According to the contestable markets theory,¹ the price-setting process is already influenced by the potential competition. The actual market entry of a new provider will help make price-setting more efficient but it is not an essential condition for that improvement.

Building on this theory, some conclusions can be drawn. Before the third-generation directives were introduced, the potential competition was restricted because of the protracted procedures for obtaining an insurance licence. The regulated tariff system prevented price competition. In addition, the establishment of a strong distribution organisation in markets

¹ This theory attempts to explain price-setting in markets that are not characterised by outright competition but by the existence of economies of scale with monopolistic or cartel like structures on the supply side (see Baumol et al., 1982).

dominated by outside sales forces meant that entry costs for new providers were often prohibitive, so established insurers enjoyed a virtually protected market. The introduction of the single licence for insurance, coupled with a system of home country control, allowed significantly faster market entry as the insurer no longer had to go through time-consuming licensing procedures in each national market. The abolition of price and product controls also meant an increase in product and service provision without prior approval from the regulator and the possibility that any efficiency improvement may be passed on to the consumer in the form of lower premiums and better quality service. After the implementation of the third-generation insurance directives, the likelihood of new providers being able to break into markets that used to be heavily regulated has increased. This could form a credible threat for established insurers, pressuring them to change their pricing policies to avoid losing customers.

The liberalisation and deregulation of the insurance business in Europe aimed ultimately at creating a competitive and integrated European insurance market with companies providing consumers with the widest choice of innovative insurance products on offer at the best price. This has only been possible through the harmonisation of certain essential aspects of the insurance business, in particular the prudential standards applicable to the undertakings.

However, legislation itself does not seem to create a fully integrated market. Müller-Reichart (2005) reports on the results of a survey of experts in insurance and pensions, on the subject of the present state of EU market integration. He concluded that, in general, the life insurance industry is less integrated than non-life insurance. Reinsurance and the associated underwriting of large risks are the most integrated, whereas integration in the mass risks, motor insurance and company pensions segments is minimal. The conclusion was that cross-border competition in retail is virtually non-existent because of prevalent barriers to market entry. The survey also found that cross-border acquisitions continue to be the insurers' key means of successful market integration. Fourteen major insurers were identified as having significant sales in two or more member states. Those fourteen held a combined EU market share of about 37%.

The role of the euro capital market

Since January 1999, the euro was introduced as a single currency in 12 of the 25 EU member states. What used to be fragmented capital markets have combined to form a massive euro capital market capable of competing with

capital markets in the US.² The introduction of the euro has brought far-reaching structural changes to the insurance industry. These changes are as significant as the effects of liberalisation and deregulation have been since 1994.

The introduction of the euro has affected the three following areas:

- *Asset allocation strategy.* Even if an insurer's business is limited to the domestic market, the European monetary union (EMU) forces companies to have a wider geographical spread in their investment portfolios. Companies have to gear their portfolio performance to a European benchmark.
- *Competition for investors.* The shares of insurance companies are measured against European benchmarks. This increases competitive pressure: companies that achieve poor results compared to their rivals will be identified more readily and penalised with a lower share price.
- *Underwriting practices including pooling of risks.* From an underwriting point of view, the activity of large industrial customers in a European context is gradually replacing national demand with a European one, and this requires international service capability.

Since the legal framework for commercial lines (large risks) is already determined by international considerations, the abolition of capital market boundaries removes the obstacles to a single European insurance market presented by having different national currencies. The mainly broker-based distribution system makes it easier for companies to conduct their business across borders without being subject to national currency fluctuations. Insurers offering commercial insurance across Europe can also diversify their large risks more effectively in an international context, thereby allowing for a reduction of the capital base and a subsequently lower cost of capital. Conversely, the direct impact of the euro on the mass insurance market, including personal lines, is minimal. National legal requirements and consumer protection rules continue to play a role in premium rating and pose significant barriers to cross-border insurance business.

² By the end of 2003, bond, equity and bank assets markets accounted for more than €33 trillion as compared to €35 trillion in the US (Casey & Lannoo, 2005).

The role of information technologies and financial innovation

The insurance landscape is not only being reshaped by regulatory changes but also by the rapid spread of new information technologies and financial innovation.

The role of information technology (especially the internet) has been twofold. First it provides opportunities for new market entrants as market transparency is improved while the significance of traditional distribution channels is reduced. Second, it improves the efficiency of the production processes for new and established insurance providers, leading to substantial cost cutting along the insurance business value chain, which may be passed on to consumers. This translates into more competitive pressure between established insurers and new entrants. However, while it creates an enormous business potential in the long run, the use of internet to sell services creates new risks, which in turn create new business opportunities for insurers, ranging from the misuse of data to system security and attacks by hackers.

Financial innovation – which is about developing new financial products and processes – has been robust in recent decades, with the impressive growth of derivatives³ trading. The notional value⁴ of financial derivatives traded on organised exchanges throughout the world has grown markedly from \$13.5 trillion in 1999 to approximately \$58 trillion in 2005 (BIS, 2006). Three types of factors drive financial innovation: supply and demand, taxes and regulation. Demand-driven innovation occurs in response to the desire of companies to protect themselves from market risks such as fluctuations in exchange rates, interest rates and energy prices. Supply side factors that encourage financial innovation include improvements in technology and heightened competition among financial services firms. Other financial innovation occurs as a rational response to taxes and regulation since firms seek to minimise the costs that these entail.

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³ A derivative instrument or 'derivative' is a financial contract whose value derives from the performance of the underlying asset. This underlying asset is commonly a stock, portfolio of stocks, a bond, a currency or a commodity. It can also be a pool of mortgages, a portfolio of credit card receivables or an insurance contract.

⁴ Notional value, or underlying value, is an important measure of the economic impact of derivative markets. It is also an important tool in looking across markets that use different contract sizes. However, it is often not easily available.

In insurance, financial innovation can serve to transfer insurance risks to capital markets. Approximately \$12.6 billion worth of these capital market insurance solutions have been issued worldwide in recent years (Swiss Re, 2001). These solutions offer issuers several advantages including the potential to reduce counterparty risk and to diversify funding sources. In the case of the former, when catastrophe bonds (also called 'cat bonds'⁵) are issued for example, the funds collected are invested in investment grade securities and guaranteed by a high-rated company. The securities are held as collateral in a trust account for the benefit of the reinsured and the investors.

While serving to better allocate and diversify risks in capital markets and therefore contributing to the resilience of the financial system, the growth of these innovative instruments may address concerns with respect to the transfer and potential concentration of risks from insurance to banks or other financial operators. This may therefore cast doubt on the appropriate level of regulation in this area.

1.2 Trends in the European insurance market

Market structure

Over the past decade, the European insurance market has undergone radical changes. Volatile stock prices, declining interest rates, industry deregulation and increased globalisation have put pressure on the insurance industry to restructure. There was a marked tendency towards consolidation through mergers and acquisitions in the 1990s, peaking in 1999. The volume of life insurance premiums acquired globally increased from \$23 billion in 1994 to \$81 billion in 1999 (Swiss Re, 2006a). Despite an overall decline in the number of insurance companies in Europe during the last decade, the European insurance market is still fragmented, with 4,758 companies recorded in 2003. The majority of the old member states

⁵ In a typical transaction, a special purpose vehicle (SPV) enters into a reinsurance contract with a cedant and simultaneously issues cat bonds to investors. If no loss event occurs, investors receive a return of principle and a stream of coupon payments that compensate them for the use of their funds and their risk exposure. If, however, a pre-defined catastrophic event does occur, investors suffer a loss of interest, principle or both. These funds are transferred to the cedant in fulfilment of the reinsurance contract.

experienced a more pronounced reduction in the number of their insurance companies while the number of insurance companies has grown in the new member states, Ireland and Luxembourg thanks to foreign entry (Table 2). As shown in Table 3, the five largest life insurance groups increased their market share in several countries. This increase is mainly driven by the insurance companies in the old member states since an opposite pattern occurred for the new member states' insurance companies. The same trend can be seen in the non-life insurance market.

Table 2. Number of insurance companies in Europe

	1992	1997	2002	2003	% change (base 1992)
Austria	74	77	72	71	-4.1
Belgium	276	242	201	189	-31.5
Cyprus	42	39	36	34	-19.1
Czech Republic	12	40	42	42	250.0
Germany	775	715	703	703	-9.3
Denmark	235	264	226	214	-8.9
Estonia	na	23	13	13	-43.5
Spain	430	368	334	328	-23.7
Finland	57	62	68	68	19.3
France	614	543	495	486	-20.9
United Kingdom	823	841	806	772	-6.2
Greece	161	130	102	100	-37.9
Hungary	13	19	28	28	115.4
Ireland	96	152	199	224	133.3
Italy	268	261	254	249	-7.1
Lithuania	24	32	30	28	16.7
Luxembourg	72	91	95	95	31.9
Latvia	15	28	20	19	26.7
Malta	na	21	18	18	-14.3
The Netherlands	488	499	453	443	-9.2
Poland	27	50	74	77	185.2
Portugal	80	97	81	74	-7.5
Sweden	525	490	448	440	-16.2
Slovenia	7	14	14	15	114.3
Slovakia	9	23	27	28	211.1
EU 25	5123	5121	4839	4758	-7.1
Eurozone	3391	3237	3057	3030	-10.6

Source: CEA (2005).

Table 3. The market share of the five largest life and non-life insurance companies by country (%)

Country	5 largest life insurance companies			5 largest non-life insurance companies		
	1992	2003	Change	1992	2003	Change
Austria	51.10	49.60	-1.5	54.50	57.90	3.40
Belgium	54.60	74.00	19.4	34.90	58.80	23.90
Cyprus	89.80	89.10	-0.7	34.50	48.70	14.20
Czech Republic	100.00	75.00	-25.0	100.00	82.00	-18.00
Germany	31.50	32.20	0.7	23.50	27.90	4.40
Denmark	77.00	57.40	-19.6	60.30	70.00	9.70
Spain	45.60	42.20	-3.4	13.80	38.30	24.50
Finland	98.70	85.10	-13.6	82.70	90.90	8.20
France	46.40	55.10	8.7	40.70	53.70	13.00
United Kingdom	29.20	45.20	16.0	28.60	41.00	12.40
Greece	68.70	62.50	-6.2	39.30	42.80	3.50
Hungary	98.40	76.70	-21.7	94.80	85.30	-9.50
Ireland	62.60	66.90	4.3	47.40	68.80	21.40
Italy	53.90	59.70	5.8	33.80	69.20	35.40
The Netherlands	57.50	65.80	8.3	40.40	48.00	7.60
Poland	100.00	82.80	-17.2	94.70	80.30	-14.40
Portugal	49.40	79.00	29.6	54.70	68.30	13.60
Sweden	70.30	73.20	2.9	89.00	89.80	0.80
Slovenia	99.50	83.60	-15.9	99.60	93.90	-5.70
Slovakia	100.00	79.50	-20.5	100.00	89.00	-11.00

Source: CEA (2005).

Another trend caused by the recent wave of mergers and acquisitions in the European insurance industry (see Table A1 in Annex 1) is the move towards bancassurance (Dierick, 2004). The pursuit of cross-selling opportunities and synergies in the distribution network and in asset management has allowed banks and insurers to increase their assets under management and to diversify their earnings. Several bancassurance groups such as ING, Fortis, Allianz/Dresdner and BNP Paribas are among the top ten in terms of market share in life and non-life markets (see Table A2 in Annex 1).

Despite potential cost/revenue synergies and diversification benefits gained from the creation of financial conglomerates, this structure may create certain risks that ought to be taken seriously by regulators. These risks include regulatory arbitrage, the contagion effect, moral hazard and to some extent lack of transparency (Dierick, 2004).

However, due to the changing landscape in the aftermath of the equity market decline of 2000-02, global mergers and acquisitions slowed sharply in 2000 and continued to decline for the following four years. The decline was more dramatic in Europe, where life insurers, considered to be the driving force of the process, suffered the biggest losses of capital due to their heavy investments in the equity markets, which led several companies to the brink of insolvency. Undoubtedly, the opportunities for consolidation have not been exhausted yet, given that M&As (mergers and acquisitions) are expected to pick up over the next few years. A recovery in stock prices and low interest rates, coupled with a high fragmentation of the European insurance market, will be the main drivers for such future development.

Premium growth

Apart from the serious challenges faced by insurance companies in 2001,⁶ which led to stagnating annual premium growth worldwide, the European insurance industry was able to quickly recover the sustained growth it experienced over the past decade (Table 4). This growth was mainly attributable to life premiums, which account for two-thirds of all insurance premiums (Table 5), although there was a decline in 2001 (Table 6). This drop can be put down to the negative trends in European stock markets, which led to a collapse in the sales of unit-linked life insurance products.⁷

⁶ This was a year when the claims burden was at its highest due to a series of natural catastrophes, the re-emergence of asbestos claims and acts of terrorism such as 9/11.

⁷ The current landscape for life insurance savings products in Europe can be divided into: with-profit policies (particularly in the UK), policies with a minimum guaranteed return (particularly in continental Europe) and unit-linked policies. With-profit policies usually provide a very low guaranteed return, a variable annual bonus and a terminal bonus at maturity: the latter two depend on the performance of the life insurer's asset portfolio. For with-profit policies investment decisions are left to the life insurer. As returns can be smoothed over time, the company can afford to invest a certain share of assets in equities. Products with a minimum guaranteed return work in a similar way. However, the guaranteed return is usually considerably higher, thereby reducing the scope for equity investments. In contrast to the above life insurance policies with a savings element, the investment risk of a unit-linked policy is borne fully by the policyholder, but

Table 4. Total premiums (life and non-life) as a percentage of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Relative growth (1992-2003)
EU 25	6.1	6.7	6.6	6.7	6.8	7.2	7.9	7.8	8.7	8.3	8.4	8.3	36.1
Eurozone	5.3	5.9	6.1	6.3	6.4	6.6	6.5	6.9	7.3	7.3	7.5	7.7	45.3

Source: CEA (2005).

Table 5. Percentage of life and non-life insurance premiums in 2003

Premium by origin 2003	Life	Non-life
United Kingdom	66.9	33.1
France	64.8	35.2
Germany	46.0	54.0
Other EU	60.1	39.9
EU 15	60.1	39.9
New EU countries	40.1	59.9
EU 25	59.7	40.3
Total	59.6	40.4

Source: CEA (2005).

Table 6. Life premiums as a percentage of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Relative growth (1992-2003)
EU 25	3.0	3.3	3.3	3.4	3.7	4.1	4.4	4.8	5.7	5.2	5.1	5.0	66.67
Eurozone	2.3	2.6	2.9	3.1	3.3	3.5	3.5	3.9	4.3	4.2	4.3	4.4	91.3

Source: CEA (2005).

As a consequence of the sharp decline in equity markets, UK, German and Swiss life insurers have been hit particularly hard for the following reasons:

- UK life insurers writing with-profit policies have always invested a large percentage of their assets in equities.⁸
- In recent years, German and Swiss life insurers have allocated high guaranteed returns and promised high surpluses to their

the policyholder can determine the asset categories in which premiums are invested.

⁸ At the end of 2001, UK life insurers had 37% of their non-unit linked assets invested in equities (see Swiss Re, 2003a).

policyholders, while investing an increasing share of their assets in equity.⁹

Products with guaranteed returns are sold in other large continental European life insurance markets. However, in the second half of the 1990s, French, Italian and Spanish life insurers started to promote unit-linked policies. The success of these products allowed companies to mitigate their investment risk since it is mainly borne by the policyholders, thereby reducing their exposure to the stock market disarray and the low interest rate environment (see Table 7 on the differences between the different life insurance policies).

Table 7. The differences between a unit-linked policy and a traditional participating policy

	Traditional participating policy including with profit and guaranteed returns policies	Unit-linked policy
Investment risk	Borne by the life insurer to the extent of what the life insurer has guaranteed	Borne mainly by the policyholder
Asset allocation	Determined by the life insurer	Determined by the policyholder
Death benefit	Guaranteed death benefit plus accumulated bonus (depending on profit distribution method)	Higher of guaranteed death benefit and value of accumulated funds, sometimes varies (such as death benefit plus accumulated funds or minimum death benefit plus accumulated funds)
Endowment benefit	Guaranteed living benefit plus accumulated annual bonus (based on investment performance)	Value of accumulated funds
Surrender benefit	Mathematical provision plus accumulated bonus (depending on profit distribution system) less surrender fee	Value of accumulated funds less surrender fee

Source: Swiss Re (2003a).

⁹ At the end of 2001, German and Swiss life insurers had 26% (or 18% based on book value) of their non-linked assets invested in equities (Swiss Re, 2003a).

As compared to 2003, the European insurance market has displayed sustained growth in 2004 and 2005, thanks to the improvement in global macroeconomic indicators and to insurers' efforts to opt for a conservative investment strategy driven by past stock market crises. In a number of countries, particularly Ireland, Luxembourg, the UK and Sweden, this growth is concentrated in unit- or index-linked products owing to their attractiveness to consumers as compared to the low-yielding guaranteed products.¹⁰ However, the bulk of the premiums in most countries are still generated from guaranteed return contracts (CEIOPS, 2005a).

The prospects for further growth in European life premiums are promising, owing to the tax and pension reforms that have been underway since 2004.¹¹

The non-life insurance business has grown slowly over the last decade without a break in that trend (Table 8). This pattern can be explained by progressive increases in premium rates, particularly in commercial and motor lines. Indeed, the non-life insurers' poor results in previous years, the shortage of capacity and their exposure to stock market losses have forced them to improve their underwriting results on the back of price increases.¹² However, these increases have neither compensated their underwriting losses nor added more comfort to their profit margins. It is only in 2004 that the sector saw some signs of relief resulting from improved average net combined and net loss ratios¹³ in 2004 (CEIOPS,

¹⁰ The share of unit-linked premiums in total life premiums in the EU/EEA increased from 37.7% in 2003 to 40.4% in 2004, according to CEIOPS (2005a).

¹¹ For example, in Germany, tax breaks for endowment policies were eliminated at the end of 2004 through the introduction of a pension reform in early 2005, which allowed for tax advantages to be extended to contributions to private and occupational pension products. In France, the government introduced new pension plans as from April 2004, which allow individuals to make tax-free contributions (up to a defined limit). In the UK, legislation simplified pension tax as from April 2006.

¹² However, owing to the favourable profitability situation enjoyed by incumbent non-life insurers, new entrants may enter the market and push down the prices to attract new consumers. This may lead to a softening of insurance premium rates in the coming years and eventually to lower premium income.

¹³ The combined ratio is the ratio of claims and costs to premiums, the loss ratio is the ratio of claims to premiums.

2005a). The improvement was mainly driven by strong premium rates for most lines of business, particularly motor insurance and fire insurance, low losses from natural disasters in most countries and a gradual recovery in equity markets.

Table 8. Non life premium as a percentage of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Relative growth (1992-2003)
EU 25	3.1	3.4	3.3	3.3	3.1	3.1	3.5	3.0	3.0	3.1	3.2	3.4	9.68
Eurozone	3.0	3.2	3.2	3.2	3.1	3.1	3.0	3.0	3.0	3.0	3.2	3.3	10.0

Source: CEA (2005).

Insurance financial activities

During the 1990s, there has been a sustained growth in the percentage of European insurance companies' investment as a percentage of GDP. This trend was temporarily broken in 2001 and 2002, owing to the turbulences in the financial markets globally, before signs of recovery emerged in 2003 (Table 9). European insurance companies are the most important group of institutional investors in Europe. In volume terms, they hold a total asset value, as a percentage of GDP, of 54.4%, compared to investment and pension funds respectively of 40.6% and 29.2% in the EU 15 in the year 2000 (Lannoo & Levin, 2003).

Table 9. Total insurance companies' investment (assets) (as a percentage of GDP)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Relative growth (1992-2003)
EU 25	28.6	32.1	31.8	34.6	37.6	42.7	48.0	50.9	52.1	50.2	49.0	52.0	81.82
Eurozone	21.2	24.0	24.9	27.7	30.5	33.5	36.4	38.7	39.9	41.0	41.6	44.3	23.10

Source: CEA (2005).

Life insurers are active players in the financial markets since they hold on average more than 75% of all insurance assets (Table 10).

Table 10. Percentage of total insurance companies' investment by origin

Investments by origin	2000		2001		2002		2003	
	Life	Non-life	Life	Non-life	Life	Non-life	Life	Non-life
EU 25	82.60	17.40	82.20	17.80	81.40	18.60	81.60	18.50
Eurozone)	76.50	23.50	76.40	23.60	75.90	24.10	76.00	24.10

Source: CEA (2005).

As can be seen in Table 11, on average, the largest proportion of the European insurance companies' assets is invested in fixed income (41.5%), whereas 28.5% of their assets is invested in equity in 2003. The investment behaviour of insurance companies in individual countries shows a few differences across countries. In the UK and Ireland, the largest proportion of the insurance companies' assets is invested in equity while in continental Europe and in the new member states, the largest proportion is invested in fixed income.

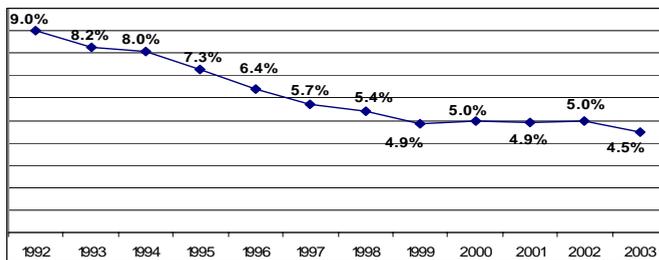
When looking at the evolution of the investment behaviour of European insurance companies over the past 12 years, the speed with which they have switched to more active asset management behaviour is particularly noteworthy. While their investments in real estate have almost halved between 1992 and 2003 (Figure 1), equity and fixed income investments both display interesting patterns. What is immediately evident is the increasing appetite of European insurers for risk until mid-2000, coinciding with the beginning of the downward spiral of global stock markets (Figure 2). The development of insurance companies' investments in fixed income displayed moderate growth until 1998, followed by a sharp decrease. This decrease can be attributed primarily to low interest rates and depressed bond yields (Figure 3). Insurance companies' asset holdings in these products have picked up since mid-2000 as a response to turbulent stock markets. Against this background, it is clear that the role of insurance companies as active institutional investors has grown in importance in recent years. For example, they sought to diversify their large investment portfolios by increasing their presence in the credit derivatives markets, by becoming more active buyers of credit default swaps (CDS), collateralised debt obligations (CDO), private equity, funds of hedge funds and reverse convertible securities (IMF, 2002).

Table 11. Asset allocation of insurance companies in 2003 (%)

Country	Total insurance assets (€ millions)	Land & buildings & participating interests	Investments in affiliated undertakings & participating interests	Shares and other variable-yield securities & units in unit trusts	Debt securities & other fixed-income securities	Loans, including loans guaranteed by mortgages	Deposits with credit institutions	Other investments
Austria	55,953	6.4	12.3	27.8	34.3	13.0	2.1	4.1
Belgium	128,595	2.8	6.5	20.4	60.4	4.8	3.1	2.1
Cyprus	1,430	9.6	1.3	17.7	29.7	9.6	28.1	4.0
Czech Republic	6,775	4.5		5.8	67.3	2.4	10.9	9.0
Germany	1,059,512	2.4	12.7	24.4	9.7	48.3	2.2	0.3
Denmark	155,037	2.6	8.2	11.6	61.7	0.1	0.4	15.4
Estonia								
Spain	121,481	3.9	3.2	5.9	63.1	1.3	7.6	14.9
Finland	81,933	11.9	1.4	24.0	57.0	4.5	1.0	0.1
France	1,015,888	4.4		23.4	68.7	1.3	1.4	0.7
UK	1,433,200	6.2		43.3	36.9	1.2	3.5	8.9
Greece	6,928	10.5	8.8	15.9	39.7	1.5	10.5	13.0
Hungary	4,109	0.8	5.0	4.8	81.1	0.7	4.5	3.1
Ireland	54,202	7.8		58.1	21.7			12.5
Italy	365,385	1.2	5.0	9.4	50.0	0.5	0.0	33.7
Lithuania								
Luxembourg	30,356	0.3		43.1	44.4	0.0	7.4	4.8
Latvia								
Malta	591	5.2	3.6	8.7	36.9	0.8	11.1	33.7
NL	267,539	5.2%	3.9%	27.0%	37.1%	19.3%	2.0%	5.5%
Poland	13,302	0.5%	4.6%	7.0%	73.5%	0.2%	4.0%	10.1%
Portugal	28,470	4.4%	2.1%	11.3%	59.0%	0.3%	1.6%	21.3%
Sweden	228,466	3.0%	8.6%	36.6%	46.2%	0.7%	4.3%	0.6%
Slovenia	3,514	4.5%	3.4%	28.6%	30.6%	13.9%	10.5%	8.5%
Slovakia	1,427	4.7%	1.8%	2.0%	68.1%	10.0%	13.2%	0.3%
EU 25	5,064,092	4.3%	4.3%	28.5%	41.5%	12.2%	2.5%	6.8%
Eurozone	3,216,242	3.6%	5.8%	22.4%	41.9%	18.6%	1.9%	5.8%

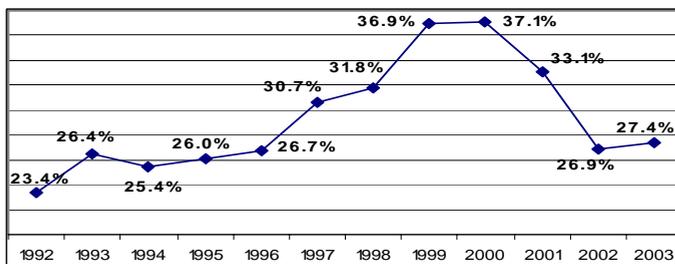
Source: CEA (2005).

Figure 1. Land and buildings and participating interests as a percentage of total assets (EU 25 plus Switzerland, Croatia and Turkey)



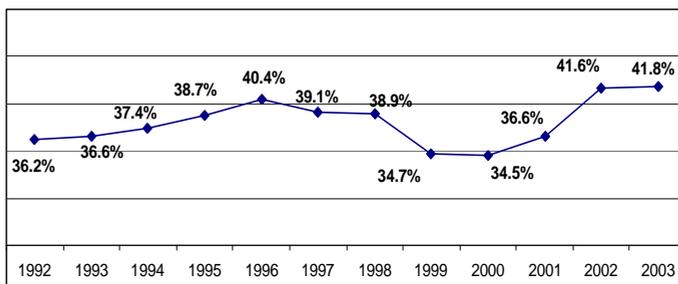
Source: CEA (2005).

Figure 2. Shares and other variable-yield securities and units in unit trusts as a percentage of total assets



Source: CEA (2005).

Figure 3. Debt securities and other fixed-income securities as a percentage of total assets



Source: CEA (2005).

