



Systemic Risk in Insurance

An analysis of insurance and financial stability

Special Report of The Geneva Association Systemic Risk Working Group

March 2010

The Geneva Association

(The International Association for the Study of Insurance Economics)

The Geneva Association is the leading international insurance “think tank” for strategically important insurance and risk management issues.

The Geneva Association identifies fundamental trends and strategic issues where insurance plays a substantial role or which influence the insurance sector. Through the development of research programmes, regular publications and the organisation of international meetings, The Geneva Association serves as a catalyst for progress in the understanding of risk and insurance matters and acts as an information creator and disseminator. It is the leading voice of the largest insurance groups worldwide in the dialogue with international institutions. In parallel, it advances—in economic and cultural terms—the development and application of risk management and the understanding of uncertainty in the modern economy.

The Geneva Association membership comprises a statutory maximum of 80 Chief Executive Officers (CEOs) from the world’s top (re)insurance companies. It organises international expert networks and manages discussion platforms for senior insurance executives and specialists as well as policy-makers, regulators and multilateral organisations. The Geneva Association’s annual General Assembly is the most prestigious gathering of leading insurance CEOs worldwide.

Established in 1973, The Geneva Association, officially the “International Association for the Study of Insurance Economics”, is based in Geneva, Switzerland and is a non-profit organisation funded by its members.

President: Dr Nikolaus **von Bomhard**, Chairman of the Management Board, Munich Re Group, Munich.

Vice Presidents: Mr Michael **Diekmann**, Chairman of the Management Board, Allianz SE, Munich; Mr Kunio **Ishihara**, Chairman of the Board, Tokio Marine & Nichido Fire Insurance Co., Tokyo; Mr John **Strangfeld**, Chairman and CEO, Prudential Financial, Inc., Newark.

Members of the Board: Dr Carlo **Acutis**, Vice President, Vittoria Assicurazioni S.p.A., Turin; Mr Antoine **Bernheim**, President, Assicurazioni Generali S.p.A., Trieste; Ms Christine **Bosse**, CEO, TrygVesta Group, Ballerup; Mr Henri **de Castries**, Chairman of the Management Board and CEO, AXA Group, Paris; Mr Patrick **de Larragoiti Lucas**, President, Sul America Seguros, Rio de Janeiro; Prof. Denis **Kessler**, Chairman and CEO, SCOR, Paris; Dr Stefan **Lippe**, CEO, Swiss Re Group, Zurich; Mr José Manuel **Martinez**, Chairman, MAPFRE SA, Madrid; Mr Andrew **Moss**, CEO, Aviva plc, London; Mr James J. **Schiro**, CEO, Zurich Financial Services, Zurich; Mr Donald A. **Stewart**, CEO, Sun Life Financial Inc., Toronto; Mr Patrick **Thiele**, President and CEO, Partner Re Insurance Co., Pembroke; Mr Mark **Tucker**, Group Chief Executive, Prudential plc, London; Dr Richard **Ward**, CEO, Lloyd’s, London.

Secretary General and Managing Director: Mr Patrick M. **Liedtke** (Head of Insurance and Finance), Geneva.

Vice Secretaries General: Prof. Jan **Monkiewicz** (Head of PROGRES and Liaison—Eastern Europe), Warsaw; Mr Walter **Stahel** (Risk Management), Geneva.

Heads of Research Programmes: Dr Christophe **Courbage** (Health & Ageing and Insurance Economics) Geneva; Ms Geneviève **Reday-Mulvey** (Four Pillars) Geneva.

Head of Communications: Mr Anthony **Kennaway**, Geneva.

Special Officers: Mr Katsuo **Matsushita** (Liaison—Japan & East Asia), Yokohama; Dr Bruno **Porro** (Chairman of Chief Risk Officers Network), Zurich; Mr Gordon **Stewart**, (Liaison—Eastern North America), New York.

Chairman of the Scientific Advisory Council: Prof. Harold **Skipper**, Georgia State University, Atlanta.

Former Presidents of The Geneva Association: Mr Raymond **Barre**, Paris (1973-1976); Mr Fabio **Padoa**, Trieste (1976-1983); Mr Julius **Neave**, London (1983-1986); Prof. Dr Dr e.h. Reimer **Schmidt**, Aachen (1986-1990); Sir Brian **Corby**, London (1990-1993); Drs. Jan H. **Holsboer**, Amsterdam (1993-1999); Mr Walter **Kielholz**, Zurich (1999-2003); Mr Henri **de Castries**, Paris (2003-2008); Mr Martin J. **Sullivan**, New York (2008); Mr Jacques **Aigrain**, Zurich (2008-2009).

Systemic Risk in Insurance

An analysis of insurance and financial stability

Special Report of The Geneva Association Systemic Risk Working Group

The Geneva Association

53 Route de Malagnou,

CH-1208 Geneva,

Switzerland

E-mail: secretariat@genevaassociation.org

Tel: +41-22-707 66 00

Fax: +41-22-736 75 36

www.genevaassociation.org

March 2010

© The Geneva Association

Systemic Risk in Insurance—An analysis of insurance and financial stability

Published by The Geneva Association (The International Association for the Study of Insurance Economics)

Contents

Foreword	1
Executive summary	3
0. Introduction	5
0.1. Purpose of this report	5
0.2. Report structure	5
0.3. The economic and social role of insurers	5
0.3.1. Providing protection for individuals and their possessions	6
0.3.2. Financing the economy through the premiums raised	6
0.4. The importance of insurance in numbers	7
0.5. The different types of insurers' business models	8
1. Setting the scene	11
1.1. The financial crisis: the different effects on banks and insurers	11
1.1.1. Insurers vs. banks: capital and capacity	12
1.1.2. Insurers vs. banks: stable volume and pricing	13
1.2. The effects of the crisis on the insurance industry	15
1.2.1. Insurers with limited banking activities	15
1.2.2. Bank-insurance conglomerates	16
1.2.3. Insurers with wholesale banking operations: AIG	17
1.2.4. Monoliners	18
1.2.5. Conclusion	20
1.3. Why did insurers fare better?	20
1.4. Conclusion	22
2. FSB and IAIS definition of systemic risk	23
2.1. Size	24
2.2. Interconnectedness	25
2.3. Substitutability	26
2.4. Timing	28
2.5. Contributing factors to the assessment of systemic importance	29
2.6. Wind-up and run-off: insurance industry experience	29
2.7. Conclusion on the FSB and IAIS criteria for systemic risk	31
3. Assessing systemic relevance of insurers' risk activities	33
3.1. Investment management activities	35
3.1.1. Asset liability management and strategic asset allocation	35

3.1.1.1. Exposures to other financial institutions	36
3.1.1.2. Investment in equities	37
3.1.1.3. Investment in callable bonds	38
3.1.1.4. Programme trading	39
3.1.2. Derivatives activities on non-insurance balance sheets	40
3.2. Liability origination activities	40
3.2.1. Underwriting catastrophic risks	41
3.2.2. Underwriting long-term