Financial strength

An insurer needs to be adequately capitalised¹⁴ since its core activity is the assumption of risks. This is combined with asset management, since technical reserves, which are funded using advance premium payments and an insurer's own capital funds, are invested to earn interest. The transfer of risks involves an underwriting risk and the investment in income-bearing assets poses other risks that may endanger the insurer's ability to fulfil its obligations to make payments for claims in adverse circumstances. Capital funds serve as a buffer against unforeseen fluctuations in results.

As reported by CEIOPS (2005a), the European insurance sector seems adequately capitalised with no severe cases of insolvencies. The weighted average solvency ratio in the EU/EEA countries in 2004 amounts to 225% for life insurers, 380% for non-life insurers and 320% for composites. These percentages are considered to be respectively a slight (and a significant) improvement for life (and non-life) insurance sectors as compared to 2003. However, it is worth pointing out that these averages, which are based on risk-insensitive formulae, do not enable us to determine how many companies may be in potential difficulty, or, indeed, whether there could still be issues for some particular national markets. Supervisors in several countries reported the use of stress-testing to assess the ongoing solvency situation of insurance firms. The results confirm the ability of the life sector to withstand shocks in the equity and bond markets. In other countries, smaller insurance companies are facing solvency problems.

1.3 Risks and risk management in insurance companies

Risk is inherent to the insurance business. Risk is generally used to describe any situation where there is uncertainty about the outcome. There are many definitions of risk.¹⁵ A useful one was adopted by the IAA Insurer Solvency Assessment Working Party¹⁶ (IAA, 2003): "The chance of

¹⁴ For an explanation of what constitutes capital in an insurance company, see Annex 2.

¹⁵ For more on definitions of risk, see Tosetti et al. (2001).

¹⁶ Acting in support of the International Association of Insurance Supervisors (IAIS), the International Association of Actuaries (IAA) formed a working party to prepare a paper on the structure of a risk-based solvency assessment system for

something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.” Risk only has a meaning in the context of a set of objectives or expected results.

The key components of risk include *volatility*, *uncertainty* and *extreme events*. *Volatility* is the risk of random fluctuations in either the frequency or severity of a contingent event. The volatility component of risk is seen as being diversifiable. *Uncertainty* is the risk that the models used to estimate the claims or other relevant processes are mis-specified or that the parameters within the models are mis-estimated. Uncertainty risk is not diversifiable since it cannot be relatively reduced by increasing portfolio size. Finally, *extreme events* are high-impact and low-frequency events for the company as a whole. These are elements from the extreme, adverse tail of the probability distribution that are not adequately represented by extrapolation from more common events and for which it is usually difficult to specify a loss value and thus an amount of capital held.

Today, in view of the threat of terrorism and vandalism since 2001, the increased frequency of catastrophes related to climate change and the mounting risks related to e-activities, the third component of risk, which was previously insignificant, has grown in importance. This points to the dynamic nature of risk and the limitations of models in predicting the real nature of risk at a given point in time.

Owing to the dynamic character of risk, the variety as well as the increasing complexity of modelling and managing risks in the insurance business, this section begins with a taxonomy of risks followed by a brief review of the current industry practices in modelling and managing risks and the role of reinsurance and hedging. Then, we briefly examine how failure occurs in the event of risk mismanagement.

1.3.1 Taxonomy of risks in insurance

Owing to the increasing importance and complexity of risks faced by insurance companies nowadays, several initiatives have been taken, aimed at understanding, defining and quantifying these risks.

insurance (see IAA, 2003, for the draft version and http://www.actuaries.org/LIBRARY/Papers/Global_Framework_Insurer_Solvency_Assessment-members.pdf for the final version).

In its report, the Insurer Solvency Assessment Working Party of the International Actuarial Association (IAA, 2003) provided an extensive analysis of risks by dividing them into four broad categories: underwriting, credit, market and operational.

In Europe, the Sharma report¹⁷ (Sharma, 2002), commissioned by EU insurance supervisors, contributed to an understanding of the solvency risks of insurance firms.

The findings of the Sharma report are examined in this section since the risk classification it adopts is deemed to offer a tailored analysis based on cause-effect methodology, which is widely used to analyse failure.

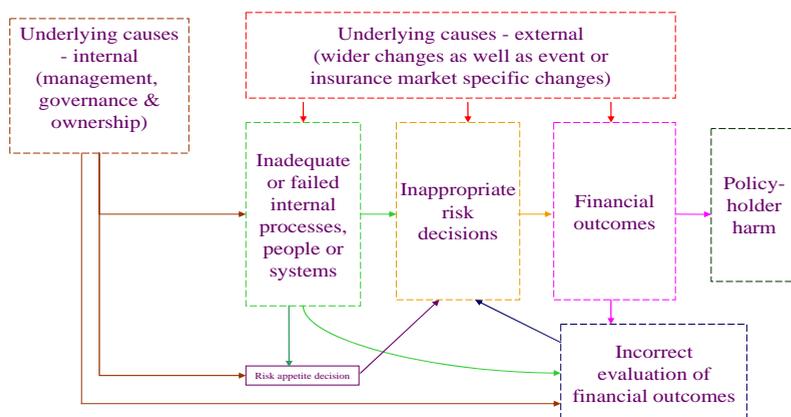
One of the objectives of the report is to formulate a more up-to-date picture of the risks that are faced by European insurance firms. To do so, the report starts by identifying and analysing the risks that led to the solvency problems between 1996 and 2001 or created a significant threat to the solvency of firms, including any new or emerging risk. It then prioritised each risk that it had identified. The period under investigation was of particular interest since it included some extreme events that have occurred and also a downward spiral in the financial markets.

To classify insurance risks, the working party opted for a cause-effect methodology. The main benefit of this approach is to help understand both the underlying sources of a particular risk and its ultimate impact on a firm. This allows not only for an understanding of the importance of a risk, but also how to control it.

Risks can be described and categorised either by their causes or effects. However, since the effects of a risk are often more obvious than its causes, it is typical for risks to be described by their effects (Figure 4).

¹⁷ Working group report on "Prudential supervision of insurance undertakings" prepared by the London working group, chaired by Paul Sharma and published in December 2002 (see http://ec.europa.eu/internal_market/insurance/docs/solvency/solvency2-conference-report_en.pdf). The working group was made up of insurance supervisors from most member states together with a member of the EC Conference Secretariat. The European Commission was present in all the discussions. This work built on a previous working group report, called the Müller report (1997), on the solvency of insurance undertakings.

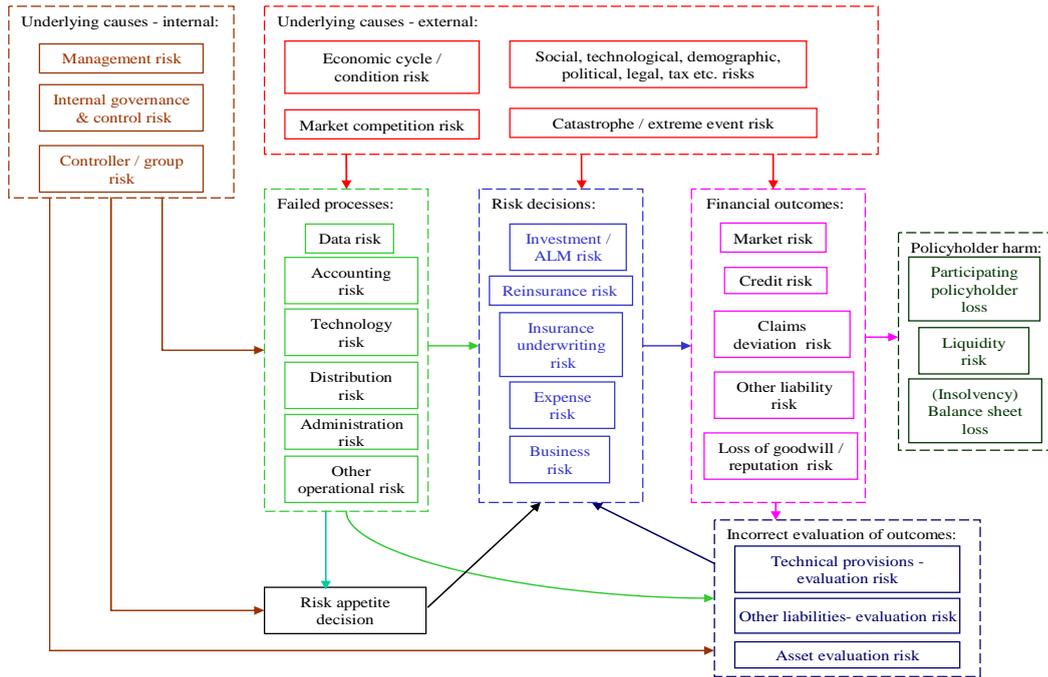
Figure 4. Generic risk map



Source: Sharma (2002).

This broad methodology provided the framework for risk classification to be mapped, as shown in Figure 5. The definitions of all identified risks are given in Annex 3.

Figure 5. Risk map (detailed)



Source: Sharma (2002).

1.3.2 The main developments in the insurance industry's risk management practices

In recent years, risk management has gained momentum among the major European insurance companies and financial conglomerates. In late 2004, they formed the Chief Risk Officer (CRO) Forum, which initiated a benchmarking study to provide a comparative inventory of the risk measurement framework used by CRO Forum member companies.¹⁸

The main message of the study (Filipovic & Rost, 2005), published in April 2005, is the existence of a multitude of methods in use nowadays,¹⁹ with no one common method. This is mainly due to a lack of common standards and by the different actuarial traditions in European countries.

The CRO study offers a clear classification of methodologies used by the European insurance companies. It shows, however, a high degree of diversity and divergence in modelling and measuring risks, measuring capital adequacy and valuating liabilities.

The main findings are summarised as follows:

- Capital adequacy
 - Solvency point of view: economic, regulatory, rating agency
 - Level point of view: group versus solo
 - Capital point of view: policyholder versus shareholder
- Liability valuation: statutory versus market consistent
- Risk modelling: scenario-based, static-factor model, covariance model, stochastic factor model
- Scenarios definition: event/hypothesis, deterministic projection, randomly generated sample path, sensitivity or stress test
- Risk measurement
 - Time horizon: one year versus multi-year

¹⁸ The participants in this study are worldwide operating insurance and reinsurance companies, partly financial conglomerates, with a broad range of business activities.

¹⁹ In a survey carried out by MOW (2003), over the last five years, almost 40% of the leading European insurers have begun to use RAPM (Risk Adjusted Performance Metric)/Risk Capital Tools operationally, from 5% in 1997.

- Risk measure: VaR, TailVaR, target ruin probability
- Aggregation: risk numbers versus overall profit and loss distribution

The core observations emerging from the CRO exercise were:

- The high degree of usage of internal models,²⁰ especially in typical insurance risks. These models are becoming an operational management tool, notably for underwriting policies, performance measurement and management compensation.
- The increasingly widespread use of a hierarchical structure with sub-units on a legal, country and/or lines-of-business basis leading to differences between risk profiles at group and sub-unit levels.

Building on the diversity of capital requirements measurements, it was widely agreed that the economic value of the assets and liabilities provides the most accurate picture of risk profile and capital adequacy. However, it was also recognised that, in a realistic model, there are regulatory and rating agency constraints to be met. The assessment of capital adequacy depends on the solvency (economic, regulatory, rating agency), level (group, solo) and capital (from the policyholder's or shareholder's point of view). Currently, there are various perspectives in use which are due to the different accounting systems and the complexity inherent in determining capital structure.

With respect to the valuation of assets and liabilities, assets are valued on a market-consistent basis. This means that assets are marked to market if a market value is available or marked to a model otherwise. As for the valuation of liabilities, there is currently no industry standard. There are essentially three basic approaches in use: best estimate, best estimate plus risk margin or statutory values.

As to the modelling of risk variables and dependencies, the industry members consider that an internal risk-based capital adequacy system should go beyond absorbing normal business fluctuations. The sources of randomness are uncertain cash flows and future asset and liability values, which are caused by more fundamental underlying random risk factors.

²⁰ Internal models are expected to reflect each company's individual risk exposures more appropriately than just applying standardised rules driven by a jurisdiction or by regulators.

These risks were categorised under four broad headings: insurance risk (underwriting risk), market risk, credit risk and operational risk. This observation is consistent with the dynamic character of risk in insurance.

The risk models analysed can be categorised in scenario-based models, static factor models, covariance models and stochastic factor models. Many participants start by calibrating a stochastic factor model and translating it into a table form, which is then practically used as a covariance model. This is claimed to help ensure better communication between the risk management unit and the rest of the staff.

In particular, the study reported several limitations to be considered in improving such systems:

- The lack of a clear trend and homogeneity as regards model uncertainty.
- About two-thirds of the companies do not consider intra-group risks at a group level.
- Only about one-third of the participants are using and/or developing stochastic operational risk models.
- A mixture of correlations, copulas and tail adjustments are in use to account for dependencies.
- About 25% of the participants use or plan to use a multi-year horizon.
- 75% of the participants take reinsurance into account for risk mitigation, while accounting for the case where the re-insurer defaults.
- All financial conglomerates take full account of diversification benefits between insurance and banking business at group level and essentially all participants measure diversification benefits between their local entities.

The risk measurement methods can be classified by the time horizon of the assessment and the risk measure (VaR, Tail VaR, or target ruin probability). The industry trend is towards calibrating target confidence levels to annualised VaR. The internal annualised VaR calibrated confidence levels at group level range from 99.6% and 99.99%.

Based on the evaluation of the strengths and weaknesses of each framework analysed, the study proposes a set of recommendations, supported by the CRO Forum member companies, for the admissibility of internal models.

The findings of the CRO Forum study are built on observations from large European insurance, re-insurance companies and financial conglomerates. These observations show the growing use of internal models, which seem in an evolving phase of development. This would suggest the emergence of industry 'best practice' with regards internal models. This development should be further encouraged and supported by the European regulators in the wake of Solvency II framework. However, the lack of a common minimum standard to value assets and liabilities and to model and measure risks renders comparability between companies hard to achieve, and therefore any benchmarking would be yet subject to a high degree of subjectivity.

Moreover, the CRO Forum study says nothing about other industry practices, in particular of small- and medium-sized insurance and re-insurance companies. Intuitively, the use of internal models by this category of companies is deemed to be minimal unless considerable investment in resources for measurement and management of risks is deployed. The lack of a minimum standard to value assets and liabilities makes it even more difficult for them to go beyond a simplistic and risk-insensitive approach - at least in the short run. In the medium to long run, the spread of know-how in measuring and managing insurance risks and accessibility of internal models and processes will also benefit small- and medium-sized insurance and reinsurance companies.

Building on this background, it is highly recommended for the industry to coordinate its efforts and initiatives while taking equal account of the interests of large, medium and small insurance and re-insurance companies to preserve the competitive edge and the level playing field.

1.3.3 The role of reinsurance²¹ and hedging in mitigating insurance risks

Reinsurance is a common way for insurers to manage their risk, as reported in the IAA Insurer Solvency Assessment Working Party (IAA, 2003). In the case of reinsurance in the normal course of business, or indemnification reinsurance, the insurer retains the risks inherent in the original policies

²¹ To learn more about the reinsurance market, see Credit Suisse First Boston (2005).

sold, while the re-insurer and insurer separately agree to exchange certain specified payments. Indemnification reinsurance can be structured to permit the policyholder to retain varying degrees of risk (e.g. via deductibles, co-insurance, captive reinsurance, retrospective premium arrangements, etc.).

Re-insurers offer a wide range of traditional and alternative forms of insurance to weather the risks of insurers. Traditional treaty reinsurance is used to reinsure precisely defined portfolios, albeit typically leaving some part of the risk with the direct insurer. Alternative Risk Transfer (ART) is a collective term for more recent risk management methods. The most popular forms are self insurance (by mean of captives²²), finite concepts (combination of risk transfer and risk financing) and the transfer of insurance risks to the capital market.

Reinsurance can be used to reduce volatility, uncertainty and extreme-event risk. For example, some types of reinsurance can be structured to directly insure against catastrophic events such as earthquakes or hurricanes. Reinsurance spreads the risk entailed in a particular event by limiting a given company's exposure.

Since major risks are transferred to reinsurers, the insurers no longer need to retain capital on their balance sheet to cover them. Reinsurance could thus serve as an equity substitute and provide additional underwriting capacity. Consequently, the transfer of risks to reinsurers reduces the fluctuations in the business performance of the insurer. A more balanced earning curve reduces the company's capital costs. At the same time the stability of the insurance system is enhanced because the probability of insurers becoming insolvent declines. Nonetheless, the presence of a reinsurance contract exposes the insurer to the risk of counter-party default. Moreover, despite being rare, reinsurers' bankruptcies may occur. In Europe, several cases were reported (Table 12). The reasons for reinsurers' bankruptcies may be classified into three areas: a) the assumption of risks (risk underwriting²³), b) the transfer of risks

²² The use of captives has increased dramatically with the hardening non-life insurance market (Swiss Re, 2003a).

²³ This is linked to the possibility of mis-specification of the statistical models to assess the frequency and the extent of the loss events.

(retrocession²⁴) and c) the investment of premium income (investment policy²⁵).

Table 12. Examples of re-insurers' bankruptcies in Europe, 1992-2002

Company	Country	Year	Reason	Net premium written (\$ millions)
Aterforsakringsktiebolaget LUAP	Sweden	2002	Insufficient capital	244.8 (2000)
UIC Insurance Co. LTD	UK	1996	Poor underwriting, failed attempt to raise capital	10.8 (1993)
Kobe Reinsurance SA	Belgium	1995	Fraud	12.1 (1993)
Dai-Ichi Kyoto RE ins. Co SA	Belgium	1995	Risky assets, fraud	66 (1993)
Reassurance afviklings Aktieselskabet	Denmark	1995	Insufficient IBNR* reserves	0.29 (1994)
Kansa Reins Co Ltd	Finland	1994	Poor underwriting, Insufficient capital	2.9 (1993)
P&C insurance company Kansa international	Finland	1993	Poor underwriting, Insufficient capital	22.6 (1993)
Ardena SA	Luxembourg	1993	Fraud	4 (1992)
Charter Re insurance CO Ltd	UK	1993	Hurricane and London market losses	60.5 (1992)
Chancellor insurance company Ltd	UK	1992	Losses from LMX spiral	91.7 (1991)

* Incurred but not reported.

Source: Swiss Re (2003b).

Hedging transactions could also result in a net reduction in risk as the insurer assumes an offsetting risk to the one it currently holds. The insurer

²⁴ Retrocession is the transfer of ceded premiums from reinsurers to other reinsurers or insurers. This procedure enables them to spread their risks more broadly but they are still taking a credit risk. The insolvency of a 'retrocessionnaire' can trigger a domino effect and cause financial embarrassment for other reinsurers with correspondingly negative effects on primary insurers. An example of this was the vicious circle triggered by the insolvency of LMX, which occurred in the London market at the beginning of the 1990s. The knock-on effects of the LMX insolvency came about because of the commission-based retrocession of a large part of the business to syndicates.

²⁵ This arises because of interest, exchange rate and stock market risks together with credit risks arising from reinsurers' investments in corporate loans. These risks ought to be successfully diversified.

still retains the original risk but the offsetting hedging transaction results in a net reduction in risk for the insurer. It is important to note that the insurer assumes additional counter-party default risk as a result of the hedging transaction unless the hedge is a 'natural' hedge. A natural hedge occurs when a company can offset risks in different lines of business. For example, writing both life insurance and life contingent annuities for similar groups of policyholders may help to provide a hedge against the impact of improving mortality.

Insurance derivatives make it possible for an insurance or reinsurance company to use capital market instruments to hedge losses. The derivatives' value is determined by the performance of an insurance specific index. For example, the index may be based on claims development for certain risks. The relevant insurance index is often based on the following: the total loss amount for an event, the aggregate claims ratio for certain risks, temperature patterns, such as the number of rainy days, the magnitude of an earthquake in a specific region, etc.

However, insurance hedging policies could lead to losses when there is not enough capital to cover the probabilities of default arising from their market exposures.

1.3.4 Failure occurrence

When insurers and re-insurers fail to properly estimate risks in their balance sheets, failure can occur. The finances of insurers and ways in which failure can occur are outlined below.

Insurers' income comprises:

- premiums received from policyholders,
- investment income and capital gains (or losses) on the funds built up and
- claims on reinsurers.

The main item of expenditure are the claims that they pay out. However, insurers will also be committed to pay further claims in the future and need to assess the provisions needed to meet such obligations. Their expenditure therefore comprises:

- costs, including commissions;
- the claims that they pay out, plus the increase in the provisions for future claim payments;

- premiums paid to reinsurers and
- taxes.

The excess of their income over their expenditure flows through into the balance sheet. This excess, in year t , may be regarded as $F_t + M_t$. By F_t we mean the firm's profit. However, there is no uniform calculation of profit and some countries categorise part of the excess of income over expenditure as a movement in the balance sheet that is not regarded as profit (referred to here as a miscellaneous item, M_t).

The balance sheet records the assets and liabilities of the insurer. The liabilities are primarily their liabilities to policyholders (the provision for claims, known as technical provisions in EU accounts) together with debt. Any element of equity capital is excluded and liabilities are referred to as (L_t). The insurer's assets (A_t) are built up from the premiums paid by policyholders together with other income and the capital that has been provided. It chooses how to invest the assets, in bonds, equities, property, cash, etc. The excess of assets over liabilities constitutes the equity of the firm (E_t), as measured in the balance sheet (the economic value would include goodwill).

The increase in equity from one year to the next is:

$$E_{t+1} - E_t = F_t + M_t + K_t - D_t$$

(where K is the new capital injected and D is the dividends paid out).

The regulator will set a minimum solvency requirement (E^*). The insurer therefore has to meet the requirement, $A_t - L_t \geq E^*$. However, the income and expenditure are subject to stochastic variation. The insurer may therefore adopt a policy such that it has a given probability of meeting this requirement. If $A_t - L_t$ is positive but less than E^* , we expect the regulator to take action to ensure that there are no further adverse events that prevent the insurer from meeting its obligations to policyholders. Indeed, the regulator may wish to have A and L calculated with margins for prudence incorporated in the valuation. An element of understatement of assets and/or overstatement of liabilities amounts to hidden reserves.

We can see a number of ways in which an insurer may fail. One possibility is that claims are higher than expected. While premiums will be calculated with some assumption about the claims that are expected to be paid, they may be inadequate. Browne & Hoyt (1995) confirmed that underwriting risk is the major factor influencing the frequencies of insolvencies.

Insurers take steps to reduce the severity of unexpected claims, for example by reinsurance, and it is feasible in some cases to choose assets that (precisely or broadly) match the liabilities. However, these do not eliminate the risk (and reinsurance introduces the risk that the reinsurer fails).

Failure may also derive from the asset side of the balance sheet. Assets may decline in value (from market and/or credit risks). If the assets match the liabilities, this is not a significant solvency problem but in other cases it can be.

Insurers are subject to other risks, of course. Even if assets exceed liabilities, they fail if the assets are insufficiently liquid to pay liabilities that are due. Many insurance companies' failures have resulted from liquidity crises. They are also subject to operational losses, which have led to a number of failures.

Evidence on the causes of actual failures and near-failures of insurers in the EU is given in Müller (1997), Sharma (2002) and CEIOPS (2005a).

In the case of insurers' insolvencies, several European countries have established state guarantee funds to cope with the consequences. Examples are the UK's protection schemes for personal lines of business, plus France's and Germany's mechanisms for motor liability insurance. We note that at present there is no EU standard regulation on state guarantee funds in insurance.

1.4 The rationale for insurance regulation

The nature of insurance contracts is that there is uncertainty about the occurrence, amount or timing of future claims. These elements of 'the future' and 'uncertainty', typically in the context of adverse events, can lead to problems in insurance markets that have led to them to be subject to a substantial degree of regulation.

The reasons for this include:

- Asymmetric information
 - Policyholders may understand less (or more) than the insurer about the contract and the risks involved (and the insurer may be able to make changes in the operation of the contract before it is completed).
 - Policyholders may understand less than the insurer about the latter's ability to fulfil the terms of the contract.

- Ambiguity
 - There is a lack of information about the contract, the risks and the ability of the insurer to fulfil the terms of the contract.
- Agency problems
 - Shareholders, managers and policyholders have different interests, knowledge and decision-making abilities that may mean the interests of one or more parties is/are not properly represented.
 - Insurance salesmen may have commission or other incentives that lead them to act in their interest and not that of policyholders (who are less knowledgeable).
- Individuals' responses to uncertainty and the future, often in the context of events they consider unpleasant, may have some characteristics that lead governments to intervene. In particular, individuals may be judged to have 'excessive' risk-aversion and/or they may be myopic, discounting the future too heavily.
- External effects: governments may consider that insurance can support or affect other activities or can impact on the distribution of income and wealth, which may lead to a case for intervention.
- Moral hazard: individuals' behaviour may change as a result of insurance and governments may wish to intervene to influence such changes.

Harrington & Niehaus (2004) state that insurance markets tend to have costly and imperfect information and much regulation aims to reduce the problems resulting from this, for example by authorising insurers and agents, monitoring and regulating solvency, prescribing contract terms, outlawing unfair sales and claims practices and requiring disclosure of information. They also explain that unregulated markets may fail to provide sufficient information, e.g. because high-quality insurers may be unable to develop accurate measures to demonstrate their quality that can be readily understood by most policyholders.

In addition, insurance markets, like others, may lack competitiveness for reasons such as there being a limited number of firms, leading to a call for regulation.

Skipper & Klein (2000) emphasise the importance of effective competition, which enhances choice and value but has limitations and that the role of insurance regulation is to rectify market imperfections. They go

on to argue that regulation should be adequate, impartial, minimally intrusive and transparent. This can lead to a number of specific objectives that regulators may have, for example as put forward by Meier (1991):

- to monitor solvency;
- to ensure fair trading;
- to promote fair access to markets;
- to promote price stability;
- to support the domestic industry and
- to satisfy social objectives.

In contrast to the public interest theory of regulation, expressed above, some writers have considered political elements of regulation. Adams and Tower (1994) refer to the following alternatives to public interest theory:

- The private interest (or capture) theory suggests that regulation is a partisan process that favours politically effective groups that dominate the regulatory process.
- The economic theory of regulation suggests that regulation is an economic good whose allocation is governed by the laws of supply and demand.

We recognise that regulators have their own objectives and will be subject to representations from many sources: government, politicians, industry and consumers. These groups may also have some differences of interest (e.g. mutual versus proprietary insurers) and differences in political clout (e.g. small versus large insurers). It can be challenging for regulators to achieve a balance between these conflicts that is fair and also seen to be fair. It is not surprising that there is an increasing interest in regulatory governance (Kielholz & Nebel, 2005).

We can draw a general distinction between prudential regulation and conduct of business regulation. The CEPS Task Force decided to restrict its report to the former, given the topicality of the discussions taking place on a new solvency regime for the EU (Solvency II) which is attracting increasing interest (see Sandström, 2006).

1.5 The challenges facing insurers and regulators

Both life and non-life insurers have faced challenging conditions in recent years. We consider here what some of the key challenges have been and comment briefly on the implications for regulators.

Insurance provides three types of services. It provides protection against adverse events, which is particularly important for risk-averse individuals; it provides an investment service, as premiums are received before claims are paid; and it provides 'real' services, such as advice on risk management and administration of pension schemes. However, there have been adverse trends in some key areas of claims, which we review in section 1.5.1. There have also been difficult investment conditions for insurers, which we review in section 1.5.2. In section 1.5.3 we briefly review the implications for insurance regulators.

1.5.1 Challenges for insurers – liabilities

Natural and man-made disasters

Swiss Re (2006b) has been recording 'major events' since 1970, with 397 major events worldwide in 2005, a figure that has been on an upward trend since the mid-1980s. The number of natural catastrophes had always been below 50 per year up to 1985, but it has been rising and reached 149 in 2005. Man-made disasters numbered under 100 a year up to 1985, but again have been increasing, with 248 in 2005 (see Table 13).

Table 13. Natural catastrophes and man-made disasters

		2000	2001	2002	2003	2004	2005
Number of incidents	Natural catastrophes	121	111	130	142	116	149
	Man-made disasters	230	204	214	238	216	248
	Total	351	315	344	380	332	397
Victims	Natural catastrophes	7,767	22,803	10,729	51,485	295,160	88,083
	Man-made disasters	9,694	10,247	13,066	7,914	7,275	8,935
	Total	17,461	33,050	23,795	59,399	302,435	97,018
Insured property losses (\$bn)	Natural catastrophes	7.5	10.0	11.4	16.2	45.7	78.3
	Man-made disasters	3.0	24.4	2.1	2.3	2.9	5.1
	Total	10.5	34.4	13.5	18.5	48.6	83.4

Source: Swiss Re, Sigma, various issues.

Swiss Re also records the number of victims (dead and missing). The event that claimed the highest number of victims was the storm and flood catastrophe in Bangladesh in 1970 (300,000 victims). However, recent years have also seen high numbers of victims. The Indian Ocean tsunami on 26 December 2004 claimed an estimated 220,000 victims and the total of 302,000 catastrophe victims in 2004 was the highest for decades. Only rarely has it gone above 100,000. The Kashmir earthquake in October 2005 claimed 73,000 victims, contributing to a total for the year of 97,000 victims, again high by historical standards.

The largest event measured by insured property losses was, up to 2004, Hurricane Andrew (in 1992), which cost \$22.3 billion (in 2005 prices). This was overtaken in 2005 by Hurricane Katrina, where floods, damage to levees and oil rigs meant that there were insured losses of \$45 billion, i.e. double the cost of Hurricane Andrew. Hurricanes Rita and Wilma, in 2005, led to insured losses of \$10 billion each. Therefore, of the ten largest (by insured losses) hurricanes, seven took place in 2004-05. The outcome was that catastrophes in 2005 had directly attributable financial losses of more than \$230 billion (\$123 billion in 2004), of which Katrina contributed \$135 billion. Insured property damage in 2005 totalled \$83 billion, the highest figure ever recorded, following on from the previous highest figure in 2004 of \$48 billion. Compare these figures to the 1970s, where insured property losses (indexed to 2005) came to under \$10 billion each year.

Europe accounts for a relatively small share of the losses (Swiss Re, 2005a, 2006b). In 2005, there were 59 catastrophes in Europe (out of 397), 659 victims, and \$7 billion insured losses (against an average of \$3.6 billion in 2000-05). Some European non-life insurers have suffered from natural disasters, such as those arising from floods in central and eastern Europe in 2005 (CEIOPS, 2005a). In addition, though, European insurers accept business worldwide and are therefore exposed to worldwide losses.

Swiss Re (2005b) comments that the trend towards very high losses appears to be continuing. This reflects increases in population densities, high concentrations of insured values and construction activity extending into areas exposed to natural perils. For example, storm-prone coastlines have been opened up for property development (Swiss Re, 2005a).

The nature of terrorism losses is such that, although included in the Swiss Re figures above, it is useful to document them separately.

The terrorist attacks of 9 September 2001 are estimated to have resulted in total insured losses of about \$40 billion (Hartwig, 2002),

although there is inevitably uncertainty about this figure. Marsaud (2002) estimated that European insurers and reinsurers would pay about 50% of the final cost.

Environmental and other liabilities

The threat to insurers in Europe from asbestos claims has increased following some legal rulings and increasing recognition that there will be substantial deaths from mesothelioma (Santoni, 2003). There is concern that claims may escalate, as they have done in the US, where asbestos claims are estimated to exceed the September 11 losses: perhaps \$55-65 billion (Arcadia, 2003, quoting Tillinghast Towers-Perrin). The same source suggested environmental liabilities of \$30-40 billion. Some analysts have suggested that some insurers may have been significantly under-reserved. It is still difficult to estimate what the final claims will be.

Lowe et al. (2004) estimated that asbestos-related costs in the UK would cost £8-20 billion, with the insurance industry bearing half this cost (£4-10 billion). The majority of this would arise from mesothelioma. Insurers' precise liabilities will be affected by a number of cases that will decide legal liability: this legal risk can be classified as operational risk.

Insurers also need to face the threat of epidemics. The threat of Severe Acute Respiratory Syndrome (SARS) has, to date, been modest. However, a current worry is the potential for a pandemic arising from a mutation of the avian flu virus so that it is transmittable between humans. This would have widespread effects, not only on individuals suffering illness and death, but also with massive consequences for businesses and the economy.

Pensions

Mortality rates among the elderly have been falling significantly in many countries. The result is that life insurers have had to increase the value attributed to their liabilities on annuity policies, in some cases significantly. A general improvement in longevity is a systematic risk that is causing concern (CEIOPS, 2005a) and has proved hard to hedge, although there is some limited offset if life insurers also have assurance policies on lives where mortality is also improving.

1.5.2 Challenges for insurers – asset management

Bond markets

The reduction in interest rates – seen from Table 14 – has had a severe impact on insurance companies with long-term business (Holsboer, 2000). Long-term government bond yields have fallen from about 10% per annum (p.a.) at the beginning of the 1990s to below 5% p.a. today. Liabilities for guaranteed benefits have therefore increased substantially and insurers have not always invested in suitable matching assets. Several life insurers have issued products in the past where benefits to policyholders were based on overly optimistic interest rate assumptions. The reduction in interest rates has also hit general insurers as their investment income has been reduced. CEIOPS (2005a) highlights the concerns arising from the low yield environment.

Table 14. Government bond yields, % (10-year bonds)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Euro	8.18	8.73	7.23	5.99	4.71	4.66	5.44	5.03	4.92	4.16	4.14	3.44
US	7.21	6.69	6.54	6.45	5.33	5.64	6.03	5.01	4.60	4.00	4.26	4.28
Japan	4.24	3.32	3.03	2.15	1.30	1.75	1.76	1.34	1.27	0.99	1.50	1.39

Source: European Central Bank, Monthly Bulletin (various issues).

The lower interest rates may also have led to a ‘search for yield’, where financial institutions and investors seek to move from safe to riskier assets in an attempt to boost flagging investment returns (Bank of England, 2003). This highlights the need for insurers to have appropriate risk management practices to avoid undue dangers, especially given that some corporate bonds have been hit by corporate failures, notably Enron.

Equity markets

Investors had become accustomed to high returns from equities and the severe bear market of 2000-03 came as a shock. There has been some recovery in share prices since 2003, as seen in Table 15. Risks relating to equity markets remain a major concern, however (CEIOPS, 2005a).

Table 15. Share price indices 1998-2005

	1998	1999	2000	2001	2002	2003	2004	2005
Euro ^a	280.5	325.8	423.9	336.3	260.0	213.3	251.1	293.8
US ^b	1085.3	1327.8	1426.7	1193.8	995.4	964.9	1131.1	1207.4
Japan ^c	15338	16830	17163	12115	10119	9313	11181	12421

^a Dow Jones EURO STOXX Broad.

^b Standard & Poor's 500.

^c Nikkei 225.

Source: European Central Bank, Monthly Bulletin (various issues).

Where life insurers hold equities to match unit-linked liabilities, the assets and liabilities will move together, although firms will be worse off as a decline in share values reduces the value of funds under management and hence the value of insurers' income as related to fund size.

Where insurers have chosen equities although they do not match liabilities, the mismatching risks have been exposed as equity values have fallen. In the case of participating life insurance, the reductions in asset values have come at the very time that the value of guaranteed liabilities has risen as a result of the fall in interest rates. Hence solvency margins have fallen sharply.

Some insurers have surplus assets in equities. This is an investment risk that corresponds to shareholders' other equity investments but it again means that solvency margins have fallen.

1.5.3 Challenges for regulators

Higher claims and lower investment returns have thrown down challenges for insurers, such as to review amounts of premiums to ensure that they reflect new conditions; review claim provisions that would otherwise be inadequate; check the security of re-insurers; and, overall, ensure that they have adequate capital to continue operations.

Not all insurers have succeeded. Within the EU, CEIOPS (2005a) noted 48 failures of insurers in 2001-04 (31 non-life, 14 life, 3 combined). In 14 cases, under-pricing or mis-pricing was a relevant factor (especially for non-life business) and in 14 cases investment depreciation was relevant (especially important for life business). There were also 153 near-failures (problems that could have led to failure).

Insurers' problems impact on regulators, who need to be more careful in monitoring solvency and ensuring that policyholders are protected when insurers' solvency levels are low. In particular, they need to:

- check the basis used for the valuation of insurers' assets in regulatory reporting, noting that historic cost is no longer as prudent as it was,
- ensure that there are appropriate mechanisms in place to monitor the adequacy of claim provisions and

- investigate whether the rules on minimum solvency that have operated in the past need to be revised.

In a relatively low-solvency environment, regulators also need to consider other elements of the regulatory framework, such as what they require insurers to do to manage risk and at what trigger points they should intervene. Regulators also need to consider what insurers should disclose to policyholders about their financial conditions and risks, given that solvency can no longer be taken for granted (O'Brien, 2003). These are among the issues that the EU is considering in the Solvency II project.

2. Global regulatory developments

A sound regulatory, supervisory and accountancy system is necessary to maintain efficient, safe, fair and stable insurance markets and to promote growth and competition in the sector. This chapter sets out the various international initiatives taken so far in the area of insurance regulation and supervision while focusing on the ongoing work of the International Association of Insurance Supervisors (IAIS) and the International Accounting Standards Board (IASB).

2.1 The international capital adequacy and solvency principles

The International Association of Insurance Supervisors²⁶ (IAIS) performs a similar role as the Basel Committee for Banking Supervision does for banks. It aims to ensure improved supervision of the insurance industry on a domestic and at an international level in order to maintain efficient, fair, safe and stable insurance markets for the benefit and protection of policyholders. It also aims to promote the development of well-regulated insurance markets and contribute to global financial stability.

To pursue its objectives, the IAIS has developed a range of principles, standards and guidance that are fundamental to effective insurance supervision. Despite its progress in recent years and its present far-reaching work plan, the IAIS has not yet produced a global solvency framework to regulate insurance and re-insurance companies.

In this section, we briefly review and discuss the main past and ongoing IAIS initiatives on capital adequacy and solvency for insurers and on credit risk transfer.

Insurance solvency takes a central position in insurance supervision. In 2002, the IAIS produced capital and solvency principles (IAIS, 2002) for

²⁶ The IAIS was established in 1994. Its members are insurance regulators and supervisors from more than 100 jurisdictions.

insurers. These principles are designed to serve as a basis for solvency regimes, are applicable to all insurance companies and are relevant for evaluating the solvency of life and non-life insurance undertakings. These principles mainly relate to the adequacy of technical provisions and the safety of assets in insurance companies. In total, 14 principles were introduced (Annex 4).

In October 2003, the IAIS produced a document (IAIS, 2003a) that serves as a basic benchmark for insurance supervisors in all jurisdictions. In particular, Insurance Core Principle (ICP) 23 (reproduced in Annex 4), which relates to capital adequacy and solvency, provides a range of criteria that should apply to a solvency regime.

Despite serving as a basis for the assessment of insurer solvency, the 14 IAIS solvency high-level principles together with the relevant Insurance Core Principles were insufficient to be recognised as a globally applicable framework to the financial components of insurance supervision and in particular to the assessment of insurer solvency.

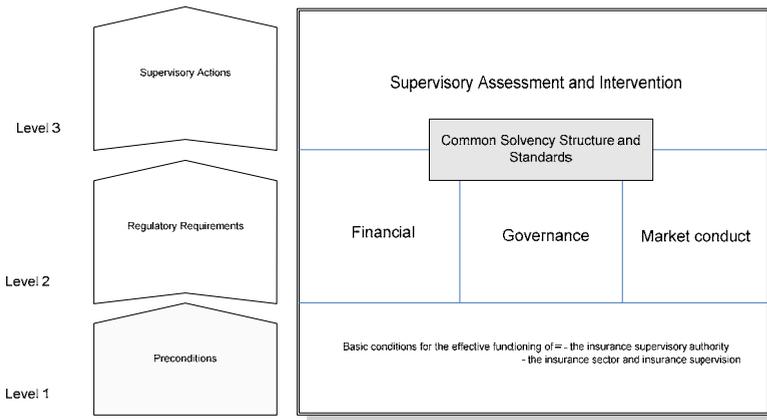
Aware of the limitations of the principles, the IAIS members recently (in October 2005) approved a new policy paper (IAIS, 2005a) that describes the rationale and contents of a framework for insurance supervision.

The core objective is to improve supervision of the insurance industry for the benefit and protection of policyholders by:

- assisting both industry and the insurance supervisory community in the determination and assessment of the risk and solvency position of insurers, reinsurers and financial groups;
- serving to enhance the transparency and comparability of insurers worldwide, to the benefit of consumers, the industry, investors and other interested parties;
- strengthening insurance market stability;
- supporting a level playing field;
- offering further opportunities for international cooperation;
- reducing opportunities for unwanted regulatory arbitrage;
- increasing public confidence in the insurance sector and
- enabling a more effective use of resources by industry and the supervisory community.

A common structure and standards for the assessment of insurer solvency are intended to support transparency and convergence. The first step is to improve the transparency of the existing solvency regimes and of the financial condition of individual insurers. And a next step is to work towards convergence of the solvency regimes. The common structure and standards for the assessment of insurer solvency is illustrated in Figure 6.

Figure 6. The common solvency structure and standards within the framework for insurance supervision



According to this structure and building on the aspects identified and set out in the Insurance Core Principles, the Framework for Insurance Supervision consists of financial,²⁷ governance²⁸ and market conduct²⁹

²⁷ This pertains to the field of solvency and capital adequacy, valuation and adequacy of technical provisions, forms of capital, investments and financial reporting and disclosure.

²⁸ This refers to governance processes and controls in areas such as the board, directors, senior management and other organisational aspects, fit and proper testing of directors and management, administrative organisation, and internal controls, including risk management, compliance with legislative requirements, shareholder relationships and the governance risks posed by group structures.

issues. It also examines three levels of aspects in relation to these issues, reflecting three different responsibilities: preconditions for effective insurance supervision,³⁰ regulatory requirements³¹ and supervisory actions.³²

At first sight, the structure of the IAIS framework for insurance supervision seems different from the Basel II framework for banks, tailored by the Basel Committee. Indeed, in the former, all regulatory requirements, including those addressing public disclosure, appear at the same level. Such disclosure requirements related to financial, governance and market conduct blocks would form part of the supervisory assessment. The framework for insurance supervision is based on the view that insurance supervisors have the role of assessing whether insurers meet their disclosure requirements both to the market and to policyholders. Conversely, in the Basel framework, market discipline is not considered in the supervisory review, a different approach that relies overly on the role of the market.

The IAIS took the view that the insurance supervision framework is compatible with the three mutually reinforcing pillar approach of Basel II,

²⁹ This includes dealing with customers in the sale and handling of insurance policies and also the integrity of conduct of an insurer as an institutional investor. It also includes disclosure of relevant information both to the market and to policyholders.

³⁰ First, the need for a policy and an institutional and legal framework for the financial sector and its supervision, a well developed and effective financial market structure and efficient financial markets with relevant information available. Second, effective insurance supervision can only be implemented if there is a set of clearly defined principles, supervisory objectives and the existence of a supervisory authority (or authorities) that has adequate powers, legal protection and financial resources to exercise its functions and powers, is operationally independent, notably from political authorities and from insurers, is accountable and transparent in the exercise of its functions and powers, hires, trains and maintains sufficient staff with high professional standards and treats confidential information appropriately.

³¹ These requirements should be met by the insurer.

³² The adherence by insurers to all requirements needs to be subject to supervisory review.

also put forward by the International Actuarial Association³³ (IAA). Nevertheless, the reasons for this compatibility were not examined at all.

Moreover, it is very likely that insurance regulators are not comfortable being continuously compared to their banking counterparts. This could be rightly justified on the grounds that banks and insurance businesses are fundamentally different. However, the recent trends towards conglomeration, in particular in Europe and to a lesser extent in the US, suggest the need for a consistent regulatory approach for banks and insurance companies to avoid arbitrage in this respect.

The 'cornerstone paper' (IAIS, 2005b), also approved in October 2005, formalises a more precise view of a number of key elements intended to act as a conceptual guide for further work towards developing a common structure and common standards for the assessment of insurer solvency and offers an assessment of the financial position of an insurer from the perspective of insurance supervision (see Figure 7).

According to the IAIS cornerstone paper, the cornerstones for future work on regulatory financial requirements are:

Cornerstone I emphasises the need for an insurer to meet its liabilities under all reasonably foreseeable circumstances, in the short- and long-term;

Cornerstone II outlines that, in order to achieve that aim, there should be clarity on the main risk factors an insurer faces, their possible impact, and how these risks are reflected in the regulatory financial requirements;

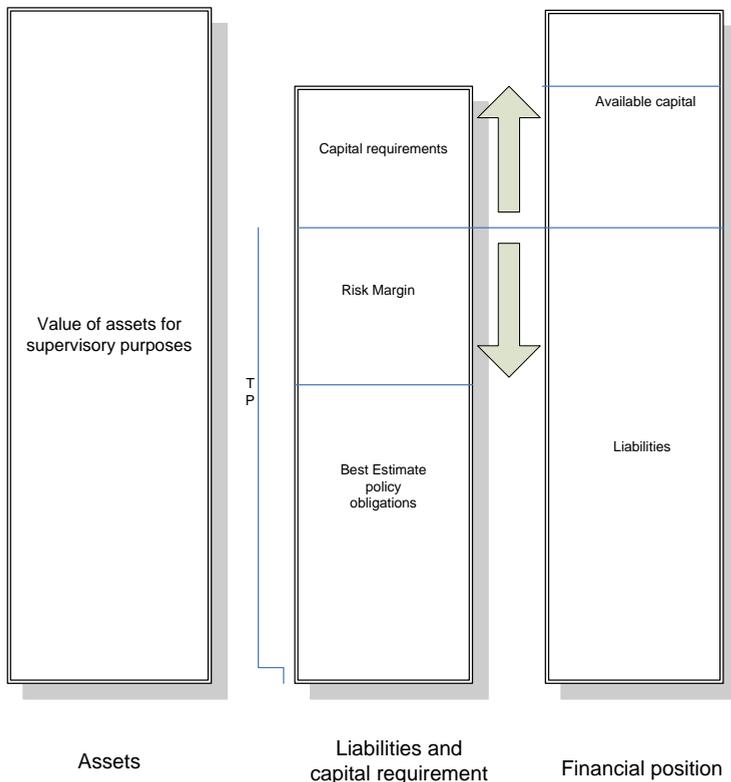
Cornerstone III stresses the need for explicit prudence in the regulatory financial requirements;

Cornerstone IV emphasises that, in formulating regulatory financial requirements and undertaking solvency assessment, there is a need to attach appropriate and consistent values to assets and liabilities;

Cornerstone V makes clear that a solvency regime should be specific on the determination of technical provisions;

³³ To do so, acting in support of the IAIS, the Insurance Regulation Committee of the International Actuarial Association (IAA) formed the Insurer Solvency Assessment Working Party chaired by Stuart Wason in early 2002 to prepare a study on the structure for a risk-based solvency assessment system for insurance and to provide a best-practices approach available to all supervisors (see IAA, 2003; for more details on the findings of this study, see Annex 5).

Figure 7. Supervisory assessment of the financial position of an insurer



Note: TP = technical provisions.

Cornerstone VI outlines the need for a clear understanding by both the insurer and the supervisory authority of the expected cost of meeting the insurer's liabilities and the main determining factors thereof. This is a prerequisite to attaining insight into the level of prudence of the insurer's solvency position and of the technical provisions;

Cornerstone VII indicates that there is a further need to define a number of control levels for assessing the financial condition of an insurer; and

Cornerstone VIII acknowledges that the structure of the insurance markets may call for a menu of approaches for the assessment of insurer solvency.

Following these two initiatives by the IAIS, a separate 'roadmap' (IAIS, 2006), which lays the foundations of a proposal for a work plan for the development of a common structure and common standards for the assessment of insurer solvency, was published in February 2006. The next step envisioned by the IAIS is to complete the IAIS common structure for the assessment of insurer solvency, which will outline the details of the IAIS philosophy on the assessment of insurer solvency, in the course of 2006. The forthcoming paper, called 'structure paper'³⁴ is intended to provide a coherent and systematic analysis of the main aspects and elements of the regulatory financial requirements, focusing on the possible respective roles of technical provisions and capital within a risk sensitive solvency system. This paper will also indicate any need for further standards and guidance papers. The IAIS work will be ongoing until mid-2007. In parallel, the IAIS is seeking the involvement of the IAA to undertake a study on the best practice for the determination of the technical provisions and capital requirements and the assessment of adequacy, relevance and reliability thereof. The results of the latter study are expected to be released in the course of 2006.

The IAIS ongoing work is organised according to the three main aspects of insurer solvency: the financial block, the governance block and the market conduct block, as set out in Figure 6.

There will be a need for financial standards addressing the four main areas of insurer solvency assessment:

- determination of insurance liabilities and technical provisions;
- determination of capital requirements;
- suitability and valuation of assets for insurers and
- recognition and valuation of forms of capital.

³⁴ The first draft of this paper was meant to have been published and made available for consultation by the end of the first quarter of 2006.

Governance standards will address:

- governance and risk management, including internal control by insurance companies;
- asset-liabilities management by insurers and³⁵
- use and validation of internal models.

The market conduct standards will include issues such as treating customers fairly, reasonable expectations, constructive liabilities and mis-selling. This will give due emphasis to managing the obligations to policyholders which the liability values reflect. Work on this standard will indicate the need for supervisory review to complement qualitative and financial requirements to ensure that all risks are covered and the regime is risk-responsive. Moreover, the critical role of public disclosure in the insurance solvency assessment will be outlined, and where relevant, the standards will include requirements for supervisory reporting and public disclosure.

Aiming at constructing a balanced and solid framework for insurance supervision, the IAIS has organised the range of principles, standards and guidance papers³⁶ developed since its inception according to the main aspects distinguished above. Gathering the previously disparate IAIS initiatives in a defined structure is already a step forward towards the construction of a solid framework for insurance supervision. However, no distinction is made according to the upper two levels of the framework, regulatory requirements and supervisory assessment, as many of the IAIS papers contain both aspects.

The IAIS has also focused on credit risk transfer between insurance, banking and other financial sectors. The IAIS paper (IAIS, 2003b) presented to the Financial Stability Forum on 24-25 March 2003 in Berlin focused on the following points:

- *The use and extent of credit risk transfer.* The paper concluded that it is very difficult to gather definitive global data on credit risk transfer

³⁵ The IAIS work on this is already progressing well.

³⁶ See Annex I, pp. 13-14, a "Roadmap for a common structure and common standards for the assessment of insurer solvency" (IAIS, 2006).

transactions, but the information already available showed that there has been a substantial increase in credit risk transfer activities.³⁷

- *Issues for financial stability.* Credit risk transfers potentially provide a stabilising mechanism enabling risks to be spread among a greater pool of players. The paper highlights that regulatory arbitrage does not appear to be the main driver for credit risk transfer activities but that they are driven more by general commercial reasons such as insurers seeking increased yields and diversification of portfolios. But still more consistent data are needed to make definitive judgements as to the risks insurers and re-insurers are exposed to in this area.
- *Issues for risk management within insurance firms.* The paper points out that credit risk transfer straddles both the investment and the underwriting activities of insurers and raises potentially difficult issues for the implementation of risk management systems within insurance firms. Firms need to acquire new skills and techniques before they participate in the credit risk transfer market.
- *Supervisory and regulatory issues.* The IAIS is calling for regulatory standards discourage regulatory arbitrage. Regulatory frameworks should ideally result in similar capital charges and risk management requirements for the same risks in the different financial sectors. Furthermore, supervisory staff need to have sufficient skills and tools to assess firms' risk management systems and controls in the area of credit risk transfer.

A number of issues to be looked into further were identified. The most challenging issue is to close gaps in the regulation of complex products. Another very important issue directly related to credit transfer market is the regulation of re-insurance. A third issue is consolidated supervision, particularly to avoid any regulatory arbitrage.

Since then, the IAIS has produced new guidance materials on investment risk management (IAIS, 2004); and on risk transfer, disclosure and analysis of finite reinsurance (IAIS, 2005c); new standards on the supervision of re-insurers (IAIS, 2003c) and on disclosures concerning

³⁷ The global market for credit derivatives amounted to almost \$2 trillion notional outstanding in 2002, with a notable high market share of insurance companies as credit protection sellers (see British Bankers Association, 2002).

investment risks and performance for insurers and re-insurers (IAIS, 2005d).

Building on these facts, there is a need to increase communication, transparency, cooperation and coordination between the stakeholders involved in the production of the new global solvency framework to avoid duplication of rules and high costs for the regulators and the regulated. This would also ensure the stability of the regulatory framework for insurance and reinsurance companies world-wide.

Further, being a leader in this field, the EU needs to continue influencing the IAIS to ensure international regulatory convergence in the field of insurance.

2.2 The link with accounting rules

Insurance regulators wish to monitor the solvency of insurers with a view to protecting policyholders from default. That means examining the insurer's assets and liabilities. However, insurers, like other firms, prepare accounts that contain a valuation of their assets and liabilities. Can the insurance regulator rely on the accounting data for the measurement of assets and liabilities? This could be supplemented by the regulator requiring some additional assets to be held (a minimum solvency margin) and requiring further information such as the sensitivities of assets and liabilities to alternative economic conditions or other specially designed measures of risk.

However, a number of problems with this approach were identified. In particular, there is no common framework for insurers measuring their assets and liabilities, which we refer to in section 2.2.1. The International Accounting Standards Board (IASB) has a project to produce an accounting standard for insurance contracts and we comment on the progress of this in section 2.2.2. In section 2.2.3 we describe some of the accounting approaches currently required by regulators. While acknowledging the insurance regulators' desire to use, as far as they can, the conclusions to be reached by the IASB, there are also some concerns that they may validly lead to different results.

2.2.1 Insurance accounting practices

Insurers use a variety of approaches for valuing assets and liabilities in their accounts. A survey by the international Accounting Standard's

Committee (IASC) Insurance Steering Committee (1999) showed a huge number of methods in use. The EU has an Insurance Accounts Directive, Council Directive 91/674/EEC of 19 December 1991, on the annual accounts and consolidated accounts of insurance undertakings. This permits a number of options: for example, on whether assets should be shown at market value and whether general insurance claims should be discounted in deriving the provisions.

Three general valuation methods for assets are used: historic cost, amortised value (applicable to fixed-interest securities) and market value.

Historic cost is thought of as being objective, prudent and stable. However, the prudence is questionable if market value falls below historic cost. Insurers then have to revert to using market value or perhaps (if permitted) ignore market value if they can make the questionable judgment that the fall in market values is temporary. Furthermore, if an asset is sold with a sizeable capital gain, there is a big jump in asset values at the time of sale, hence the stability is lost.

There are other objections to the use of historic cost (IASC Insurance Steering Committee, 1999). In particular, it lacks consistency: the value placed on an asset depends on when it was bought, so two insurers with the same asset can place different values on it. It is not transparent, as readers of accounts cannot interpret aggregate asset values when there are a variety of asset purchase dates. It is therefore dangerous for regulators to rely on historic cost for measuring solvency. And it is unfair to expect policyholders (or intermediaries acting on their behalf) to make a choice among insurers when their solvency is assessed using historic cost.

The use of amortised values is objective and relatively straightforward, though only applicable to redeemable fixed-interest securities, and does not reflect changes in credit risk.

Market value has been becoming more common in accounts and, in practice, the valuation process does not provide too many problems for insurers. Some may regard market values as ephemeral, as borne out by large swings in market values. On the other hand, market value is very relevant to management actions and policyholder benefits, and it therefore makes sense for this to be the basis of valuation of assets. Consider, for example, the following:

- The answer to the question, "What amount is available to pay claims?", cannot be anything other than market values.

- Insurers may be running risks by mismatching assets and liabilities; only by understanding the market value of assets can we understand the risks being run.
- Changes in market conditions are what have led insurers to change their premium rates and, in the case of life insurers, to alter surrender values or bonuses on participating contracts. We therefore deduce that it is market conditions that are relevant to understanding the finances of the business.

In any event historic cost is market value. It is the amount paid on the market to buy the asset, only it is the market price at the date of purchase. If there are fundamental problems with the relevance and reliability of market values, they also largely apply to historic cost as well. So we are left with the question – is it better to use the current market value of an asset, or an out-of-date market value (i.e. historic cost)? It is not surprising that market values have been increasingly accepted in accounts.

However, it is more difficult to value insurance liabilities. They are uncertain and often are not payable for some time, and they have no readily observable market value (in the absence of a liquid market). These factors have hindered development of an international accounting standard for insurance, but they are now being addressed by the International Accounting Standards Board (IASB).

2.2.2 The IASB project

In 1997, the International Accounting Standards Committee (IASC, the predecessor of the IASB) established a Steering Committee to start work on a project that was intended to deliver a new accounting standard for insurance contracts.

The role of the IASB is to develop high-quality accounting standards, requiring high-quality, transparent and comparable information in financial statements and other financial reporting to help participants in the world's capital markets and other users make economic decisions.

The committee published an issues paper in 1999, and then developed a draft Statement of Principles. A standard that resolved all the questions, however, appeared some time off. Yet, by 2005, many insurers were required to issue accounts using IFRS (International Financial Reporting Standards) as a result of new rules for listed companies in the EU and elsewhere requiring compliance with IFRS. Some standard that

covered insurance was therefore essential. The outcome was that IASB issued IFRS4 in 2004, but this largely allows insurers to continue using existing practices, with the following exceptions:

- catastrophe and equalisation provisions cannot be treated as liabilities,
- liabilities have to be checked for their adequacy, using current estimates of future cashflows and
- more extensive disclosures are required.

IASB has a second phase of its project that aims to resolve the remaining (and more difficult) issues, including determining what is an acceptable basis for calculating an insurer's liabilities. At present, many firms use a basis that errs on the side of prudence, which may reflect a tradition with which insurance regulators have been comfortable but which is questionable for accounts that are meant to be unbiased. IFRS4 acknowledged this to be the case, but set out that where an insurer uses a practice in calculating liabilities that uses 'excessive prudence', that can continue for the time being.

IASB is examining a number of options but, in particular, the use of 'fair value', defined in IFRS4 as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

Dickinson & Liedtke (2004) reported the concerns that some EU insurers have about fair value. It is largely untested and, in the absence of a liquid market for trading liabilities, is subjective and difficult to implement. It is based on the notion of transferring liabilities to a third party whereas, in practice, we expect the liabilities to be settled by the insurer. There are fears that the accounts would be less transparent and it would be harder to provide earnings forecasts. It was thought that the increased volatility of accounting results could mislead and may increase the cost of capital. Firms were also concerned that a full fair value reporting system would significantly change business strategies, corporate policies and systems over time in a way that would reduce competitiveness.

However, IASB (2004) did indicate a liking for fair values. Indeed, if assets are at fair value, it is logical to think that liabilities should be at fair value, too. However, that is perhaps too big a step when fair value is not only difficult to calculate for non-traded insurance liabilities but is also subject to a number of different interpretations as to its meaning. Perhaps it

is simplest to think in terms of some form of value that reflects current rather than historic conditions, as we want the assets and liabilities to be meaningful in today's balance sheet. We can then think through what form of current value calculation is appropriate.

IASB has established an Insurance Working Group, which is carrying on investigations with a view to concluding the phase II work. The group is considering a number of options for the calculation of liabilities. These include, in the case of life insurance, what is referred to as current value, of which there are two variants. Current entry value is the amount that the insurer would charge a policyholder to secure the benefits under the contract, whereas current exit value is the amount an insurer would have to pay another party to take over its obligations. There are advantages and disadvantages of both approaches. Entry value is not easily observable. Exit value would, in theory, be lower, and might lead to recognising profits that were more properly attributed to later periods. For non-life insurance, the discussion favours discounting estimates of claims payable in the future when deriving the provisions. In both life and non-life insurance, the liabilities would exceed the value of future cashflows discounted at a risk-free rate, there being some adjustment for risk: if the liability measurement was intended to be an estimate of a market value, the adjustment would be a 'market value margin' (MVM), i.e. an estimate of what market participants would require to compensate them for taking on uncertain liabilities. How risk adjustments or MVMs would be calculated is, however, a difficult issue. Actuarial modelling has advanced significantly and may contribute to a solution. No model is perfect, however, and there may be particular difficulties for small and medium-sized insurers for whom implementing models may be difficult.

2.2.3 Accounting and insurance regulators

The Solvency II project is keeping a close watch on IASB developments, although it may not come to the same conclusion. However, it is important that the approaches have a degree of consistency and that, if there are two sets of figures (for accounts and for regulators), insurers can use one system to produce both.

Insurance regulators may, for example, wish to use a lower value of assets than in the accounts, bearing in mind their responsibilities to protect policyholders. They may wish to see a lower (or nil) value given to assets that are regarded as insecure, such as amounts due from agents, or where

there is a concentration of assets (e.g. of particular shares or properties) or of counterparty risk.

Regulators should be concerned by inaccuracies in insurers' calculations of their liabilities. Empirical studies into US general insurers' provisions (Petroni, 1992; Beaver & McNichols, 1998; Gaver & Paterson, 1999) have found insurers understating liabilities to improve solvency, overstating to reduce tax payments and making changes in order to smooth results. The investigation into Australia's failed general insurer HIH found, in relation to the assessment of liabilities, "actuarial analyses infected by optimism" (HIH Royal Commission, 2003). In the UK, Diacon et al. (2003) found that general insurers, on average, had liabilities higher than the (discounted) value of the claims they subsequently paid, implying an element of prudence that may be a result of the wording of the regulations governing the calculations. On the other hand, the Penrose report (2004) produced for the UK government found that Equitable Life reported liabilities of a lower value than best practice would have produced. Overall, these concerns may lead the regulator to say that the potential for management manipulation is another reason to require additional elements of prudence in valuing liabilities.

Regulators might, in principle, favour using fair values. If an insurer is solvent on a fair value basis, then surely it has enough assets so that another party could take over its liabilities, hence providing reassurance to policyholders. However, there are a number of problems (Sheldon & Smith, 2004). For example, the amount needed by the market to take over liabilities may increase just at the time it is needed, say in the event that a 'mortality shock' causes widespread financial distress in the insurance and reinsurance industry. Third parties may need additional margins to reflect the institutional costs of bearing risks. Another problem of fair value is that it incorporates credit risk, i.e. if an insurer has a higher likelihood of default, its liabilities are given lower value. That appears unacceptable for a regulator who is looking to establish whether the assets are adequate to pay all policyholders without default (CEIOPS, 2005a). Also, the fair value of liabilities includes a provision for expenses, which could be the expenses that a third party would incur. Again, the regulator would be concerned not to assume lower expenses than the insurer was actually incurring.

If regulatory valuations are to be different from those in the accounts, this could be implemented in a number of ways:

- Regulatory values could be prescribed with different rules that separately reflect the regulators' preferences (this is unacceptable if it fails to link the two sets of figures).
- Regulatory values are prescribed as in the accounts but with specified adjustments shown separately.
- Regulatory values are as in the accounts, but the insurer's minimum solvency margin depends on these adjustments, e.g. if it has insecure assets or especially uncertain liabilities.

Regulators have different needs from accounting standard-setters and they may require different valuations. However, it is important that insurers are able to use one system to produce all the relevant figures. They should also be able to reconcile and disclose differences in the figures in a transparent manner. We should then have insurers providing data to the market in a way that avoids confusion and which takes into account the need for regulations to refrain from imposing undue costs, a consideration that regulators are alert to.

There are two stumbling blocks, however. First, IASB is likely to take some time in deciding what its phase II standard will be. The EU has little choice but to guess the likely outcome if it is to implement Solvency II as planned. Second, phase II will not address two aspects that are important to insurers and insurance regulators:

- Where an insurer has contracts that contain insufficient risk transfer to meet the definition of an insurance contract under IFRS4 (e.g. unit-linked pensions policies without guarantees), the liability is calculated in accordance with the rules for financial instruments, and this may not be fair value.
- Similarly, some assets valued as financial instruments may be at amortised rather than fair value.

We believe that there is merit in using some form of current values for valuing insurers' assets and liabilities, and it is logical for this to be used in both insurers' accounts and in the valuation they provide for regulators. However, Europe needs to continue close liaison with the IASB, not only on the standard for insurance contracts but also more generally on the rules for financial instruments.

3. Towards a new European regulatory and supervisory framework

Substantial progress has been made in the Financial Services Action Plan (FSAP) since its adoption in 1999, in its efforts to fulfil its three strategic objectives: completing a single wholesale market by the progressive removal of outstanding barriers to an integrated financial services market; developing an open and secure market for retail financial services, removing regulatory and administrative barriers in order to help consumers; and ensuring the continued stability of EU financial markets by installing state-of-the-art supervisory practices in order to contain systemic or institutional risk (e.g. capital adequacy, solvency margins for insurance) and take account of changing market realities (where institutions are organised on a pan-European, cross-sectoral basis).

Regarding insurance measures, the current solvency requirements for insurance undertakings in the EU appear to have worked reasonably well for a number of years, increasing the protection offered to consumers. However, the EU seems to have failed to create a single market for insurance owing to the divergence of member states' implementations of the directive. Moreover, recent developments have substantially affected the insurance market and brought new challenges to policy-makers, pressing them to modernise the current rules. These developments have included innovations in the instruments used in financial markets (e.g. credit derivatives) as well as further refinements in measuring and managing risk. Consequently, a review of the solvency requirements for insurers was a necessity in an era of modern risk management.

The European Commission is in the process of reviewing the solvency regulation for insurance companies, known as Solvency II. This chapter begins with a brief description of Solvency I and its weaknesses. It then reviews Solvency II developments in recent years and discusses several ongoing issues addressed in the process. The last section will give an assessment of the current regulatory and supervisory framework for insurance groups and financial conglomerates.

3.1 Solvency I and its weaknesses

The EU's solvency regime dates from the first insurance directives (Establishment Directives), in 1973 (non-life) and 1979 (life), which are now referred to as the Solvency I regime. The main objectives of the regulation are to protect policyholders and to ensure a level playing field between insurance undertakings in the EU.

The rules covered the way in which an insurer's assets and liabilities are valued for this purpose (which may differ from the way they are included in the insurer's accounts) and the minimum solvency requirement.

The provisions may be summarised as follows:

- Assets are valued either at historic cost (or market value if lower) or market value – countries decide which approach to follow.
- Non-life liabilities are valued as the future estimated outgoing cashflows (with some restricted discounting permitted).
- Life liabilities are valued as the future cashflows discounted either at 60% of current bond yields or at a rate not higher than the yield being earned on the assets.
- There is discretion on whether life insurers can use a process known as Zillmerisation³⁸ to reduce the impact of high acquisition costs in calculating their liabilities.
- A minimum excess of assets over liabilities (minimum solvency margin, MSM) being set by 'fixed ratios'.

Comment [r2]: The definition is in the glossary, delete it in footnote

The MSM calculation using fixed ratios was, in summary:

- For life business: 4% of liabilities (but 0 or 1% applied if there were no or few guarantees in the contracts written) plus 0.3% of the sum at risk (i.e. amount payable on death minus the provision held), reduced for short-term term assurances.
- For non-life business, the greater of:
 - 18% of claims up to €7 million, plus 16% of claims above (claims being averaged over 3 or 7 years); and

³⁸ Zillmerisation is an actuarial technique that reduces the liabilities of an insurer to reflect the acquisition expenses that have been incurred.

- 26% of premiums up to €10 million, plus 23% of premiums above.
- Both subject to a minimum capital requirement (minimum guarantee fund).

The need to review the solvency rules was apparent when the third-generation directives were drawn up in 1992, and these tasked the European Commission with reviewing the solvency requirements. The review began in 1994, and a report was prepared under the chairmanship of Dr Helmut Müller (1997). This made a number of recommendations, including an increase in the minimum guarantee fund (which was implemented), and for the solvency margin in non-life insurance to reflect not only claims and premiums but also provisions (this was not adopted).

It was acknowledged that a more fundamental review was needed (Dickinson et al., 2001). The outcome was that the EU was entering the 21st century with an insurance solvency regime designed in the 1970s. This was despite the changes that have taken place in insurance and in financial markets, and the advances in financial economics, actuarial science and modelling technology, which highlight how out-of-date Solvency I is. The investigations intended to put in place a Solvency II regime have now been gathering momentum.

While we have referred to Solvency I, there is no one Solvency I: the directives deliberately allowed countries to implement insurance regulation in different ways. If the IASB is looking to harmonise insurers' accounts worldwide, it looks totally unsatisfactory for the EU to allow different regulatory regimes within its borders. In particular, we see some countries focusing on historic cost of assets, others on market value. Historic cost was thought to be prudent, but is less so when asset values fall (as they have done). Liabilities are intended to be established using prudent assumptions, but this leads to the danger of using assumptions that are thought to be prudent but are not tested against current (and perhaps deteriorating) conditions, so that the prudence has disappeared – without this being appreciated. There are therefore strong reasons for carrying out calculations on a basis that is realistic and transparent, and then building in specific margins for prudence when required.

The EU does have a uniform approach to determining the minimum solvency margin, using a fixed ratios approach, where the MSM depends on a factor multiplied by a proxy for a measure of risk exposure. This is

simple and objective. However, it appears arbitrary, and according to KPMG (2002), there are other problems, in particular:

- It does not consider risks fully or in detail, and using premiums and liabilities for determining the MSM may create distortions and gives incentives for under-provisioning.
- Allowances for hedging and reinsurance are inadequate.
- There is no credit for insurers who have already allowed for uncertainty by establishing higher liabilities.

Dickinson et al. (2001) also listed a number of criticisms relating to non-life business, including:

- There is no reasonable allowance for investment risk, a weakness that has become more important as non-life insurers have increased the riskiness of their investments.
- There are insufficient controls on the credit risk of reinsurance.
- The additional risks of long-tailed liability insurance are inadequately reflected in the formulae.

In life insurance business, the failure to reflect risks in detail also applies, with the lack of consideration of asset risks being a major criticism. Furthermore, the standard approach taken to calculate liabilities is the net premium valuation method. While this had been put forward as an appropriate approach for solvency regulation (Skerman, 1966), it has been roundly criticised as unsuitable for changing financial conditions, especially where life insurers' assets included equities, and for not reflecting the reality of how life insurers managed their business (Scott et al., 1996). Although there was an emphasis on prudence, it is difficult to work out what the element of prudence is in the absence of the true 'realistic' information.

There are also dangers if the outcome of the prudence principle is that large amounts of 'spare' capital need to be retained. This may lead to capital being used inefficiently, perhaps wasted by management and/or it may be anti-competitive.

Life business has also become more complex, including the use of new types of new product designs involving new risks (such as long-term care), new financial instruments that can offer protection to insurers but can also lead to problems and new forms of financial engineering. The world in which Solvency I was designed was quite different.

We can also see that Solvency I is backward-looking, using past data in conjunction with historic factors to (inadequately) reflect risk. This may offer little insight into the future viability of a business in a more rapidly changing environment than was previously the case.

The current solvency regime can also lead to the problem of double gearing, where capital is counted twice when calculating underwriting capacity: one for the parent company and one for the subsidiary.

The motivation for Solvency II does not rest merely on the weaknesses of Solvency I. It also recognises that insurers (life and non-life) have improved the techniques used to manage their business. Indeed, such improvements have been a prerequisite of some of the changes that have taken place in the market. In particular, firms produce more detailed management information more frequently than previously. With such improved information available, there is no need to restrict regulation to broad approximations. Insurers have also introduced more refined models of their business, in many cases including stochastic methods. If insurers are using models to run their business, including the production of future projections of the firm's financial position, regulators need to consider how they can take advantage of these developments.

The alternatives to fixed ratios (KPMG, 2002) use the advances that have taken place in measuring and modelling risk to produce a more sophisticated and risk-sensitive regime, and a brief description of them will highlight their advantages compared to the fixed ratios regime, although it is fair to comment that each has some disadvantages as well:

- Risk-based capital (RBC) has been used in the US since 1993 (life), 1994 (non-life), and uses a variety of measures of exposure to which risk factors are applied; the formulae also takes account of off-balance sheet risk and the correlations between risk types. While RBC is risk-sensitive and considered an enhancement to the fixed-ratio approach, it is not dynamic and forward-looking.
- Scenario-based models analyse the impact of specific risk scenarios, and an insurer's capital requirement is based on the worst-case outcome as applied to the firm's financial model. The capital definition is dependent on the scenarios set and the results may be thought to be arbitrary. However, the use of scenarios allows for a straightforward and intuitive definition of results, and the fact that most firms use models that are dynamic and forward-looking is a benefit.

- Probabilistic models go one step further: they attempt to cover the whole range of risk variables, giving a full probability distribution of possible outcomes. The capital required is that needed to maintain solvency with some specified probability over some given period. Such an approach considers the interactions between risks and uses dynamic forward-looking models. However, the models require inputs that are difficult to obtain, and this leads to subjectivity, while the outcome in terms of required capital can be difficult to understand.

The deficiencies of Solvency I can also be seen if we adopt the framework (as the Solvency II study has) of Basle II as applied to banks. This views regulation in three parts:

- Pillar I: quantitative assessment of capital,
- Pillar II: supervisory assessment and
- Pillar III: supervisory reporting and public disclosure.

Solvency I is largely concerned with what we now call Pillar I. However, the regulatory regime needs to focus more on the qualitative matters covered under the second and third pillars. In particular, we see the progress made by IAIS in developing its core principles, first issued in 1999. These call on regulators to, for example, ensure that insurers establish sound risk management and corporate governance policies and practices, issues that were less high-profile when the Solvency I directives were developed in the 1970s. It is sensible to take on board the broad Basel approach of three pillars, which recognises that in addition to reviewing how the required quantity of capital is determined, the regulators can benefit from having other tools in their toolkit.

3.2 The new solvency rules for European insurers

At the beginning of 2000, the Commission services together with member states initiated a fundamental and wide-ranging review of the overall financial position of insurance undertakings, called the Solvency II project.

One of the objectives of the project is to establish a solvency system that is more appropriate to the real risks facing the industry by avoiding cross-subsidisation and hidden reserves. It also intends to give incentives to

insurance companies to improve their internal risk management and assessment procedures through the enforcement of risk-adequate pricing of insurance products,³⁹ while taking into account the different needs for harmonisation not only at European and international levels, but also across the financial sectors.

The ultimate objectives of the new regulation should be to protect policyholders, to ensure harmonisation of the rules at EU level and to ensure a level playing field within the insurance sector and across financial sectors. The last two objectives have not been achieved by the current solvency rules.

The Solvency II project was divided into two phases. The first phase involved the overall design of the system and the second one was oriented to the technical detailed rules filling the structure. The parties involved in the first phase, ranging from the Commission services to the supervisory authorities and the insurance regulatory representatives, have been working together to develop a new design for the insurance framework. Many studies were carried out, such as the KPMG report (2002) and the report on member states' best practices, to enhance the debate towards the completion of the new Solvency II framework.

As a starting point of the process, a complete review of the existing European directives (Solvency I) has been carried out. Aiming to update the Müller report (Müller, 1997), which recognised certain weaknesses in the methodology of the current solvency systems and gave consideration to the need for a more risk-based approach, the Sharma report (Sharma, 2002) of 2002 focused on understanding the solvency risks of insurance firms and how to better monitor firms' risk management. Given the international developments and the progress made in the New Basel Capital Accord, many issues have been addressed, e.g. the lessons from the Basel process, the need for greater consistency and clarity in the measurement of solvency and links with international accountancy standards and market events, the need for more risk sensitive internal models and the impact of the Lamfalussy approach.

At the end of the first phase, it was agreed that the three-pillar approach of Basel II could be used in setting up a comprehensive structure

³⁹ The Sharma report (2002) recommended focussing on better risk management, reviewing and challenging the management of the company.

for the Solvency II framework. The first pillar would cover the quantitative requirements, such as the treatment of provisions, investment rules and capital requirements. The second pillar would focus on the supervisory review process and the third pillar would be dedicated to market discipline.

3.2.1 The general structure of Solvency II

The new solvency system will take the mutually interactive three-pillar structure of Basel II as its starting point:

- Pillar I: financial requirements
- Pillar II: supervisory activities
- Pillar III: supervisory reporting and public disclosure

Pillar I: Financial requirements

In Pillar 1, the new solvency regime contains the technical provisions and two capital requirements with different purposes and calculated differently: the solvency capital requirement (SCR) and the minimum capital requirement (MCR).

The European Commission considers that an increased level of harmonisation for technical provisions is a cornerstone of the new solvency regime. In line with the expected IASB developments, the best estimate of the technical provision will be calculated, topped up with a risk margin. The first quantitative working hypothesis⁴⁰ is that the confidence level of the technical provisions will be set at 75% of the probability distribution.⁴¹ The risk margin will, at a minimum, be equal to half a standard deviation in order to take account of strongly skewed distributions. The characteristics of life and non-life will be examined further when harmonising the rules for the valuation of technical provisions.

The SCR reflects the level of capital that enables an institution to absorb significant unforeseen losses stemming from its exposure to underwriting and other financial risks (such as credit, market, liquidity and operational risks) and that gives reasonable assurance to policyholders and

⁴⁰ The percentage may need to be adjusted based on future impact studies.

⁴¹ This is in line with the Commission's second call for advice in the context of the Solvency II project.

beneficiaries. In the European Commission's view, the parameters of the SCR should be calibrated in such a way that the quantifiable risks to which an institution with a diversifiable portfolio of risk is exposed are taken into account and based on the amount of economic capital that corresponds to a ruin probability of 0.5% (VaR of 99.5%) and a one-year time horizon.⁴² Ruin occurs when the amount of admissible assets is lower than the amount of technical provisions.

Two approaches could be used to calculate the SCR: a standard formula and internal models whose validation is subject to supervisory criteria. The internal model could result in a higher or lower SCR as compared to the amount based on the standard formula, but subject to the floor, which is the MCR.

The standard formula to calculate the SCR can be based on a variety of models, including a factor-based formula, probability distribution-based formula, scenarios or combinations. The suitability of a standard formula that takes into account the characteristics of life, non-life and reinsurance business, and which varies according to the specific sector concerned needs thorough analysis. The characteristics of the standard formula have not yet been agreed.

Internal models could be used instead of the standard formula to derive the SCR if the internal model has been validated for this purpose by the national supervisor. Validation criteria and the validation process to be developed and harmonised have also not yet been agreed. The European Commission may also allow partial use of models, subject to the fulfilment of validation conditions, including compatibility with the standard formula.

The MCR reflects a level of capital below which ultimate supervisory action would be triggered. It will be calculated in a more simple and robust manner than the SCR. Its level will be set once quantitative impact studies have been completed.⁴³ The European Commission's view is that the MCR should be constructed in a straightforward manner, such as under the current Solvency I directives, while maintaining a sufficient level of

⁴² This is also a working hypothesis and the percentage may need to be adjusted based on future impact studies.

⁴³ A post QIS2 consultation paper is intended in late October 2006. Consultation Paper N°14, CEIOPS (2006).

prudence in order to facilitate and stabilise the transition to the new overall solvency system.

The overall capital requirements involve the maintenance of a) appropriate technical provisions (policy liabilities), b) appropriate assets supporting those obligations and c) a minimum amount of capital (developed from a set of available and required capital elements) for each insurer. It will be set against the risks as classified by the IAA (2003), including the underwriting risk, the credit risk, the market risk, the operational risk and the liquidity risk. Nevertheless, this list is not exhaustive and may be adjusted provided specific reasons are given. Moreover, if these risks are quantifiable, they are part of Pillar I; otherwise, they will be taken into account under Pillar II.

Pillar II: Supervisory activities

Departing from the individual risk and capital assessment required to be performed by undertakings, Pillar II involves the supervisory authorities' activities aiming at identifying institutions with financial, organisational or other features that may produce a higher-risk profile (supervisory review). National supervisors may require high-profile institutions to hold a higher solvency capital than under the SCR and/or to take measures to reduce the risks incurred. According to the European Commission, the supervisory actions will not only help foster the harmonisation of supervisory methods, tools and powers by developing common standards and methods, but also will include increased cooperation between supervisors combined with peer reviews. The scope will go beyond the supervisory review process defined under Basel II.

Pillar III: Supervisory reporting and public disclosure

Supervisory reporting will go beyond financial reporting rules and will include different types of information that a supervisor needs to perform its functions. This information will not be in the public domain. Public disclosure will involve transparency and disclosure of information by undertakings to the public. This will serve to reinforce market mechanisms and discipline.

This is slightly different as compared with the Basel II framework, in which Pillar III requirements only deal with public disclosure and supervisory reporting is only harmonised to a limited extent.

Table 15. The general design of Solvency II

Pillar I Financial requirements			Pillar II Firm's management and supervisory practices	Pillar III Supervisory reporting and disclosure requirements		
Technical provisions	Risk quantifications	Capital requirements	Risk governance	Risk transparency		
<ul style="list-style-type: none"> • Explicit and harmonised prudential level • Guidelines for life technical assumptions • Common statistics and guidelines for claims management 	<p>Minimum capital requirements (MCR):</p> <ul style="list-style-type: none"> • Sets minimum acceptable capital level • Triggers ultimate supervisory intervention • Less risk sensitive than Target Capital 	<p>Target capital or solvency capital requirements (SCR):</p> <ul style="list-style-type: none"> • Link with the supervisory review process (Pillar 2) • Validation of internal models • Allowing reduction or addition of capital requirements <table border="1" data-bbox="584 597 948 680"> <tr> <td data-bbox="584 597 760 680">Standard Formula</td> <td data-bbox="760 597 948 680">Internal Model</td> </tr> </table> <p>Investments</p> <ul style="list-style-type: none"> • Prudent investment approach: Management, quantitative limits and capital requirements on investment risks • Coverage of capital requirements 	Standard Formula	Internal Model	<p>Internal management</p> <ul style="list-style-type: none"> • Governance, internal control and risk management • Investment and ALM • Fitness and propriety <p>Supervisory process</p> <ul style="list-style-type: none"> • Process: off-site and on-site reviews, powers of intervention and solvency control levels, transparency • Tools: stress tests, early warnings 	<p>Public disclosure of financial situation and exposure to risks</p> <ul style="list-style-type: none"> • Market discipline effects <p>Supervisory reporting</p> <ul style="list-style-type: none"> • Link with Pillar 2
Standard Formula	Internal Model					

Supervisory reporting and disclosure requirements will be in line with those developed by the IAIS and IASB in order to reduce the administrative burden for supervised institutions. These are also intended to be compatible with disclosure requirements in the banking sector. Confidentiality aspects linked to disclosure requirements will still need further careful consideration.

3.2.2 The legislative process

Further to the Council conclusions of 3 December 2003,⁴⁴ the European Commission was invited to extend the committee structure⁴⁵ applied so far in the securities sector to banking, insurance and Undertakings for Collective Investment in Transferable Securities (UCITS).

In insurance, two committees were established by decisions of the Commission:

- A committee of regulators: (European Insurance and Occupational Pensions Committee – EIOPC) established by Commission Decision 2004/9/EC of 5 November 2003 to assist the Commission in adopting implementing measures for EU directives; and
- A committee of supervisors (the Committee of European Insurance and Occupational Pensions Supervisors, hereafter CEIOPS) established by Commission Decision 2004/6/EC of 5 November 2003 to act as an independent advisory group on insurance and occupational pensions.⁴⁶

⁴⁴ EcoFin (meeting of EU member state finance ministers) invitation of 3 December 2002 made on the basis of the conclusions of the report from the Economic and Financial Committee on financial regulation, supervision and stability.

⁴⁵ On 9 March 2005, European Parliament and Council Directive 2005/1/EC was adopted (see European Parliament and Council, 2005). This directive amends various financial services directives in order to establish a new organisational structure for financial services committees. It extends the Lamfalussy committee structure to the banking, insurance and UCITS areas. The result in the insurance and occupational pensions sectors is the disappearance of the Insurance Committee and its replacement by the European Insurance and Occupational Pensions Committee (EIOPC).

⁴⁶ According to its founding text (see <http://www.ceiops.org/content/view/7/10/>), CEIOPS advises the Commission, either at the Commission's request or on

The Solvency II legislation will be the first directive in the insurance sector adopted under the Lamfalussy⁴⁷ procedure. This means that legislative measures will be drafted by subdividing them into two levels. The level I rules (or principles) contain basic political choices that can be translated into broad but sufficiently precise framework norms. Level II contains the more detailed technical measures needed to implement the objectives pursued by level I legislation (see Annex 6 on Lamfalussy model in insurance and occupational pensions).

Being a Lamfalussy directive, the Solvency II directive should contain general principles and most quantitative requirements will be introduced through level II implementing measures.

CEIOPS has had a crucial and challenging role in the development of the Solvency II project through its answers⁴⁸ to the European Commission's specific calls for advice,⁴⁹ which were structured in three waves.

The first wave, launched in July 2004, addressed the following areas of work primarily related to Pillar II issues:

- internal control and risk management,
- supervisory review process (general and quantitative tools),

the Committee's own initiative, in particular on the preparation of draft implementing measures in the fields of insurance, reinsurance and occupational pensions; contributes to the consistent implementation of EU directives and to the convergence of member states' supervisory practices throughout the Community; constitutes a forum for supervisory co-operation, including the exchange of information on supervised institutions; deals with convergence in the supervision of insurance companies and occupational pension funds (CEIOPS Charter). CEIOPS is made up of high-level representatives from insurance and occupational pensions supervisory authorities from member states of the European Union.

⁴⁷ Final report of the Committee of Wise Men on the regulation of European Securities Markets. To find out more about the Lamfalussy procedure, see Lannoo & Levin (2004).

⁴⁸ All answers to the European Commission on the first (Consultation Paper 4), second (Consultation Paper 7) and third (Consultation Paper 9) waves of calls for advice in the framework of the Solvency II project are published on the CEIOPS website (see the consultations section on www.ceiops.org).

⁴⁹ All letters requesting CEIOPS for advice are published on the CEIOPS website (see <http://www.ceiops.org/content/view/5/5/>).

- transparency of supervisory action,
- investment management rules and
- asset-liability management.

The second wave, launched in December 2004, addressed mainly Pillar I issues including:

- technical provisions in life and non-life insurance,
- safety measures,
- solvency capital requirements (standard formula and internal models) for life and non-life and their validation,
- reinsurance and other risk mitigation techniques,
- quantitative impact study and data related issues,
- powers of the supervisory authorities,
- solvency control levels,
- peer reviews and
- group and cross-sectoral issues.

The third wave, launched in April 2005, sought advice on:

- eligible elements to cover capital requirements,
- cooperation between supervisory authorities,
- supervisory reporting and public disclosure,
- pro-cyclicality and
- small undertakings.

In parallel, the European Commission has requested that CEIOPS acquire insights into the possible quantitative impacts of the new solvency regime through a series of quantitative impact studies⁵⁰ (QIS).

The first QIS (QIS1) focuses on the level of prudence in current technical provisions, benchmarking them against some predefined confidence levels. Building on the inputs of QIS1 (CEIOPS, 2006a), CEIOPS

⁵⁰ In advance of the QISs, CEIOPS conducted a Preparatory Field Study (PFS) by asking national supervisors to collect some relevant information from individual life insurance undertakings in order to evaluate assets and liabilities on a broadly market consistent valuation basis (see [http://www.ceiops.org/media/files/consultations/QIS/QISpreparatoryreport_0508\(2005\).pdf](http://www.ceiops.org/media/files/consultations/QIS/QISpreparatoryreport_0508(2005).pdf)).

launched a QIS2 in spring 2006⁵¹ to focus on solvency requirements (SCR and MCR) as defined in the European Commission documents. A third QIS is planned in 2007 to provide further elements for the calibration of capital levels. The inputs of the impact studies will be invaluable for the preparation of the directive proposal and corresponding impact assessment for Solvency II.

For this purpose, several working groups were created in order to study the different aspects of the Solvency II exercise: Life and non-life (under Pillar I), supervisory review (under Pillar II) and disclosure and accounting (under Pillar III) and cross-sectoral issues, besides the advisory group that coordinates the work and the financial stability committee that coordinates data collection for the purpose of conducting the quantitative impact study (QIS).

Building on the July 2005 Roadmap, (European Commission, 2005) the formal adoption by the Commission of the proposal for a framework directive is foreseen in July 2007. The original date for adoption was in October 2006. The delay was mainly due to the Commission's decision to codify the directives related to life, non-life, reinsurance and groups into one framework directive and to the need for CEIOPS to develop further guidelines for the simulations on Pillar I items.

After the agreement of the majority of the member states to codify the relevant existing directives including non-life and life insurance, reinsurance, insurance groups and winding-up, and without renegotiating the *acquis*,⁵² the European Commission is in the process of drafting the sections relative to Solvency II in the consolidated directive. The consolidation exercise was deemed to be in line with the Commission's 'better regulation approach' as it increases the quality of the Solvency II project.

On the basis of the technical advice delivered by CEIOPS in the three waves and the quantitative impact assessments, the Commission will prepare a draft framework directive, which will be accompanied by an impact assessment.

⁵¹ The results are expected in autumn 2006.

⁵² This refers to the body of EU legislation covering the insurance sector.

The impact assessment is defined as “the process of systematic analysis of the likely impacts of intervention by public authorities. It is as such an integral part of the process of designing policy proposals and making decision-makers and the public aware of the likely impacts”.⁵³

In a broader sense, the impact assessment for the Solvency II directive⁵⁴ will ultimately seek to provide qualitative and quantitative assessments of the impact of major policy alternatives.

In the case of a Lamfalussy directive, there will be additional complexities to perform an impact assessment as all details needed for the analysis may not be decided upon at the time of the presentation of the Commission framework directive. In such cases, certain parameters for the calculations may need to be estimated in order to perform the analysis.

In addition, CEIOPS will continue to work on integrating the advice already delivered by covering the aspects not yet dealt with or needing further specification.

The following priority areas that arose from the three waves of calls for advice have been identified⁵⁵ so far and will be subject to further consultation papers:

Regarding Pillar I issues:

- The development of the SCR standard formula including the issues of cross-sectoral consistency and diversification benefits and costs at intra-group, inter-company, inter-and intra-business line, inter- and intra-risk category.

⁵³ European Commission Communication COM (2002) 276 final says that the impact assessment “will contribute to an effective and efficient regulatory environment [...]” and “identifies the likely positive and negative impacts of proposed policy actions, enabling informed political judgments to be made about the proposal and identify trade-offs in achieving competing objectives” (European Commission, 2002).

⁵⁴ More explanation on the impact assessment of the solvency II level 1 directive can be found at: http://europa.eu.int/comm/internal_market/insurance/docs/markt-2519-05/markt-2519-05-rev1_en.pdf.

⁵⁵ The areas were identified in a letter from the European Commission to the Chairman of CEIOPS on 24 January 2006 and responded to by CEIOPS on 4 July 2006 in Consultation paper nu. 14.

- The development of the MCR formula.
- The link between accounting and solvency and, more specifically, the valuation of technical provision (link with IASB/Pillar 3 progress).
- How to take into account reinsurance in the SCR and MCR and how the capital requirements will apply to reinsurance undertakings.

Regarding Pillar II issues:

- Capital 'add-on' at group and solo undertakings.
- Pillar II issues relevant to reinsurance.

Regarding group and cross-sectoral issues:

- Distribution of capital within a group and the extent to which diversification benefits and costs should be taken into account and transfers of capital can be admitted.
- Level at which sub-groups' solvency should be supervised.
- Cooperation with third countries (for parent companies and subsidiaries).
- Integration of the group dimension in the future QIS to the extent possible.
- Re-examination in light of the developments of the MCR and SCR formulae for insurance and reinsurance undertakings of the approach outlined in the answer to Call for Advice 18 for MCR and SCR at group level.

In light of the ongoing developments in Solvency II, the European Commission has followed a highly transparent approach. This approach is laudable since all documents related to the development of the Solvency II framework were available in a timely manner on its website. It is also important to mention the significant efforts and progress made by CEIOPS in answering the first, second and third waves of calls for advice. Undoubtedly, this is a clear demonstration how the Lamfalussy procedure is successfully working and delivering tangible results in practice. Nonetheless, there is still a long way to go to respond to the difficulties

inherent to the project itself⁵⁶ to meet the challenging timetable required by the European Commission and to ultimately achieve supervisory convergence. Not only should CEIOPS continue providing the Commission with advice on the issues subject to further scrutiny to prepare the level 1 measures, but it should also continue coming up with recommendations on potential level 2 implementing measures and deciding on level 3 guidance.

3.3 Issues to be addressed by the new solvency rules for European insurers

By addressing the weaknesses of the current solvency regime, Solvency II should enable an insurance/reinsurance company to absorb significant unforeseen losses and give reasonable assurance to policyholders and beneficiaries; give an incentive to the supervised institutions to measure and properly manage their risks through the enforcement of risk-adequate pricing of insurance products; encourage a single European market for financial services, ensure a level playing field and contribute to a better managed and more competitive insurance industry that can better perform its key function of accepting and spreading risk. Overall, Solvency II should be beneficial to the European insurance industry.

Striving to meet their challenging timetable, European regulators need to produce a framework that provides a differentiated regulatory approach to life, non-life and reinsurance companies by taking into account their differences in terms of business and risks. The framework should correspond to a coherent and consistent risk-based approach based on an economic valuation of the balance sheet and risks. It should allow a number of approaches that vary in terms of complexity to allow application for large groups as well as stand-alone entities irrespective of their sizes, while reflecting the current market practices. The new risk-sensitive regime should provide the right level of prudence that ensures a safe, sound and stable insurance market while promoting its competitiveness. An inappropriately high level of capital requirements as a price for double counting of prudence would jeopardise the competitiveness of European

⁵⁶ Difficulties include some high-level political issues such as the prudential margin to be included in the valuation of technical provisions, where CEIOPS members have divergent views due to different traditions and practices in EU member states.

insurance companies worldwide. Close cooperation with the industry at the development stage of the new solvency regime is needed in light of the industry initiatives taken so far to ensure that the new regime is in line with market practices, while ensuring the right level of prudence.

There should be a balanced focus between the three pillars of the new framework. It seems that considerable effort has been devoted so far to the content of the first pillar but much less focus dedicated to Pillars II and III. The financial requirements under Pillar I may however be undermined by the discretionary behaviour of supervisors under Pillar II and the ineffectiveness of Pillar III. Clear-cut principles to define the relationships between insurance companies and supervisors and strong and credible forms of market discipline are strongly advocated.

Overall, a future solvency system in the EU should not be overly prescriptive, avoid undue complexity for institutions and their supervisors, reflect market developments and, where possible, be based on common accounting principles.

3.3.1 Pillars I, II, III

Pillar I: Technical provisions

It is assumed that the technical provisions will be established as best estimate liabilities plus a risk margin. However, it is worth considering the limits inherent in this assumption. Indeed, a transfer of insurance liabilities would be unlikely to be achievable at best estimate due to the cost to the transferee of holding the necessary capital to support this business and hence we agree with the concept of a risk margin in respect of non-market risks (if the purpose of the technical provisions is that they should equal the market value of liabilities). However, there may be significant subjectivity in the determination of the best estimate assumptions. It is also important to define clearly whether the risk margin is intended to reflect the additional amount required above the best estimate to transfer the liabilities or whether it is intended to represent a margin for prudence, which could be necessary to settle unforeseen policyholders' claims.

However, it is not a straightforward exercise to estimate the appropriate price of non-market risks. If there is a reference price base for a particular portfolio, it would be necessary to make some assumptions to derive any adjustments required to value a different portfolio, where the liabilities characteristics or the level of diversification may differ. The approximation of the necessary adjustments could be achieved by complex

stochastic modelling of any non-market risk and allowing for the double taxation effects and frictional costs introduced. One approach that could be taken is to include the cost of capital⁵⁷ recognising that an insurer with relatively risky liabilities would have higher capital costs. An alternative approach is to use more simplistic models for example by reducing the interest rate used to discount liabilities, or by introducing margins in each of the non-market risk assumptions (e.g. replacing best estimate assumptions with an approach such as the 75th percentile). Importantly, there should be a trade-off between requiring a comparable approach for all insurance companies and allowing companies the freedom to use different methods to ensure a fair and more tailored estimate.

In view of the different methods, it is important to thoroughly examine the basis and the practicality of each of them and explain the rationale for the final selection to ensure the maximum level of comprehension and transparency. For example, the choice between the 60th, 75th and 90th percentile as a benchmark for technical provisions, as opposed to a market value margin approach, should be accompanied with clear guidance on how these percentiles are to be calculated for life and non-life, how diversification between risk types and across products can be allowed for, how such an approach is to be applied in conjunction with a stochastic evaluation of the market consistent value of policyholder options and guarantees and the links between the risk margin method with the internal model for SCR.

Pillar I: Safety measures: MCR

CEIOPS offers the following definition of MCR: “The MCR reflects a level of capital below which an insurance undertaking’s operations present an unacceptable risk to policyholders. If an undertaking’s available capital falls below the MCR, ultimate supervisory action should be triggered.”

The key question arising is what this level should be. The MCR level should be defined based on clear principles and derived from simple and

⁵⁷ For example, Swiss Re uses a market value margin approach in its internal model to define the cost of capital, whereby the margin is determined using the frictional cost of capital method. This approach has generated stable, robust and reliable results and is already being used in the Swiss Solvency Test framework (Swiss Re, 2005c).

robust approaches and formulae. In the absence of this, the level could be determined historically – such as the minimum capital requirements of 8% for banks – rather than risk-based.

Pillar I: Solvency capital requirements – Standard formula

It is important to explicitly specify the purpose of the SCR in the framework directive and to ensure that this purpose is supported by actual data and current actuarial techniques. While it is always possible to calculate economic capital numbers representing an arbitrarily high degree of confidence, once the model and input data have been fixed, it is far from clear that such estimates are stable with respect to model error⁵⁸ or can be supported by the amount of data available. It should therefore be ensured that the proposed level of confidence does not require data and modelling techniques which greatly exceed current possibilities.

The standard formula for calculating the SCR should be simple (easy to apply by less sophisticated and small- and medium-sized insurance companies), robust (using a model that has proved its stability) and risk-sensitive (that accounts for underwriting, credit, market and operational risks) since it will be applied by a wide variety of companies and countries with different levels of sophistication.

In March 2006, the Comité Européen des Assurances (CEA) published a working document on a standard approach for calculating solvency capital requirements (CEA, 2006). This work should be carefully examined and tested in the forthcoming QISs by the European Commission.

Pillar I: Solvency capital requirements – Internal models

A most welcome and significant step forward in modernising the EU solvency framework is to allow firms to use full or partial models for regulatory purposes in Pillar 1. This step, as ground-breaking as it is, will however require a mature and considered response when setting the criteria and standards for these internal models. This is one of the key outstanding issues within the Pillar 1 that CEIOPS is still to opine on.

⁵⁸ For example, the most significant disadvantage of TailVaR is the scarcity of data, which could lead to a high modelling error.

An internal model approach should be embedded in a comprehensive risk management framework ensuring that adequate business and control processes are put in place.

The difficulty lies in finding the appropriate balance between setting minimum, core standards for any model to conform in order to achieve internal model recognition and allowing sufficient scope and ability for firms to tailor their internal model to best reflect their operating and business structures. To best achieve these competing aims, it would seem that a principles-based approach would have the most to offer.

Firstly, a principles-based framework governing internal models would be able to better recognise the dynamic nature of a firm's own business, whilst at the same time setting out high-level criteria as to the minimum requirements to be met by any firm when using an internal model. This should provide sufficient legal clarity and certainty. A core set of minimum requirements is clearly going to be needed so that supervisors can have sufficient assurance that a firm's own internal model is appropriate as a risk-based measure of the capital that it must maintain and as a determinant of the financial resources that are available on a realistic basis.

This raises the question however of what a principles-based framework means for internal model criteria. As the use of an internal model is primarily concerned with establishing the adequacy of a firm's capital resources, it should be possible to establish some high-level key principles. One of these might be a requirement to ensure that the firm's assessment is based on some pre-set probabilistic rules to ensure consistency between companies' risk assessments. Further examples of such principles could be that the assessment using an internal model reflects the firm's assets, liabilities, intra-group arrangements and future plans; a requirement for the assessment to be consistent with the firm's management practice, systems and controls; and another example would be a requirement for the internal model to consider all material risks that may have an impact on the firm's ability to meet liabilities to policyholders, using realistic valuation bases for assets and liabilities.

Such high-level principles could be supported by requiring firms to document the reasoning and judgements underlying their assessments of the adequacy of its capital resources to their supervisors. This reporting requirement could again be principles-based, by requiring firms to outline the overall results of their assessment, including justifying the assumptions

and appropriateness of the methodology used. Guidance⁵⁹ rather than prescriptive rules – that is to say, Level 3 work – could then be used to inform more fully the objectives and outcomes expected of the principles.

Such a principles-based approach could ensure sufficient rigour and consistency across Europe in firms' internal assessments, whilst reflecting the individual nature of the assessment to allow firms to develop the most appropriate methods for assessing their individual capital needs.

At this stage, we support a flexible approach in placing no limitations on the range of model approaches used and being subject to supervisor approval. This flexible approach is highly recommended so as not to stifle innovation (in particular in risk measurement and management), and is a prerequisite for market development, but it will create considerable pressure on supervisors, particularly in the early years of implementation of the new directive.

Within this exercise, it is crucial that the roles, purposes and estimations of technical provisions, MCR and SCR are clearly identified in relation to each other to avoid double counting and excessive capital requirements.

Pillar I: Risk mitigation techniques

Risk management, mitigation and diversification are fundamental aspects of insurance operations and are known for their capacity to contribute to a better allocation of capital in the financial system. Therefore, it is important that these aspects are reflected in the technical provisions, MCR and SCR.

Pillar II

There has been little debate on Pillar II as compared to Pillar I. One important message is to avoid duplication of effort or conflict between group and local supervisors for supervision as well as for validation of internal models. Although not responding completely to this aim, Art. 129 – on lead supervisor – in the Capital Requirements Directive for banking groups could offer a starting point for the supervisory system for insurance groups.

⁵⁹ The CRO Forum has drafted principles for the admissibility of internal models, which could serve as the first step towards clearly defined requirements.

Pillar III

As was rightly mentioned in CEIOPS's answers to the European Commission in the third wave of calls for advice, it is very difficult to come up with a universal formula for the right level of transparency, particularly in the still somewhat fragmented EU single market.

Indeed, disclosure and transparency requirements under the new Solvency 2 framework should and will play a very important role in supporting a more risk responsive, proactive and transparent style of regulation. It is reminded that transparency is a prerequisite for effective market discipline.

Hence, disclosure requirements should be clearly defined and framed and will be increasingly relevant for the stakeholders. Also, such requirements should be carefully assessed and – if necessary – tailored for life, non-life and reinsurance companies, so as not to overburden the markets and companies with useless information.

However, CEIOPS and its Pillar 3 Working Group are faced with no easy task of tackling this area, the success of which will be gauged if, in the end, the various jurisdictions and supervisory traditions will be able to achieve a common view to disclosure and transparency across the still 'somewhat' fragmented EU single market.

As also mentioned by CEIOPS, it is important to clearly differentiate between information that needs to be made public and information that is confidential.

The key challenges will centre on achieving a new reporting and disclosure framework that will best complement the new, more risk-sensitive SCR requirements. But, importantly, the future framework will also be home to a number of other dynamic, forward-looking innovations, such as the use of internal models under Pillar 1 and the requirement on firms to undertake their own Individual Risk and Capital Assessment in Pillar 2, and some serious thought ought to be given how to get the most out of these new features.

There is no question that the new regulatory environment will pose some significant challenges in developing regulatory reporting, particularly in ensuring that the aims of capturing this new information are balanced against cost and competition issues, including achieving the right balance between public and proprietary information. Various factors both in the planning of the reporting framework and the timing of its implementation

clearly need to be thought through carefully. These include the potential for more efficient use of technology and planned changes to accounting standards and other international initiatives.

But, it is indeed possible already now to see what broad direction the requirements under Pillar 3 should take: to capture information that is both timely and most relevant to perform an assessment of an insurance undertaking's current and future solvency and financial condition. This could, for example, take the form of a commonly agreed format for a report that would include assessment of governance and strategic issues, consideration of risk management and general systems and control processes and procedures, as well as information on the firm's own internal assessments.

A suitably constructed form of reporting should result in disclosure of useful and high quality data. It could also mean that, in addition to prudential information, wider consumer related information, such as conduct of business requirements, is disclosed. Further assessment is also required of the possible need to tailor the disclosure requirements for life, non-life and reinsurance companies, and to keep in mind not overburdening the markets and companies with useless information.

It is evident that a relevant and cost-effective Pillar 3 is one of the prerequisites to ensuring the Solvency 2 framework will be a success.

3.3.2 Legislative process

While drafting the new directive, it is crucial to differentiate clearly between principles and implementing measures to ease the task of the Parliament and the Council in the co-decision legislative process. The non-Lamfalussy-type Capital Requirements Directive (CRD) for banks was a good example of passing the whole burdensome directive (containing principles and all technical details) under the co-decision process, which resulted in 888 amendments.

Moreover, the non-entry into force of the Constitution increased the difficulties for comitology⁶⁰ and the Lamfalussy process. In the non-

⁶⁰ Most EU regulation is not enacted as legislation by the Council and Parliament but as implementation measures under the executive duties of the Commission. Such regulations can be adopted when the Council has conferred executive powers

Lamfalussy type CRD for banks, the comitology provisions were only valid until April 2008 (Ayadi, 2006). Their extension was subject to reaching a formal agreement between the three institutions that defines and secures the call-back right for the Parliament. On 6 July 2006, the European Parliament endorsed, by an overwhelming majority, a compromise reached with representatives of the Commission and the Council on the comitology procedure. The new agreement allows Members of the European Parliament, for the first time,⁶¹ to block implementing decisions taken by the Commission. It also means that the European Parliament will be informed of these decisions in all official languages and extends the time available for European Parliament scrutiny.

For the Solvency II process, this agreement is highly welcomed and should pave the way for a first, true Lamfalussy-style, high-level principles-based directive in the field of insurance.

The EU has a pivotal role in the development of the new solvency regime for insurance companies. If adopted by the European Parliament and the Council, the EU will be the first critical mass to apply the new solvency rules. At the same time, the ongoing international initiatives, in particular of the IAIS and the IASB, will have to be taken into account despite the staggered timetables. Indeed, the EU should not act in isolation given the global nature of the financial services sector. Notably, CEIOPS will play a key role in promoting a consistent and harmonised

on the Commission and after an implementation committee, composed of policy experts from the member states, has given its opinion on or approved the Commission's proposed measures. The committee procedures are commonly referred to as 'comitology'. In July 1987, the Council adopted what is known as the 'Comitology Decision', defining specific committee variants and procedures for the exercise of the implementing powers conferred on the Commission. The 1987 procedures were replaced by a June 1999 Comitology Decision. The three types of committees - advisory, management and regulatory committees - work according to different procedures and have varying levels of legislative control over the Commission (see http://europa.eu.int/eur-lex/pri/en/oj/dat/1999/l_184/l_18419990717en00230026.pdf).

⁶¹ Up until now, only a committee of national officials, and not the European Parliament, had the right to revoke the Commission's implementing measures. Furthermore, a decision blocked by the committee was referred back to Council alone with no European Parliament involvement.

implementation of the Solvency II regime across European countries and pragmatic and effective cooperation with other countries and in accommodating any required changes quickly. But the work will be complex and demanding and some issues will need to be resolved in a European spirit, such as the lead supervisor, the level of consolidation and the supervisory discretion under Pillar II. The solutions to these issues could be sought in the arrangements agreed on in the Capital Requirements Directive. This also calls for more cooperation between the level 3 committees.

We highly support the European Commission's commitment to provide an impact assessment of the new solvency regime, which is in line with the better regulation approach. The impact assessment will be performed despite the difficulties inherent in a Lamfalussy-type directive and the forthcoming changes resulting from the negotiations in Council and Parliament.

3.3.3 Outstanding issues

The need for thorough analyses of the economic and social impacts of the new solvency rules

The first quantitative impact study (QIS1) focuses on how alternative rules might affect the valuation of assets and liabilities, and solvency requirements of insurers. The second quantitative impact study (CEIOPS, 2006b), known as QIS2, will examine the effect on insurance undertakings of the possible restatement of the value of both assets and liabilities under the Solvency II framework, as well as some possible options for setting the capital requirements (MCR and SCR). The cost of the capital method suggested by the industry to assess provisions will also be tested.

The QIS1 summary report offered a useful overview of current industry practices for valuating liabilities. It focused on the level of prudence in the current technical provisions, benchmarking them against some predefined confidence levels. This could give a broad indication on the impact of the proposed rules on the required provisions. However, the results and conclusions of the first quantitative impact study are to be read with care since they are based on incomplete figures, poor guidance (in particular how to apply a confidence approach to mortality risk) and divergent national practices.

Its main conclusion shows that the best estimate plus risk margin of the technical provisions are lower than the provisions on current bases and

that the risk margins tend to be small for most undertakings and classes of business. For non-linked life, the inclusion of future bonuses seems to have a relevant impact on the required provisions in most countries, and for non-life the effect of discounting is relatively large for some classes of business.

These first-round QISs are very welcome in that they shed light on current industry practices in assessing provisions. However, we would suggest that consideration is also needed of the economic and social impacts of the proposed rules.

There is a danger that the Commission may concentrate unduly on requirements for the solvency of insurers. We expect regulators to act to protect policyholders, and it is clearly important for the regulators to set rules regarding insurers' solvency and to monitor them. An insolvent insurer means that the policyholder's purchase of security has been defeated.

However, we would not expect the new solvency requirements to produce a zero-failure regime. If an insurer's solvency was guaranteed, there would be reduced incentives for insurance customers to consider the financial strength of insurers as an indicator of quality when choosing between insurance companies and there may also be reduced incentives for the management of insurance companies to carry out financial management appropriately.

Furthermore, it is possible for a new regime to require insurers to have such large amounts of capital that this leads to further consolidation and hence reduced competition in insurance product markets. That clearly has the potential to be detrimental to the customer.

Our concern is that regulators are clearly (and rightly) concerned about an insurer becoming insolvent and it is almost inevitable that an insurance company solvency will be seen to reflect badly on regulators. However, regulators can have an impact on market competition, but this is less easy to measure. There is therefore the possibility that regulators will err on the side of over-burdensome solvency regulation because the potential economic and social impacts of that are not fully considered.

While we appreciate the merits of a risk-based solvency regime as is being proposed, we are conscious that there can be behavioural

implications that may raise concerns.⁶² For example: insurers may cease to offer high-risk products, which could disadvantage some segments of the market; there may be a transfer of risk to households through a switch to unit-linked policies which they may not be well-prepared to bear and insurers may also switch their asset portfolios from equities to bonds, which will have an impact on capital markets and interest rates.

We therefore suggest that the Commission critically examines the expected economic and social impacts of proposed solvency rules on the operations of insurance markets.

Fair competition should be preserved between large, small and medium-sized insurance companies

It is important to test the new rules according to the size of the companies. The QISs should explicitly differentiate between large, medium and small-sized insurance companies while testing the alternative rules to value assets and liabilities.

The framework should be sufficiently broad to cope with all companies, including small and medium-sized ones. Undoubtedly, the impacts of the new rules on companies of different sizes will differ depending on their initial activities and their risk profiles. However, it seems difficult to draw conclusions on these impacts based on the current quantitative impact studies performed by CEIOPS.

What is important is to ensure that the implementation costs and the complexity of the new rules do not overburden these companies and undermine their capacity to run the business.⁶³ However, we believe that differential treatments (lighter regulatory requirements and exemptions) should be based more on the companies' risk profile rather than on size.

⁶² In June 2006, Swiss Re (2006c) published a Sigma report on "Solvency II: An integrated risk approach for European insurers". The report looked at the potential impacts of the use of a more risk-sensitive solvency regime on European insurance markets.

⁶³ According to Moody's report (2006), "The overall cost and resource of moving to Solvency II, along with the move to IFRS Phase II may encourage some smaller insurers to seek to band together with their peers, to help absorb the cost of the transition and to provide a more cohesive competition against larger Groups".

The need to address the pro-cyclical effects of the new solvency rules and the potential measures to counter its effects

The concept of cyclicity in insurance is defined by CEIOPS in its response to the call for advice No. 22 as “A term to describe effects observable in economic data, which often display a recurring (but irregular) pattern of increases and decreases rather than a continuous trend...”. “The three forms of cyclicity which most concern us in considering potential pro-cyclicity aspects of Solvency II are cyclicity in the economy as a whole (the economic cycle), cyclicity in the part of the economy comprising financial services (the financial cycle) and cyclicity in the insurance industry (the insurance or underwriting cycle).”⁶⁴

As was reported by CEIOPS, pro-cyclicity within Solvency II includes two aspects: the first aspect is by reference to a special case of a feedback loop between two economic variables, one associated with the insurance or underwriting cycle and the other associated with the general economic cycle; the second aspect is by reference to a reinforcement effect on the correlation between two economic variables, one associated with the insurance or underwriting cycle and the other associated with the general economic cycle.

Building on these two aspects, pro-cyclicity under Solvency II potentially leads to the creation of an excess insurance in the short run and a reduction in the magnitude and duration of insurance cycles in the long run because of the increasing use of alternative risk financing mechanisms. Moreover, the new solvency regulation may have the potential to reinforce constraints on industry’s capacity to insure risks and may thus contribute to the underwriting cycle.

To mitigate these effects, CEIOPS considered several mitigation strategies under Pillars I and II. We believe that each of these strategies should be examined carefully (cost and benefits analysis) with a strong emphasis on transparency, market-based assessment of assets and

⁶⁴ For more explanation, see annex C (call for advice No. 22) in CEIOPS consultation paper No. 9 in answers to the European Commission third wave of calls for advice in the framework of the Solvency II project (see p.135 of http://www.ceiops.org/media/files/consultations/consultationpapers/CP9/cp_0506_CP9DA3wave.pdf).

liabilities, more sophisticated supervisory assessment and capital assessment and more effective risk management.

The need to watch the developments in credit risk transfers between insurance, reinsurance and banks to preserve financial stability

In recent years, the insurance industry has experienced steady growth. This growth will continue owing to the rapid pace of ongoing public reforms that will encourage an ageing population to allocate an increasing proportion of their savings to this industry. According to the European Central Bank (ECB),⁶⁵ insurance companies manage more than a quarter of all household financial wealth in the euro area. This makes the accuracy of the assessment, the pricing and the management of the financial risks of these institutions very important in ensuring the resilience of the financial system.

Insurance companies have traditionally been considered to be a stable segment of the financial system. Being financial intermediaries, insurance companies mobilise savings from households and firms and finance investment in the corporate sector. The main difference with banks is their balance sheet structure. The liabilities of life insurers (and also pension funds) have a long maturity and are significantly less liquid than bank deposits. They are therefore less vulnerable to customer runs, since the possibilities of savings withdrawals are clearly restricted in most insurance contracts and are also more costly for customers. As to possible contagion effects, these are limited *a priori* since these institutions are not directly connected to the interbank market or the payment system.

Moreover, there has been a strong linkage effect between insurance, reinsurance companies, pension funds and banks through credit risk transfers. As net sellers of credit risk protection instruments for example, insurance companies (and also pension funds) have increased the capacity of the banking system to absorb adverse shocks. Equally, reinsurance serves as insurance cover for insurance companies to mitigate part of their

⁶⁵ Speech by European Central Bank President Jean-Claude Trichet at CEIOPS conference on Developing a new regulatory and supervisory framework for insurance and pension funds: The role of CEIOPS, November 2005, Frankfurt am Main.

risk. This is a good illustration of how spreading risk could strengthen the resilience of the financial system.

However, this linkage may increase potential vulnerabilities through concentration of the risk in some situations. Ultimately, it is important to determine who the risk-bearers are in order to estimate the impact on financial stability. The significant increase in credit risk transfers can give rise to supervisory concerns since it may increase the potential of regulatory arbitrage. When firms identify and take advantage of gaps in regulation between the insurance and banking sectors to reduce regulatory capital requirements, for example as a result of credit risk transfers, there is a potential risk of competitive distortions that may have negative consequences such as a misallocation of capital and inappropriate risk-taking. But, arbitrage opportunities could also be beneficial when there are valid reasons to have a pricing advantage, especially if credit transactions provide insurance companies with diversification opportunities while reducing concentrations to the risk originators. Hence, there is a growing need to strike a balance between these two forces by ensuring that supervisors have the appropriate supervisory tools to ensure that the risks inherent in credit risk transfers are adequately managed.

Moreover, the increasing linkages between banks and insurance companies via the bancassurance model in Europe could undermine financial stability. Indeed, increasing cross-capital inter-linkages could potentially provoke a negative contagion spiral if equity prices were to fall, putting both sectors under pressure. Another concern is related to accounting and regulatory arbitrage between the two subcomponents of the conglomerate. As insurance companies fall under a different regulation than banks, there could be a risk of transfers from the banking entity to the insurance entity in order to lower the capital charge of the group without reducing the overall risk. This will certainly increase the fragility of the group. We strongly advocate that consistent treatment of the same risks in the two sectors will ensure a level playing field and help avoid any adverse regulatory arbitrage while structural differences between the two sectors should be carefully assessed and taken into consideration. For this purpose, a close and formal cooperation between the three level 3 committees is much needed, while ensuring full transparency and accountability towards all political institutions and market participants.

3.4 Assessment of the regulatory and supervisory framework for insurance groups and financial conglomerates⁶⁶

Despite being widely discussed, financial conglomerates are the exception, not the rule, in European finance. Over the period 1990-2003, when the concept of conglomerates started to spread, cross-sector mergers and acquisitions (M&As), with a bank acquiring an insurance group or vice-versa, formed about 15% of all M&As involving banks or insurance groups in the EU (Dierick, 2004, p. 6). However, the attention of policy-makers at global and EU level, which led to the adoption of the Financial Conglomerates Directive in 2002, is deserved, as these transactions often concern very large financial groups and acute supervisory problems may emerge. It is important to note in this context that more often insurance companies become conglomerates than banks. The subject thus deserves the special attention of insurance supervisors.

Following the 2002 directive, financial conglomerates in the EU are defined as groups of which at least one entity is active in the insurance sector and at least one entity active in the banking or investment services sector, and whereby the ratio of these entities' activities to the balance sheet total of the group exceeds 10%. The group can be organised as an unregulated holding company, with interests in regulated finance entities, or headed by a regulated banking, insurance or investment firm entity.

A first step towards the Financial Conglomerates Directive was taken in 1998 with the adoption of the European Parliament and Council Insurance Groups Directive (Directive 98/78/EC). Unlike banking, where clear and widely accepted rules on consolidation are in place, as laid down in the 1992 Consolidated Supervision Directive (CSD) (Council Directive 92/30), there were until recently no commonly agreed rules on the supervision of insurance groups. The Insurance Groups Directive resolves these problems to some extent. The directive introduces new arrangements for the regulation of insurance undertakings within an insurance group. The directive does not introduce consolidation for insurance groups, but requires every legal entity to meet its own solvency requirement. To control investments in related undertakings, it introduces the solo-plus concept, which is an adjusted-solo solvency margin test designed to ensure that an

⁶⁶ This section is written by Karel Lannoo, CEO and Senior Research Fellow at CEPS.

insurer's solo solvency position is not distorted by any investment it makes in a related undertaking (i.e. double use of the same capital to cover risks in an insurer and its related undertakings). In addition, it sets a parent undertaking solvency margin calculation designed to assess resources available to meet the overall insurance risk borne by a group, and requires monitoring of material intra-group transactions.

Work within the Brouwer Committee of the Economic and Financial Committee (EFC) – a committee advising the Council of Finance Ministers on financial regulation, supervision and stability – provided an important impetus to accelerate work on financial conglomerates. In its first report (April 2000) the Brouwer Committee called for an agreement on a coordinating supervisor for conglomerates and the use of consolidated supervision. It added that predominantly insurance groups may have a problem with emergency liquidity assistance, which supposedly is reserved for banks. Hence crisis management matters are crucially important for conglomerates as well. The report called for more regular and elaborate information exchange and recommended that memoranda of understanding should address the issue of information exchange in crisis situations, even more so for complex groups which are often supervised by different supervisory authorities.

The European Parliament and Council Financial Groups Directive (FGD) (2002/87/EC), also known as the Financial Conglomerates Directive, was formally adopted in November 2002. It had to be implemented by 11 August 2004. The directive addresses the following:

- The definition of a financial conglomerate, as mentioned above.
- Capital adequacy: this is calculated on the basis of three methods, the deduction/aggregation, the requirement deduction and the consolidated accounts methods, which can be used alone or in combination. In each case, the own funds of the conglomerate have to exceed the sum of the solvency requirements for each sector according to the specific sector regulations.
- Risk concentration: groups must report any significant risk concentration at the level of the conglomerate on a regular basis, but member states can for the time being develop their own quantitative limits.
- Intra-group transactions: significant transactions, defined as those exceeding 5% of the total amount of capital adequacy requirements, must be reported to the supervisory authorities. Member states can

develop their own quantitative limits on risk concentrations until there is further harmonisation.

- Organisational requirements relating to risk management and control: the directive requires that, at conglomerate level, adequate risk management and internal control methods are in place.
- The mandatory appointment of a coordinator or the supervisor who is responsible for supervisory overview and assessment of the group, and for supplementary supervision. To this end, the coordinator and other competent authorities shall have coordination mechanisms in place, including specific procedural arrangements.
- Exchange of information among supervisory authorities is obligatory under the directive: essential information shall be communicated automatically between authorities and relevant information upon request. The directive specifies in detail the items this should cover.

The directive introduces new requirements for conglomerates with non-EEA parents, as well as non-EEA banking and investment groups (as a result of an amendment to the Banking Consolidation Directive – the BCD). For each of these ‘third country’ groups, EEA authorities must work together as appropriate to determine whether the group is subject to ‘equivalent’ group-wide supervision in its home country. Where this is not the case, the FGD/BCD requires that the EU home country undertakes worldwide group supervision or applies other methods to the group that achieve the objectives of the relevant directive. This may imply the requirement to establish a holding company in the EEA, or to the ring-fencing of assets in the EEA from the non-EEA operations. The concerns that this raised for large US groups led to the start of the EU-US regulatory dialogue on financial services.

However, the directive does not respond to all concerns with regard to conglomerates and is seen to be too prudent and limited in its harmonising scope.

- 1) *The definition does not necessarily cover all conglomerates.* The directive is limited to financial conglomerates, hence mixed financial or mixed activity groups may not meet the strict definition of financial conglomerate, for example, because their financial or cross-sectoral activity does not reach the minimum thresholds of the directive. To fall within the scope of the directive, financial sector entities should exceed 40% of the total assets of a conglomerate.

- 2) *Transparency and the level of disclosure are limited.* Authorities are not obliged to publish a list of groups that fall under the scope of the directive, hence it is difficult, given the growing role of market discipline, to check whether a group is a financial conglomerate for those who have no access to supervisory information. There is also a lack of common rules regarding the financial statements of financial conglomerates. This hampers comparability across borders and the functioning of market discipline.
- 3) *Prudential supervision.* The directive addresses in a detailed way how capital adequacy requirements for conglomerates must be calculated, in particular to prevent 'double gearing', i.e. double counting. For other areas, however, such as large exposures, and intra-group transactions, the directive is much less prescriptive and supervisors are free and flexible in their actions, a situation that may lead to an uneven playing field. For large exposures, the banking and securities entities are subject to quantitative limits, as a result of specific EU-wide rules, but no such rules apply for insurance groups. The reverse is true for intra-group transactions. More generally, the directive does not harmonise equivalent risks, nor does it set integrated supervisory limits across sectors. The focus remains on individual supervision of the entities of a conglomerate, which is *supplemented*, but *not superseded*, by rules governing group-wide supervision. The Solvency II project could bring a more integrated approach, but that remains to be seen.
- 4) *The role of coordinator.* The coordinator should play an important role in the supplementary supervision of conglomerates; it should act as an interface with the conglomerate in receiving information and passing it on to the supervisors, conduct a supervisory assessment of the conglomerate's financial situation, risk management and internal control mechanisms and sometimes take technical decisions. The directive sets minimum rules that determine the rules of the coordinator's supplementary supervision, but these are very general and leave ample room for national discretion. In addition, the coordinator should not necessarily be based in the country in which the group has its economic centre of gravity. This may lead to supervisory arbitrage, and is this an additional argument for supervisory convergence (Dierick, 2004).

- 5) *Supervisory cooperation.* There are no guidelines with regard to a memorandum of understanding between supervisors with the aim of pursuing supervisory convergence in the area of financial conglomerates. Cooperation is in fact limited to an extensive exchange of information between supervisory authorities. In addition, a level 3 committee of supervisors in this sector has not been established.⁶⁷ This was judged not necessary, as the issues could be dealt with in one of the sectoral committees, Committee of European Banking Supervisors (CEBS) or CEIOPS. However, if the issue is not clearly assigned to one of them, there is a risk that the issues are not taken care of at all.
- 6) *Financial stability issues.* At present, there is no systematic and regular monitoring of financial groups at the European level, which would be the starting point for assessing their relevance for financial stability. In particular, there is no systematic monitoring by the ECB or any other institution and no plans for crisis management for these groups. The Memorandum of Understanding for crisis management situations which was concluded in May 2005 between supervisors, central banks and finance ministries of the EU is limited to banks.⁶⁸

In the context of the debates on the supervisory burden, the implementation of Basel II and the cross-border financial sector consolidation, the same applies for conglomerates as for European-wide banks, i.e. the powers of the coordinator may be too limited and those of the host country supervisors too extensive. Furthermore, it is not clear whether the conglomerate coordinator will be the same as the consolidating supervisor for the banking business and/or the group supervisor for the insurance business. Also, no pooling of information is planned in a

⁶⁷ Note that there is a level 2 committee for conglomerates, which was established by the Financial Conglomerates Directive. Its role is to make technical adaptations in definitions and terminology, but also to ensure uniform application of the provisions of the directive. In addition, it needs to evaluate whether the supplementary supervision arrangements of third countries are equivalent.

⁶⁸ See European Central Bank (2005), a Memorandum of Understanding on cooperation between banking supervisors, central banks and finance ministries of the European Union in financial crisis situations.

multilateral forum, which would be helpful from a macro- and micro-prudential point of view.

The low degree of harmonisation of the directive is clear when compared with the practice of Dutch supervisory authorities, a country where the market is dominated by conglomerates. Rather than have annual reporting of the capital adequacy of a conglomerate, the Dutch authorities request monitoring at six-month intervals. Intra-group exposures are limited to 1% of the total amount of capital adequacy requirements, as compared to 5% in the directive. The measurement for risk concentration and capital adequacy testing are also more refined under the Dutch practice than in the directive.⁶⁹

Notwithstanding these remarks, the utility of the conglomerates directive is that it has set a standard for integrated supervision of conglomerates and raised the benchmark. In several of its concepts and requirements, it goes further than what was required in the insurance field. CEIOPS was therefore required to look into possible amendments to the insurance group directive, in view of, amongst others, the provisions of the conglomerates directive. The coordinator concept for conglomerates in the latter directive is more far-reaching than what is in place in for insurance groups in the Insurance Groups Directive. Insurance groups reported that the lead supervisor concept is not applied in the insurance sector as the requirements of the latter directive are too loose. Authorities are said to be unwilling to take additional responsibility, whereas the conglomerates directive does not leave room for discretion for the authorities. The same differences between both directives apply with regard to the rules applicable to groups based outside the EU, intra-group transactions and internal controls (CEIOPS, 2005c).

⁶⁹ Presentation by Sandra Desson, De Nederlandsche Bank, to the Task Force meeting on 8 November 2004.

4. Lessons from national regulators' experiences

Recognising the deficiencies of Solvency I, a number of insurance regulators have already taken action to change the way in which they regulate insurance companies' solvency. This reflects the problems that have arisen in several countries due to challenges such as falling values of equities. In particular, we note that the UK, Switzerland and the Netherlands are introducing approaches along the lines of market-consistent techniques for the valuation of assets and liabilities, together with a minimum solvency margin that reflects the risks that insurers are running.⁷⁰ In this chapter, we look in more detail at developments in the UK (also see O'Brien, 2006) and Switzerland since they were both examined by the CEPS Task Force. These developments mean that the variety within the EU is even greater than it was. There is a lesson here in that if the European Union wishes to maintain a unified approach under Solvency II, it must accept that its solvency regulation regime must be more capable of adapting to new conditions than was the case with Solvency I.

4.1 The UK experience

The United Kingdom has been making significant changes to its prudential regulation of insurance firms, after the Financial Services Authority (FSA) acquired its powers as the new regulator for insurance and other financial services in December 2001. The FSA has four statutory objectives, specified in the Financial Services and Markets Act 2000:

- Maintaining market confidence

⁷⁰ CEA and Mercer Oliver Wyman (2005) have jointly produced a study, entitled "Solvency assessment models compared", to compare prevalent solvency assessment models within the largest European and non-European insurance markets.

- Protecting customers
- Promoting public awareness and
- Reducing financial crime.

The FSA is concerned with any event that may lead it to fail in any of these objectives. Failure of an insurer would clearly be one such event. The FSA has recognised the shortcomings in Solvency I, and in particular the fact that the minimum solvency requirement is not risk-related. It has therefore been keen to make changes to the prudential regulation of UK insurers.

One of the changes recently made by FSA was the introduction of an Enhanced Capital Requirement (ECR) for non-life insurers, using factors that reflect the risks of individual business types, thereby representing some move away from fixed ratios towards a risk-based capital regime, with factors applied to categories of the insurer's assets, premiums and provisions. The ECR data are not publicly available and we do not consider this further in this report.

For all insurers, FSA has introduced a new Individual Capital Adequacy Standards (ICAS) framework, requiring directors to take responsibility for assessing the amount of capital that the firm needs. We consider this further in section 4.1.1.

The other major element of the FSA's new regime relates to large and medium-sized life insurers that write participating business. We examine the reasons for this development and the outcome in section 4.1.2.

We conclude with some brief comments in section 4.1.3.

4.1.1 Individual Capital Adequacy Standards (ICAS)

The ICAS framework was introduced at the end of 2004. The plans were introduced in Financial Services Authority's 2002 consultation paper, which set out two key elements:

- an Internal Capital Assessment (ICA), a self-assessment by insurers, and
- a supervisory tool, subsequently referred to as Individual Capital Guidance, by which the FSA could require firms to hold additional capital.

The main benefits of the new framework were said to be reducing the probability of prudential failure in a cost-efficient way, greater

transparency in the way regulatory capital standards are set and promoting a strong culture of risk management.

In carrying out the assessment of capital, directors need to identify the major risks the firm faces and determine how much (and what type of) capital is needed, where holding capital is a suitable way of dealing with the risks. Firms have to consider all the risks to their business, including market, credit, insurance, liquidity and operational risks, and assess what capital they need in order to ensure a 99.5% probability of having sufficient assets to meet their liabilities, on a realistic basis, in a year's time. This is a substantial exercise, involving collection of data, assumptions on matters such as correlations between risk types and statistical modelling using stochastic models in all but the simplest cases.

The ICA is not disclosed publicly, but some evidence of how the regime is operating is available from Financial Services Authority (2005):

- Firms' submissions to FSA have varied from four pages to over 80.
- Operational risk was one of the least developed areas in firms' ICAs.
- Some life insurers are planning to increase the sophistication of their approach, for example a 'nested stochastic' method, whereby they use (e.g.) 1,000 simulations for the first projection year, after which each individual scenario has its own 1,000 simulations to produce the closing balance sheet.
- Assessing the appropriate level of a catastrophe event is challenging as there is limited data available about extreme events.
- Correlation between risks is a difficult area; in particular, normal relationships may break down under stressed conditions.

4.1.2 Participating business

From the time that the FSA took over responsibility for insurance regulation, it has had concerns about the substantial discretion such life insurers exercise in the way they manage participating business (known as 'with-profits' in the UK), especially concerning the choice of investment strategy and the determination of bonus rates that directly affect the payouts to policyholders. Participating life contracts are not transparent, and customers have little understanding of how such policies operate and the risks that they, as policyholders, are bearing. Consumer dissatisfaction has grown and participating contracts are now only a small proportion of new business.

However, UK life insurers still have over £350 billion of liabilities in participating contracts. The FSA is not satisfied that the traditional solvency regulation, based on the net premium valuation method, is adequate as an indicator of a firm's financial position or as a means of protecting policyholders. These problems were highlighted by the near-failure of Equitable Life, which in 1997 had been the fourth-largest life insurer in the UK. By 2000 it barely met the minimum solvency requirements and closed to new business. Some of its policyholders have seen their annuities cut by 30%.⁷¹ The Penrose (2004) report criticised both the management and regulation of the firm, noting the following in particular:

- Equitable Life had inadequate corporate governance and risk management processes – the lack of scrutiny of the actuarial department was especially noticeable.
- There has been a failure of accounting standard-setters to ensure appropriate methods for valuing the assets and liabilities of life insurers.
- Equitable Life used actuarial methods that were not accepted within the profession and established provisions lower than were consistent with best practice and was able to use financing reinsurance to improve its solvency position in an artificial way.

There has therefore been substantial political pressure on the FSA to change the solvency regime: waiting for Solvency II to be completed was not an option. The new requirements were implemented at the end of 2004 and apply to all life insurers with over £500 million of liabilities in

⁷¹ On 18 January 2006, the European Parliament set up a special committee of enquiry into Equitable Life to investigate “alleged contraventions or maladministration in the implementation of community laws”. The Committee is composed of 22 MEPs, including the chairwoman Mairead McGuinness, who said last year that “the Equitable Life debacle raises huge questions over shopping across borders for pensions and other financial services” (link to website: http://www.europarl.europa.eu/comparl/tempcom/equi/default_en.htm). An interim report on the crisis of the Equitable Life Assurance Society was prepared by rapporteur Diana Wallis (see <http://www.europarl.europa.eu/omk/sipade3?PUBREF=-//EP//NONSGML+REPORT+A6-2006-0221+0+DOC+PDF+V0//EN&L=EN&LEVEL=2&NAV=S&LSTDOC=Y>).

participating business (of which there are 37; in addition, one smaller insurer chose to adopt the new rules).

The proposals were set out in detail by the Financial Services Authority (2003). The key innovation is a 'realistic balance sheet', with assets and liabilities determined as set out below. This is accompanied by stress tests that effectively set a new minimum capital requirement.

The asset valuation is at market value, including those assets excluded as inadmissible under the traditional statutory valuation. Another change is that the EU permits (until 2009) insurers to include an item representing (some) future profits, but as this is essentially a means of offsetting some of the prudence in the valuation, it is appropriate to exclude future profits in the realistic valuation. Lastly, insurers are allowed to place a value on the future surpluses they expect from non-participating policies, since this is effectively an asset available for the participating business. The outcome for the 38 insurers reporting a realistic balance sheet is that their 'realistic' assets were, in total, 2.4% higher than in the 'regulatory' valuation.

The liabilities are valued depending on how the business is operated. This has three elements:

- Accrued bonuses are included as a liability, assessed by regarding, as a liability, the asset share of a policy (i.e. the accumulation of premiums with the investment return achieved) less relevant outgoings. Since firms expect to pay, at maturity, (approximately) the asset share to the policyholder, it is the asset share as accrued to the balance sheet date that is the relevant liability for the valuation.
- Management actions are taken into account: for example, if the firm were to move its assets into more secure classes if its financial position deteriorated, or if it were to reduce bonus rates, this should be reflected in the liability being valued. However such management actions must be consistent with the documentation issued to policyholders.
- The costs of financing the business, e.g. through subordinated loans, are included.

Furthermore, the cost of options and guarantees should be included using market-consistent stochastic modelling. This has proved a challenge although it has been helped by recent advances in actuarial modelling (Sheldon & Smith, 2004), and the outcome should be similar to the fair

value of liabilities. One difficulty, though, is how to calibrate models to be market-consistent when the models require long-dated option prices that may not be observable in financial markets. Firms have to publicly disclose a sample of the option prices implicit in their calculations and this should enable any outlier firms to be identified. Note also that the methodology is different from the approach that asks what is the 75th percentile in the distribution of liabilities, which is under consideration for Solvency II.

The outcome is that liabilities as calculated are, on average, 8.1% higher than in the regulatory valuation, although for five firms, the realistic value of liabilities is lower than the regulatory value. The regulatory valuation is meant to use assumptions that are prudent, but in many cases such prudence is inadequate to cover the costs realistically expected to be involved in meeting bonuses, options and guarantees and financing costs.

Overall, the ratio of realistic assets to realistic liabilities varies, across the 38 life insurers, from 133.48% to 98.38%. For two firms the ratio is less than 100% and the regulator has permitted them to take into account additional assets of the shareholder that are available if needed.

The realistic balance sheet is accompanied by a calculation of an alternative capital requirement based on stress tests. These tests are based on work done by Watson Wyatt (2004) and are intended to be consistent with a firm having a 99.5% probability of being able to meet its realistic liabilities in one year's time. The parameters assume a 'standard' type of firm. If the firm is markedly different, then any financial impact should be picked up by the ICA.

The stress tests cover only some specific risks: market risk, credit risk and persistency risk (an element of insurance risk, namely the risk that there is a change in the extent to which policyholders continue paying premiums on their policies). The details of the stress tests are taken from the FSA handbook.

The market risk stress test requires insurers to consider the impact of:

- the market value of equities changing by 10-20% (depending on what changes there have been in the FT-All Share Index in the previous 90 days),
- property values changing by 12.5% and
- yields on government securities changing by 17.5% (e.g. from 4% to 3.3% or 4.7%).

Credit risk is represented by an increase in the spread on corporate bonds over government bonds, more so for low-grade bonds.

Persistency risk involves assuming that the rate at which policyholders discontinue policies changes by 32.5% (e.g. from 5 % p.a. to 3.375% or 6.625%).

The new capital requirement is that needed to ensure that, in the most adverse scenario included in the stress tests, the insurer will still have assets at least equal in value to its realistic liabilities. In carrying out these stress tests, firms may also take into account management actions they plan to take (this, of course, adds considerable complexity to the modelling).

The results of the realistic valuation are included in the information that insurers send to the regulator, and which is made publicly available. Also included is a report on the valuation, typically 20 pages or more in length. This contains detail on, e.g. assumed returns and volatilities of the assets, and the correlations between returns on different asset classes, together with the justifications for these assumptions; the management actions assumed; and the number of projections done.

The capital requirement arising from the stress tests, as a proportion of the liabilities, varied from nil in one case where the firm would take management actions to counter the effect of the adverse events in the stress tests, to 10.06%. The average is 3%. Firms with a low excess of assets over liabilities tended to have reduced the risks in their business (e.g. through a more conservative investment strategy) and had a relatively low capital requirement.

In 14 out of the 38 cases, the realistic basis and stress test resulted in a lower capital requirement than the regulatory method, but those firms had to maintain the minimum capital using the old test as this would otherwise have breached EU rules. In the other 24 cases, the stress test produced a higher capital requirement: the largest additional amount for any one firm was £3.6 billion, which was comfortably met from the firm's existing surplus.

4.2 The Swiss experience⁷²

The Swiss insurance regulator, the Swiss Federal Office of Private Insurance (FOPI), has been determined to improve the way in which insurance solvency regulation operates and has introduced a new solvency test with effect from January 2006. The test is firmly based on a market-consistent valuation of assets and liabilities, and a principles-based approach to setting minimum solvency requirements, designed so that the required margin is sensitive to the risks that the insurer is running.⁷³

The aim of the FOPI is to ensure that the interests of policyholders are protected. The office was concerned that standard formulaic approaches to setting minimum solvency requirements, as incorporated in Solvency I, are difficult to apply because they are not flexible enough and tend to lead to the regulator becoming unduly involved in risk management.

FOPI has therefore devised a risk-based solvency standard based on the actual risks run by insurers. This states the following:

- The solvency regime should be transparent and comparable between insurers;
- The regime should give incentives for insurers to apply better risk management techniques and processes; and
- It is helpful to put responsibility on insurers to investigate their own risks and take this into account in their calculation of target capital.

In this section, we briefly describe the valuation of assets and liabilities and the target capital in the Swiss Solvency Test and its implementation.

4.2.1 *Valuation of assets and liabilities*

A feature of the test is that assets and liabilities are to be valued consistently, on a market-consistent basis.

For assets, this generally means valuing at observed market prices rather than historic cost or amortised cost as might be used in the insurer's

⁷² This description is largely based on Swiss Federal Office of Private Insurance (2004) together with the presentation by Damir Filipovic to the CEPS Task Force.

⁷³ See <http://www.bpv.admin.ch/themen/00506/index.html?lang=en> for more information about the Swiss Solvency Test.

accounts. Wherever possible, market-consistent valuation uses observable market prices. If such values are not available, a market-consistent value is determined by examining comparable market values, taking account of liquidity and other product-specific features, or on a model basis (marking to model).

The market-consistent value of a liability is the amount an arm's length transaction in a liquid market would require the transferring insurer to pay to the party taking over the liabilities. As, generally, there are no liquid markets for insurance liabilities, the market-consistent value of liabilities is taken as the best estimate of the liabilities plus a risk margin.

The test recognises the importance of valuing all embedded options in a portfolio, e.g. surrender value guarantees or guaranteed annuity options. No specific method for valuation has been prescribed by the regulator. However, valuation approaches include valuing a replicating portfolio, modelling all policyholder liabilities and interactions with the financial market on a stochastic basis and using discounting methods (deflators) and/or scenarios (risk-neutral) which ensure market-consistency.

Only liabilities that are contractually agreed or required by law have to be considered for the purposes of the test. This includes mandatory policyholder participation schemes.

All assumptions concerning insurance risks (i.e. mortality rates) have to be made on a best-estimate basis without an implicit or explicit safety margin.

Insurers need to add a risk margin to their best estimate of liabilities to produce a market-consistent value. The risk margin is defined as the hypothetical cost of regulatory capital necessary to run off all insurance liabilities following financial distress of the insurer. Without this risk margin, it would not be possible to find a third party to take over the portfolio. Risks emanating from both the asset portfolio and the liabilities enter the calculation of the risk margin.

The risk margin is calculated as the discounted value of the future costs of maintaining the Swiss Solvency Test target capital level if the insurance portfolio is being run by a third party.

In the run-off, the insurer's actuary can assume a reallocation of capital over time towards the optimal asset portfolio. In summary, the actuary determines the best estimate run-off of future annual capital

requirements, each one of which is then priced according to a cost of capital factor given as a spread over the risk-free rate. For the Swiss Solvency Test field test in 2004, the cost of capital was chosen to be 6% per annum. The resulting present value of future costs is the risk margin.

4.2.2 Target capital

The Swiss Solvency Test defines the target capital for an insurer as the sum of the risk margin (part of the market consistent value of liabilities, as described above) and the 'expected shortfall'.

To understand the expected shortfall, we also need to understand the term 'risk-bearing capital'. This is the excess of the market-consistent value of assets over the best estimate of liabilities. It is therefore equal to the target capital plus the 'free' assets of the insurer (i.e. the excess of market-consistent value of assets over the sum of the best estimate of liabilities and target capital).

The expected shortfall is the capital deemed necessary for the risks emanating within a one-year time horizon. It is quantified using the expected shortfall in the change in risk-bearing capital. It is defined as the amount of risk-bearing capital necessary today, such that if the worst-case scenarios over the next year are considered (100x% (e.g. $x = 1\%$), then on the average of those scenarios, the remaining risk-bearing capital will exceed the risk margin. In formal terms, expected shortfall is the minimum sum capable of compensating for 100x% for the worst-case expected loss. The confidence level $1-x$ will be set by the supervisor.

Expected shortfall is used rather than the more commonly used Value at Risk measure. Expected shortfall is more than VaR, the problem with VaR being that it ignores what the actual losses are above the confidence level to which VaR relates. Since the real loss distribution is expected to show some large losses with low probabilities, expected shortfall is appropriate, because it accounts for the extent of the x% 'bad instances'.

In calculating the target capital, the insurer estimates the impact of a number of risks using standard models, aggregated with the impact of applying certain scenario tests.

There are a number of standard models: an asset model, a life insurance model, a non-life model, a health insurance model and a credit risk model.

The asset model consists of 23 risk factors relating to, for example, interest rates and their volatility, exchange rates and their volatility, share prices, property prices and credit spread. All the risk factor changes are assumed to be normally distributed with zero mean. The joint behaviour of risk factors is described by their covariance matrix. Changes in risk factors lead to changes in the risk-bearing capital.

The life insurance model contains seven risk factors, with specified volatilities and correlations.

The aim of the non-life model is to determine the distribution of the annual change of the risk-bearing capital due to the variability of the technical non-life result. The technical result is determined by the earned premium, costs, future claims and the change in provisions. The actuary quantifies the risk by using explicit probability distributions.

A standard model for health insurance considers two lines of business (individual health care costs and daily allowances; and daily allowance for groups). Based on the loss history of their own portfolio, the insurers determine the expected value and the standard deviation of the result of these lines. The results are aggregated, taking into account a specified correlation between the two lines.

The standardised model for credit risk is the Basel II standardised approach, excluding operational risk.

Insurers also have to examine the impact of a number of scenarios. These are more general than simple stress tests, which often consist of stressing a single risk factor. Scenarios are described by stressing not one but the whole set of risk factors, plus providing a more complete picture.

A number of adverse scenarios are described in the Swiss Solvency Test. In addition, the actuary should define scenarios that reflect the insurer's specific exposures.

Qualitative and quantitative scenarios are distinguished. The former are evaluated but do not enter the target capital calculation, whereas the latter are aggregated with the results of the standard model.

Scenarios are used since the standard models do not necessarily reflect adequately the tail behaviour of the distribution of the change of the risk-bearing capital after one year because of the assumptions and specifications made. For example, the standard asset model assumes that the risk factor changes are normally distributed, which is often not true especially when markets are depressed. Scenarios provide more

information than a single target capital number: they can take into account the heterogeneity of risks and complement the stochastic standard model.

Examples of scenarios are:

- Industry scenario: an explosion in a chemical plant;
- Pandemic event;
- Liability for a collapsed water barrage/dam;
- Default of re-insurer;
- Terrorism.

Each scenario is given a weight (probability of occurrence) and the outcome is aggregated with the outcome from the standard models.

The insurer prepares a comprehensive report of its modelling and calculations for the supervisor.

4.2.3 Implementation

A field test was carried out in 2004, covering three non-life, four life and four health insurers in Switzerland. This showed that the test was feasible both for very small as well as large companies. The complexity of the test was accepted, since the results allowed in-depth analysis of risk by insurers. It is, however, a challenge to maintain the principle-based nature of the test, since some insurers prefer explicit rules to implement the test. In practice, it was found that market risk was often the dominant risk.

A further field test was carried out in 2005, including approximately 40-50 companies.

The Swiss Solvency Test now applies from 1 January 2006. One of the aims of the Swiss Solvency Test is to be compatible with the future European Solvency II framework.⁷⁴

4.3 Lessons for the new EU solvency framework

The new UK regime has been welcomed by insurers and others. The realistic balance sheet provides a more suitable picture of insurers' financial

⁷⁴ Swiss Re Sigma report No. 4 (Swiss Re, 2006c) looked at the change of the insurance industry's solvency position relative to the Swiss Solvency Test (SST) models.

position than the original approach, whose prudence did not cope well when equity markets declined. The new realism also operates with better incentives to manage risk, although there have been costs to policyholders as insurers have adopted a more conservative strategy and increased the charges they make for guarantees.

The new emphasis on risk management among insurers is welcome. The ICA regime has also focused directors' minds more firmly on capital adequacy and working out how they would cope with adverse situations. There is a downside in that there has been an immense amount of work involved in advancing the modelling that firms do and UK insurers would be concerned if Solvency II were to move in a different direction.

The extensive disclosure is also a welcome discipline and is valuable for analysts. It is now clear that we should not necessarily have concerns about disclosure causing market instability.

The Chief Risk Officer Forum (2005) promoted the advantages of the Swiss Solvency Test in using the cost-of-capital approach to assess the market value margin, and hence market value of liabilities, for use in Solvency II. They felt that the cost-of-capital approach has a number of theoretical and practical advantages compared with a rule specifying that the liabilities should be valued at a specified percentile in the probability distribution. In particular:

- The cost-of-capital approach is directly linked to a view of what a rational investor would require in excess of a best estimate valuation;
- The approach is easier to apply as it does not require stochastic modelling; and
- It is applicable to life and non-life business.

Building on the Swiss experience, there is growing recognition that market-consistent valuation of assets and liabilities is feasible. The cost-of-capital approach should therefore be further examined in the European context.

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Annexes

1. Life and non-life insurance concentration

Table A1. The largest mergers and acquisitions involving banks and insurers in the EU by value of transaction, 1990-2003

	Acquirer		Target		Year	Deal value (€ billions)
1	Allianz (I)	DE	Dresdner Bank (B)	DE	2001	22.3
2	Lloyds TSB Group (B)	UK	Scottish Widows Fund & Life (I)	UK	2000	12.0
3	Fortis (I)	BE	Generale de Banque (B)	BE	1998	10.5
4	Nationale Nederlanden (I)	NL	NMB Postbank Groep (B)	NL	1991	5.6
5	ING Groep (I)	NL	BBL (B)	BE	1997	4.1
6	Abbey National (B)	UK	Scottish Provident Institution (I)	UK	2001	2.9
7	Dexia Belgium (B)	BE	Financial Security Assurance (I)	US	2000	2.7
8	Irish Permanent (B)	IE	Irish Life (I)	IE	1999	2.7
9	ING Groep (I)	NL	BHF Bank (B)	DE	1999	2.3
10	Lloyds TSB Group (B)	UK	Lloyds Abbey Life (I)	UK	1996	2.1

Source: Thomson Financial.

Table A2. Biggest life groups on national markets in 2003 (€ millions)

N° 1 in each market		
Country	Group	Premium
FR	CNP	17,356
IT	Generali	13,917
UK	Aviva	12,779
DE	Allianz	10,079
NL	ING	5,582
CH	Winterthur Leben	5,390
BE	Fortis	4,024
FI	Varma, Sampo Life, Kaleva	3,117
SE	Alecta	2,475
DK	Danica	1,845
ES	Aviva	1,769
IE	Irish Life	1,725
NO	KLP	1,572
PT	Seguros e Pensões	1,249
PL	PZU Zycie	1,166

AT	Sparkassen	760
CZ	Ceska Pojist'ovna	449
HU	ING	248
GR	Ethniki	229
TR	Anadolu Hayat ve Emeklilik	201
SI	Triglav	128
SK	Allianz	126
CY	Laiki Cyprialife	71
LU	La Luxembourgeoise	65
HR	Grawe	29
IS	SJAL Líf	13

N° 2 in each market

Country	Group	Premium
FR	Crédit Agricole	14,782
UK	Halifax	11,727
IT	Allianz	8,945
CH	Rentenanstalt	4,830
BE	Ethias (ex-SMAP)	3,094
DE	AM-Leben	3,088
NL	Fortis	2,982
FI	Ilmarinen, Suomi, Suomi Oy	2,602
SE	Skandia	2,323
ES	Mapfre	1,683
DK	PFA Pension	1,683
IE	BankofIreland Life	1,347
NO	Storebrand	1,185
PT	Fidelidade - Mundial	986
AT	Wiener Städtische	689
PL	Commercial Union	383
GR	Interamerican Life	210
CZ	Nationale - Nederlanden	158
HU	Aegon	146
TR	Commercial Union Emeklilik ve Hayat	86
SK	AMSLICO	73
CY	Eurolife	71
LU	Le Foyer	58
SI	Maribor	46
HR	Croatia	27
IS	Alpjoda	8

N° 3 in each market		
Country	Group	Premium
FR	AXA	11,283
UK	Standard Life	11,002
IT	Unipol	5,061
NL	Aegon	3,241
DE	R+V AG	2,954
CH	Zürich Leben	2,917
BE	AXA	2,128
ES	Caifor	1,596
SE	Folksam	1,566
FI	Tapiola	1,194
PT	Tranquilidade Vida	854
DK	Nordea	801
IE	Ark Life	788
NO	Vital	757
AT	Raiffeisen	584
PL	Amplico Life	238
GR	AIG Life	198
CZ	Kooperativa	141
HU	OTP Garancia	114
TR	Yapı Kredi Emeklilik	71
SK	Kooperativa	56
CY	Universal	54
LU	Fortis	44
SI	PFM	41
HR	Merkur	23
IS	Lift. Islands	7

N° 4 in each market		
Country	Group	Premium
UK	Prudential	8,473
FR	BNP/Paribas	7,477
IT	Sanpaolo Vita	5,033
DE	Hamburg Mannheimer	2,899
NL	DLL	2,502
CH	Basler Leben	2,009
BE	KBC	1,951
SE	SHB	1,503
ES	BBVA	1,237
FI	Nordea Life	872

DK	Kommunernes	736
NO	Gj.Nor Sp.	685
IE	Hibernian Life	668
PT	Grupo Allianz Portugal	662
AT	UNIQA Personen	400
PL	Nationale Nederlanden	206
GR	ING Life	169
HU	Generali-Providencia	106
CZ	Pojišťovna ČS	101
SK	Nationale-Nederlanden	51
TR	Koc Allianz Hayat ve Emeklilik	44
LU	Swisslife	38
CY	American Life	25
SI	Merkur	24
HR	Zagreb	22
IS	Líftrmidstödin	0

N° 5 in each market

Country	Group	Premium
UK	Legal and General	6,461
FR	Générali	6,053
IT	Poste Vita	4,489
DE	Deutscher Herold	2,790
NL	Interpolis	2,030
BE	ING	1,778
CH	Patria	1,762
SE	SEB	1,401
ES	Generali	1,199
FI	Fennia	739
IE	Friends First	589
PT	Totta Seguros	514
DK	Industriens Pension	496
AT	Generali	398
NO	Nordea Liv	313
PL	Warta Vita	110
CZ	ČSOB Pojišťovna	95
GR	Agrotiki	91
HU	Allianz Hungaria	66
TR	Vakif Emeklilik	34
LU	AGF	24
SK	Kontinuita	20

HR	Allianz	19
SI	Grawe	16
CY	Interlife	14

Largest non-life groups on national markets in 2003 (€ millions)

N° 1 in each market		
Country	Group	Premium
UK	Aviva	8,451
FR	Groupama	8,123
DE	Allianz	8,037
IT	Fondiaria-Sai	6,803
ES	Mapfre	4,096
NL	Achmea	3,137
CH	Winterthur	2,073
SE	LF/group	1,658
PL	PZU	1,641
BE	AXA	1,406
DK	Tryg	1,091
AT	Wiener Städtische	1,036
IE	Hibernian	925
PT	Fidelidade-Mundial	885
FI	If Insurance	852
CZ	Ceskà Pojist'ovna	740
HU	Allianz Hungaria	550
SI	Triglav	391
SK	Allianz	328
GR	Ethniki	320
HR	Croatia	317
TR	Anadolu	263
LU	Le Foyer	199
IS	Sjova-Almennar	98
CY	Laiki	41

N° 2 in each market		
Country	Group	Premium
FR	AXA	7,358
UK	Royal + Sun Alliance	5,796
IT	Generali	5,619
DE	AXA	2,593
NL	Fortis	2,263

CH	Zürich	1,995
ES	Allianz	1,666
NO	Gjensidige	1,442
SE	If Skade	1,255
BE	Fortis	1,204
DK	Topdanmark	939
AT	Allianz Elementar	878
PT	Seguros e Pensões	789
FI	Pohjola-group	660
IE	Allianz	599
CZ	Kooperativa	487
PL	Warta	397
HU	Generali-Providencia	267
TR	Axa Oyak	262
SI	Health Insurance Mutual	243
GR	Phoenix-Metrolife Emporiki	163
LU	La Luxembourgeoise	131
SK	Kooperativa	121
IS	Vatryggingafélag	92
HR	Euroherc	81
CY	General Ins. of Cyprus	31

N° 3 in each market

Country	Group	Premium
FR	AGF/Allianz	6,301
IT	Allianz	5,292
UK	Zurich	4,382
DE	Gerling	2,381
NL	ING	1,847
CH	Mobiliar	1,191
ES	Generali	1,162
SE	AFA	1,065
BE	Ethias (ex SMAP)	985
NO	Vesta	900
AT	Generali	839
DK	Codan	683
IE	AXA	541
FI	Tapiola-group	445
PT	Grupo Tranquilidade	407
CZ	Allianz	231
PL	Ergo-Hestia	213

TR	Ak	209
HU	OTP Garancia	127
SI	Maribor	117
GR	Agrotiki	111
IS	Tryggingamidstodin	72
LU	AXA	63
HR	Jadransko	51
SK	Czech ins.co.	42
CY	Lloyd's underwriters	21

N° 4 in each market

Country	Group	Premium
FR	MAAF/MMA	4,689
IT	Unipol	3,792
UK	Allianz Cornhill	2,493
DE	R+V	2,207
NL	DLL	1,651
ES	Axa	1,153
CH	Allianz	1,144
SE	Trygg/Hansa	1,005
AT	Uniq Sach	817
BE	KBC	705
DK	Alm. Brand	521
IE	Royal&Sun	470
NO	Spb1	426
PT	Allianz Portugal	335
FI	Fennia	243
TR	Yapı Kredi	184
PL	Allianz	158
SI	Adriatic	113
CZ	Generali	113
GR	Interamerican General	102
HU	Aegon	97
HR	Allianz	40
LU	Zurich Assurances	31
SK	UNIQA	28
CY	Pancyprian	20
IS	Vidlagatrygging	11

N° 5 in each market		
Country	Group	Premium
FR	Générali	3,131
UK	AXA	2,393
IT	Toro	2,181
DE	Zürich	1,846
NL	Interpolis	1,286
ES	Zurich	1,058
CH	Helsana	861
SE	Folksam	832
AT	Uniqa Personen	725
CH	Helsana	672
BE	Winterthur	557
IE	Eagle Star	382
PT	Axa Portugal	329
DK	If	284
FI	local Insurance Group	217
TR	Koc Allianz	183
NO	Gard	152
CZ	Pojišťovna ČS	98
HU	UNIQA	86
PL	HDI Samopomoc	86
GR	Alpha	74
SI	Slovenica	47
LU	La Baloise	26
HR	Triglav	23
CY	Minerva	14
SK	UNION	13
IS	Íslandstr	5

2. What is capital in an insurance company?

The economic capital of an insurer is defined as the difference between the market value of assets and the market value of liabilities. The market value of assets reflects the market value of the insurer's stocks, bonds, real estate, cash and the like. The market value of liabilities equals the present value of the payments that the insurer has promised to make in the future for policies already sold.

The primary purpose of capital is to act as a safeguard for policyholders and as a cushion against unexpected losses.

According to Art. 27 of the life Directive and Art. 16 of the non-life Directive, the eligible capital items are set as follows:

Elements which may meet the solvency margin without limit include: paid-up share capital, (common share capital and perpetual non-cumulative preference shares); reserves (statutory or free) not corresponding to underwriting liabilities and retained earnings; initial or foundation fund; subordinated members' accounts (meeting specific requirements); profit reserves (participation fund surplus);

Supplementary elements which are eligible up to specified limits include: perpetual cumulative preference shares, perpetual cumulative subordinated debts and perpetual securities, limited to 50% of the lesser of the available and the required solvency margin; fixed term subordinated debt and fixed term preference shares, limited to 25% of the lesser of the available and required solvency margin;

Elements that need the prior approval of the supervisory authority before they can be eligible to meet the solvency margin include: no more than 50% of members' calls for non-life mutuals up to 50% of the lesser of the available or required solvency margin; future profits (under the Recast Life Directive 2002/83/EC (Article 27) – future profits will no longer be eligible capital from 31 December 2009 onwards) subject to a limit of 25% of the lesser of the available or required solvency margin; hidden reserves arising out of the valuation of assets; and no more than 50% of the unpaid share capital or unpaid initial fund up to 50% of the lesser of the available and required solvency margin.

3. Definitions of insurance risks

<i>Underlying causes – internal</i>	<i>Definitions</i>
<i>Management & staff competence risk</i>	The risk that management, staff or other ‘insiders’ lack the skills, experience or other personal or professional qualities to enable them to perform their tasks adequately and successfully. It includes the risk of over-reliance on one or more persons (‘key person risk’).
<i>Internal governance & control risk</i>	The risk of inadequate or failed systems of corporate governance and overall control, including the risk that arises from an inadequate control culture.
<i>Controller & group risk</i>	The risk of inadequate or inappropriate direction, control or influence from connected persons (natural or corporate) including from major shareholders, parent undertakings and other group undertakings and the management of those undertakings.
<i>Underlying or trigger causes – external</i>	
<i>Economic cycle/condition risk</i>	The risk of adverse change in the economy, including adverse changes in economic variables such as interest, inflation and exchange rates.
<i>Market competition risk</i>	The risk of adverse change within the insurance markets, including increases or decreases within a market of the demand for, or supply of, insurance products.
<i>Social, technological, demographic, political, legal, taxation (etc.) risks</i>	The risk of adverse change in the social, technological, demographic, political, legal, tax (etc.) environment.
<i>Catastrophe/extreme event risk</i>	The risk of a catastrophe or other extreme event, including an extreme accumulation of events from the same or related originating cause.
<i>Inadequate or failed processes, systems or people</i>	
<i>Data risk</i>	The risk that insufficient, inadequate or incorrect data is held or collected.
<i>Accounting risk</i>	The risk that inadequate, inappropriate or incorrect financial reporting policies are adopted or applied. This includes both internal and external financial reporting.

<i>Technology risk</i>	The risk of inadequate or inappropriate use (or non-use) of information technology or failure to understand the consequence of advances in information technology, e.g. as a result of an increase in the size of claims or faster claims settlement.
<i>Distribution risk</i>	Inadequate control of distribution, especially where distribution is through agents or other intermediaries or relies on new technologies (e.g. the internet).
<i>Administration risk</i>	The risk of inadequate or failed administrative systems or staff including inadequate or failed communication between front and back office systems.
<i>Other operational risk</i>	Other risks of inadequate or failed internal processes, people and systems, including in respect of outsourced processes ('outsourcing risk').
<i>Loss of goodwill /reputation risk</i>	The risk of loss of goodwill or reputation.
<i>Inappropriate risk decisions</i>	
<i>Investment/Asset-liability management risk</i>	The risk that an inappropriate investment strategy is adopted or that a chosen investment strategy is inadequately implemented, including the risks that: <ol style="list-style-type: none"> 1. assets and liabilities might not be matched due to an inadequate understanding of their liquidity, maturity and interest rate structure; and 2. the market, credit and other risks inherent from holding assets are not properly understood.
<i>Reinsurance risk</i>	The risk that an inappropriate reinsurance strategy is adopted or that the chosen strategy is inadequately implemented, including the risks that: <ol style="list-style-type: none"> 1. the characteristics of gross underwriting or of reinsurance products are inadequately understood, leading to a selection of inadequate reinsurance protection; and 2. the credit-worthiness of reinsurance counterparties is not properly investigated or understood.
<i>Expense risk</i>	The risk that an inappropriate expense management strategy is adopted or that the chosen strategy is inadequately implemented, including the risk that: <ol style="list-style-type: none"> 1. uncontrolled cost escalation may occur,

	<p>particularly on large projects, or financial and other (e.g. human) resources are used wastefully.</p> <p>2. techniques to forecast, monitor and control expense levels may be poorly understood.</p>
<i>Underwriting risk</i>	<p>The risk that an inappropriate underwriting strategy is adopted or that the chosen strategy is inadequately implemented. It includes the risks that:</p> <ol style="list-style-type: none"> 1. the circumstances and events which might lead to the incidence or aggregation of loss or of expense under insurance contracts are not properly investigated or understood; and 2. the terms and conditions in insurance contracts are not properly understood.
<i>Business risk</i>	<p>The risk that other aspects of the business strategy are inappropriate or inadequately implemented, including the risks of:</p> <ol style="list-style-type: none"> 1. mis-selling ('mis-selling risk'); 2. uncontrolled or rapid growth (or lack of planned growth) and its consequences for the adequacy or control of administrative resources, expenses, liquidity ('growth risk'); 3. excessive concentration of business in a particular region or sector or accumulation of exposure to a particular type of risk ('business concentration risk'); 4. non-insurance activities are inappropriate or inadequately controlled ('contagion risk').
<i>Financial outcomes</i>	
<i>Market risk</i>	<p>The risk of loss from general or specific changes in the value of assets, including from adverse changes in stock exchange indices and in interest and currency exchange rates.</p>
<i>Credit risk</i>	<p>The risk of loss from the failure of a counterparty to meet its obligations as they fall due.</p>
<i>Claims deviation risk</i>	<p>The risk of loss due to adverse deviation in the amount, frequency or timing of claims.</p>
<i>Other liability risk</i>	<p>The risk of unexpected loss or expense from other causes including: liability arising from regulatory non-compliance, e.g. mis-selling; and loss or expense from non-insurance activities.</p>

<i>Loss of business risk</i>	Loss of goodwill or reputation leads to loss of business and erodes the firm's value.
<i>Incorrect evaluation of financial outcomes</i>	
<i>Technical provisions -evaluation risk</i>	The risk that the technical provisions may prove to be insufficient.
<i>Other liabilities – evaluation risk</i>	The risk of non-recognition, under recognition or delayed recognition, of liabilities.
<i>Asset evaluation risk</i>	The risk that assets are incorrectly valued.
<i>Policyholder harm</i>	
<i>Participating policyholder loss risk</i>	The risk that variable benefits to participating (with-profits) policyholders will fail to meet their reasonable expectations.
<i>Liquidity risk</i>	The risk of delay in meeting policyholder claims due to inadequate liquidity.
<i>(Insolvency) balance sheet risk</i>	The risk of inability to meet policyholder claims in full due to insolvency, i.e. liabilities exceed assets.

Source: Sharma (2002).

4. Principles on capital adequacy and solvency of insurers

The 14 principles on capital adequacy and solvency of insurers

1. Adequate technical provisions are the cornerstone of a sound capital adequacy and solvency regime. Accordingly, technical provisions have to be calculated in a reliable, objective and consistent manner across insurers.
2. Supervisors should insure that an insurer makes adequate provisions of all of its liabilities insofar as they are not included in the technical provisions.
3. As regards assets, insurance companies have to invest having regard to safety and return. The regulatory framework or the insurance supervisory authorities may impose other requirements on the assets to allow for items such as concentration risk, credit risk, market risk, liquidity risk and liquidation risk.
4. Capital adequacy and solvency regimes have to address the matching of assets with liabilities.
5. Capital requirements are needed to absorb losses that can occur from technical and other risks.
6. Capital adequacy and solvency regimes have to be sensitive to risk. Supervisors may consider the use of internal capital models as a basis for a capital requirement as long as this model is assessed as adequate for the purpose by the supervisor.
7. Insurance regulatory authorities have to establish a control level. This level has to be set sufficiently high to allow intervention at an early stage to contain difficult situations.
8. The regulatory framework has to set out a threshold minimum capital requirement for companies. This minimum level of capital is designed to provide a minimum assurance of the financial capacity and soundness of the insurer.

9. The capital adequacy and solvency regime has to define the form of capital that is deemed suitable to provide support when insurer encounters an unexpected or extreme event.
10. Capital adequacy and solvency regimes have to be supplemented by risk management systems.
11. Any allowance for reinsurance in a capital adequacy and solvency regime should consider the effectiveness of the risk transfer and make allowance for the likely security of the reinsurance counterparty.
12. Insurers should be required to publicly disclose appropriate qualitative and quantitative information about risk exposures and the components to make up their capital.
13. Insurance supervisory authorities have to undertake solvency assessment.
14. Capital adequacy and solvency regimes for insurers that are part of a group should also take a group-wide view. When considering insurance companies that are part of a group, it is important that steps are taken to avoid double gearing of capital.

Source: IAIS (2002).

Capital adequacy and solvency (Insurance Core Principle 23)

The supervisory authority requires insurers to comply with the prescribed solvency regime. This regime includes capital adequacy requirements and requires suitable forms of capital that enable the insurer to absorb significant unforeseen losses.

Essential criteria

- a) The solvency regime addresses in a consistent manner:
 - valuation of liabilities, including technical provisions and the margins contained therein;
 - quality, liquidity and valuation of assets;
 - matching of assets and liabilities;
 - suitable forms of capital;
 - capital adequacy requirements.

- b) Any allowance for risk mitigation or transfer considers both its effectiveness and the security of any counterparty.
- c) Suitable forms of capital are defined.
- d) Capital adequacy requirements are sensitive to the size, complexity and risks of an insurer's operations, as well as the accounting requirements that apply to the insurer.
- e) The minimum capital adequacy requirements should be set at a sufficiently prudent level to give reasonable assurance that policyholder interests will be protected.
- f) Capital adequacy requirements are established at a level such that an insurer having assets equal to the total of liabilities and required capital will be able to absorb significant unforeseen losses.
- g) Solvency control levels are established. Where the solvency position reaches or falls below one or more control levels, the supervisory authority intervenes and requires corrective action by the insurer or imposes restrictions on the insurer. The control level is set so that corrective action can be taken in a timely manner (refer to ICP 14).
- h) Inflation of capital – through double or multiple gearing, intra-group transactions, or other financing techniques available as a result of the insurer's membership in a corporate group – is addressed in the capital adequacy and solvency calculation (refer to ICP 17).
- i) The solvency regime addresses the requirements placed upon an insurer operating through a branch.

Advanced criteria

- j) The solvency regime provides for periodic, forward-looking analysis (e.g., dynamic solvency/stress testing) of an insurer's ability to meet its obligations under various conditions (refer to ICP 20 AC g and ICP 21 AC k).
- k) The supervisory authority assesses the structure of its solvency regime against structures of a peer group of jurisdictions and works towards achieving consistency.

Source: IAIS (2003a).

5. The role of the International Actuarial Association

After considering the use of actuaries as a part of an insurance supervisory model, the IAIS committed to develop a global framework for risk-based capital for insurers. For this purpose, acting in support of the IAIS, the Insurance Regulation Committee of the International Actuarial Association (IAA) formed the Insurer Solvency Assessment Working Party chaired by Stuart Wason in early 2002 to prepare a study on the structure for a risk-based solvency assessment system for insurance and to provide a best practices approach available to all supervisors⁷⁵. The main objectives of the Working Party (WP) were:

- To describe the principles and methods involved in the quantification of the total funds needed to provide a chosen level of confidence to policyholders and shareholders that the insurer's policyholder obligations will be met;
- To provide recommended principles and methods to be used as a foundation for a global risk-based solvency capital system to be considered by the IAIS;
- To identify risk measures that explicitly or implicitly can be used to measure the exposure to loss from risk and also any risk dependencies;
- Consider whether or not risk models developed internally by insurers can provide a useful and reliable approach.

The Working Party proposes throughout its report a number of guiding principles, which can be summarised as follows:

- *A three pillar approach to supervision.* The conclusions of the WP report were designed to be consistent with the three pillar approach to the regulation of financial services entities in the new Basel Accord. The approach envisaged would have three pillars consisting of:

⁷⁵ IAA working party draft paper on a global framework for insurer solvency assessment, May 2003. Final draft was published in 2004.

- **Pillar I.** Minimum financial requirements,
- **Pillar II.** Supervisory review process, and
- **Pillar III.** Measures to foster market discipline.

The definition of these pillars needs to reflect the specificities of insurance.

- **Pillar I** (minimum financial requirements) involves the maintenance of a) appropriate technical provisions (policy liabilities), b) appropriate assets supporting those obligations and c) a minimum amount of capital (developed from a set of available and required capital elements) for each insurer.
- **Pillar II** is intended to ensure not only that insurers have adequate capital to support all the risks in their business but also to encourage insurers to develop and use better risk management techniques reflective of the insurer's risk profile and in monitoring and managing these risks. Such review will enable supervisory intervention if an insurer's capital does not sufficiently buffer the risks.
- **Pillar III** serves to strengthen market discipline by introducing disclosure requirements. It is expected that through these requirements, industry 'best practices' will be fostered.
- *Types of risks to be included and appropriately measured.* The WP report recommends that all types of risk should be considered in solvency assessment. These risks should be measured using appropriate indicators. The WP believes that the types of insurer risk to be addressed within a Pillar I set of capital requirements are underwriting, credit, market and operational risks.
- *Appropriate risk measure.* According to the WP, one risk measure that exhibits several desirable properties for various (but not all) risks is Tail Value at Risk (also called TVaR, TailVar, Conditional Tail Expectation, CTE or even Policyholders' Expected Shortfall). In many situations, this risk measure is better suited to insurance than Value at Risk (VaR), a risk measure commonly used in banking, since it is common in insurance for the risk event distributions to be skewed.
- *Principles versus rules based approach.* The WP recommends that solvency assessment should be based on sound principles. The

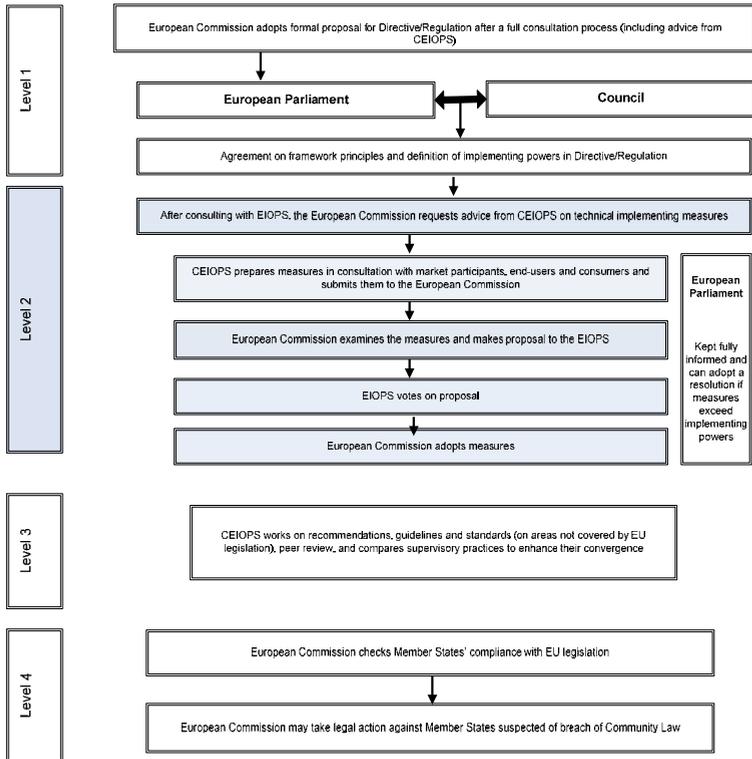
implementation of the solvency assessment will require rules developed from sound principles. According to the WP report, these rules should include provisions to allow their adaptation to current or unforeseen circumstances with the prior agreement of the relevant supervisor.

- *The use of a total balance sheet approach.* The solvency assessment should be determined on an economic basis measured by the difference between the fair value of the insurer's assets and liabilities. A proper assessment of an insurer's true financial strength will require appraisal of its total balance sheet on an integrated basis under a system that depends upon realistic values and does not generate hidden surplus. A key question is whether accounting systems can be harmonised quickly without creating discrepancies with solvency assessment.
- *Appropriate time horizon.* The solvency assessment exercise should take a reasonable period (about one year) for the purpose of determining an insurer's current financial position. The amount of required capital must be sufficient with a high level of confidence, such as 99%, to meet all obligations for the time horizon as well as the present value at the end of the time horizon of the remaining future obligations (e.g. best estimate value with a moderate level of confidence such as 75%). Due to the long term and complex nature of some insurance risks, the insurer should consider valuing its risks for their lifetime using a series of consecutive one year tests with a very high level of confidence (say 99%) and reflecting management and policyholder behaviour (but no new business). Alternatively, this test can be conducted with a single equivalent, but lower (say 90% or 95%), level of confidence for the entire assessment time horizon. This lower level of confidence over a longer time horizon is consistent with the application of a series of consecutive higher level one-year measures.
- *Risk dependencies.* The WP advocates the recognition of the impact of risk dependencies, concentration and diversification. This has implications for the desirable properties of the appropriate risk measure.
- *Risk management.* The solvency assessment method should recognise appropriately the impact of various risk transfer or risk-sharing mechanisms used by the insurer. Considered to be a sound enterprise risk monitoring process, the actuarial control cycle aims to improve a

company's ability to manage its risks and make more effective business decisions. Some of the ways in which an insurer can manage its risks, beyond the fundamentals of prudent claim management, include: risk reduction, risk integration, risk diversification, risk hedging, risk transfer and risk disclosure.

- *Standardised approaches or advanced or company specific models.* It may be appropriate for companies with effective risk management programmes to introduce advanced models which can incorporate all types of quantifiable risks.
- *Market efficient capital requirements.* Excessive minimum capital requirements, while affording additional solvency protection, will also serve to impede capital investment in insurers due to the perceived additional cost of capital required in the business, which may not be recoverable in product pricing.
- *The degree of protection.* It is impossible for capital requirements, by themselves, to totally prevent failures. The establishment of extremely conservative capital requirements, well beyond economic capital levels, would have the impact of discouraging the deployment of insurer capital in the jurisdiction. The WP considered the role of rating agencies in assessing insurers and the substantial volume of credit rating and default data available from these agencies. The WP also noted the relation between the degree of protection and the time horizon considered.

6. The Lamfalussy model in the insurance and occupational pensions sectors – with a focus on the role of CEIOPS



Glossary of terms and acronyms

Terms

Arm's length transaction

Business relationships and transactions undertaken between two related or affiliated parties that are conducted on normal market terms and conditions, so that there is no question of an unfair advantage being gained by one party at the expense of the other. (Source: http://www.iaisweb.org/060406_IAIS_Glossary_update.pdf from Insurance Fraud Subcommittee, *Guidance paper on combating the misuse of insurers for illicit purposes*, October 2005)

Bancassurance

A French term referring to the selling of insurance through a bank's established distribution channels. (<http://www.investopedia.com/terms/b/bancassurance.asp>)

Best estimate liabilities

The expected liabilities, as represented by the arithmetic mean of a distribution, projected over the run-off period, taking into account all up-to-date financial market and actuarial information. Best estimate values do not include any risk margins whatsoever. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Captives

These are usually a type of reinsurance vehicle for a company, or group of companies, not usually involved in the insurance business. They mainly insure the risks of the parent company or companies and are used in two ways. To obtain the cashflow benefits of high frequency risks, such as workers' compensation risks or motor fleet (however, motor fleet is usually so under-priced by the insurance market that it is hardly worth being kept by the in-house captive), and for high severity/low frequency risks (such as pharmaceutical risks) where there may be no cover available in the traditional market.

Cat bonds

Catastrophe bonds (also known as **cat bonds**) are risk-linked securities that transfer a specified set of risks from the sponsor to the investors. They are often structured as floating-rate corporate bonds whose principal is forgiven if specified trigger conditions are met. They are typically used by insurers as an alternative to traditional catastrophe reinsurance.

For example, if an insurer has built up a portfolio of risks by insuring properties in Florida, then they might wish to pass some of this risk on so that they can remain solvent after a large hurricane. They could simply purchase traditional catastrophe reinsurance, which would pass the risk on to reinsurers. Or they could sponsor a cat bond, which would pass the risk on to investors. In consultation with an investment bank, they would create a special purpose entity that would issue the cat bond. Investors would buy the bond, which might pay them a coupon of LIBOR plus 4%. If no hurricane hit Florida, then the investors made a healthy return on their investment. But if a hurricane hits Florida and triggers the cat bond, then the principal initially paid by the investors is forgiven, and is instead used by the sponsor to pay their claims to policyholders.

(Source: http://en.wikipedia.org/wiki/Cat_bond)

Cedant

A term for an insurer that has underwritten insurance and transfers all or part of its risk to a third party by purchasing reinsurance; also known as a reinsured. (Source: <http://www.conning.com/crcstore/glossary/c.asp>)

An original or primary insurer that purchases reinsurance; in so doing, the primary insurer cedes part of its business to the reinsurer. (Source: www.harperisk.com/ArtGlossary/ArtGlosscd.htm)

Collateralized debt obligation (CDO)

Collateralized debt obligations (CDOs) are a type of [asset-backed security](#) or [structured finance](#) product. At a high-level, a CDO can be thought of as a [mutual fund](#) where the owners (i.e. the equity class(es)) leverage their investment by borrowing (by issuing debt) against the portfolio. (Source: <http://en.wikipedia.org>)

Confidence level

The critical point on the probability distribution of liability amounts (or some other quantity) before which the required capital is adequate to cover

losses. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Copula

A copula is a function that associates the distribution function of one random variable to the distribution function of another random variable.

Using copulas to model dependencies on a deeper level, one can for instance take into account that many insurance risks seem to be almost independent in 'normal' situations but heavily dependent in the extreme. (Source: http://www.actuaries.org/LIBRARY/Papers/Global_Framework_Insurer_Solvency_Assessment-members.pdf).

Cost-of-capital (CoC) approach

An approach by which the market value margin (MVM) is determined, by applying a cost of capital charge to the present value of all future solvency capital requirements in order to run the liabilities off fully. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Credit default swaps (CDS)

CDS is a swap designed to transfer the credit exposure of fixed income products between parties. It is the most widely used [credit derivative](#). It is an agreement between a protection buyer and a protection seller whereby the buyer pays a periodic fee in return for a contingent payment by the seller upon a credit event (such as a certain [default](#)) happening in the reference entity. A CDS is often used like an insurance policy, or [hedge](#) for the holder of a [corporate bond](#). The typical term of a CDS contract is five years, although being an [over-the-counter derivative](#) almost any maturity is possible. (Source: <http://en.wikipedia.org>)

Derivative

Also known as a derivative instrument, a derivative is a financial contract whose value derives from the performance of the underlying asset. This underlying asset is commonly a stock, portfolio of stocks, a bond, a currency or a commodity. It can also be a pool of mortgages, a portfolio of credit card receivables or an insurance contract.

Economic capital

The amount of market-consistently valued assets that an insurer judges it should hold in excess of market-consistently valued liabilities to ensure a non-negative economic surplus at a pre-determined time horizon and confidence level. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Economic value

The value of asset or liability cash flows, derived in such a way as to be consistent with current market prices where they are available or using market consistent principles, methodologies and parameters. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Hedgeable risks

A risk that a party can reduce their exposure to by purchasing a hedging instrument or transferring the exposure to a willing, rational, diversified counterparty in an arm's length transaction under normal business conditions (i.e. securitisation e.g. derivatives, options, futures, etc.). (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Market-consistent value

The market-consistent value of assets is its observed market value when available (mark-to-market). If such values are not available, a market-consistent value is determined by examining comparable market values, taking account of liquidity and other product-specific features, or on a model basis (mark-to-model). In particular, market-consistent means that up-to-date values are used for all parameters and that the valuation replicates the market prices of the calibration assets within an acceptable tolerance. The market-consistent value of liabilities is the sum of the discounted best estimate and the market value margin. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Market value margin (MVM)

The cost of risk, i.e. risk margin in addition to the best estimate liability (i.e. the expected present value of best estimate future cash flows) required by

the market. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Minimum capital requirement (MCR)

The capital level representing the final threshold that could trigger ultimate supervisory measures in the event that it is breached. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Non-hedgeable risks

Risks that cannot be hedged or easily transferred to a third party due to market liquidity or interest. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Participating insurance

Policies that entitle the policyholder to receive dividends reflecting the difference between the premium charged and the actual operating expenses and mortality experience of the company; if expenses and mortality are better than anticipated so that an excess of premium has been collected, a portion of the excess then so available is returned to the insured in the form of dividends – the premium is calculated to provide some margin over the anticipated cost of the insurance protection. (Source: http://www.iaisweb.org/060406__IAIS_Glossary_update.pdf from *Training Manual Original Glossary (Butterworth – July 2000)*)

Risk

Potential of a deviation away from expectations, typically involving earnings or value in financial services. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Risk Adjusted Performance Metric (RAPM)

RAPM is a performance metric that is based on a standard accounting performance metric but with some adjustments to reflect future economic risk.

Risk-free rate

Theoretical interest rate at which an investment may earn interest without incurring any risk. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Risk margin

A generic term, representing a buffer above discounted best estimate cash flows. A risk margin may be used for various reasons, e.g. to protect against worse-than-expected outcomes. One case of a risk margin is a market value margin (MVM); in the case of the MVM it is calculated using economic valuation techniques. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Retrocession

The amount of risk that a reinsurance company reinsures; the amount of acession which the reinsurer passes on. (Source: http://www.iaisweb.org/060406__IAIS_Glossary_update.pdf from *Training Manual Original Glossary (Butterworth – July 2000)*)

Run-off basis

A method of considering the financial situation assuming that no new business will be written but that the company will continue to operate with underwritten insurance contracts until the end of the term set by the policy conditions (e.g. the renewal date, the end of a fixed term, death of the insured person) including the settling of claims eventually arising during this period. (Source: http://www.iaisweb.org/060406__IAIS_Glossary_update.pdf from *Solvency Subcommittee - Issues Paper March 2000*)

Solvency capital requirement (SCR)

In the context of the Solvency II regime, is the value-at-risk (VaR) measured over one year to a 1 in 200 confidence level taking into account diversification and risk mitigation in place. The SCR may be derived using either an approved internal model or a standard approach, but in both cases it is based on the principles of economic capital and economic value. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Stress testing

The method of solvency assessment that provides for the consideration of the impact (current and prospective) of a particular defined set of alternative assumptions or outcomes that are adverse. Consideration is given to the effect on the insurance company assets, liabilities and operations of a defined adverse scenario. [Equivalent terms: *dynamic financial analysis, pessimistic scenario test, adverse scenario test*] (Source:

http://www.iaisweb.org/060406_IAIS_Glossary_update.pdf from
Solvency Subcommittee - Issues Paper March 2000)

Tail coverage

An extended reporting period extension under claims-made liability policies that provides coverage for losses that are reported after termination of the policy. (Source: http://www.iaisweb.org/060406_IAIS_Glossary_update.pdf from *Training Manual Original Glossary (Butterworth - July 2000)*)

Tail Value-at Risk (TailVaR)

Expresses the expected (i.e. arithmetic average) size of the loss if it exceeds the Value-at-Risk threshold. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms)

Value-at-Risk (VaR)

The threshold value that losses to a certain confidence level (e.g. in 99% of cases), would not exceed. (Source: 2006 Chief Risk Officer Forum, Comité Européen des Assurances, Appendix C, glossary of key terms) A problem with VaR is that it ignores what the actual losses are above the confidence level to which VaR relates.

Technical provision

Amount set aside on the balance sheet to meet liabilities arising out of insurance contracts, including claims provision (whether reported or not), provision for unearned premiums, provision for unexpired risks, life assurance provision and other liabilities related to life insurance contracts (e.g. premium deposits, savings accumulated over the term of with-profit policies). [Equivalent terms: *technical liabilities*, (*technical*) *reserves*]. (Source: http://www.iaisweb.org/060406_IAIS_Glossary_update.pdf from *Solvency Subcommittee - Issues Paper March 2000*)

Zillmerisation

Zillmerisation is an actuarial technique that reduces the liabilities of an insurer to reflect the acquisition expenses that have been incurred.

Abbreviations

CEA (Comité Européen des Assurances)

CEIOPS (Committee of European Insurance and Occupational Pensions Supervisors): A committee of supervisors established by Commission Decision 2004/6/EC of 5 November 2003 to act as an independent advisory group on insurance and occupational pensions.

EIOPS (European Insurance and Occupational Pensions Committee): A committee of regulators established by Commission Decision 2004/9/EC of 5 November 2003 to assist the Commission in adopting implementing measures for EU directives.

IAIS (International Association of Insurance Supervisors)

IASB (International Accounting Standards Board)

IMF (International Monetary Fund)

List of Task Force members

The report does not reflect a full consensus of all members of the CEPS Task Force. It should be noted, therefore, that each member does not necessarily subscribe to every assessment contained in this report, nor does the report reflect the views of the respective institutions to which the members belong.

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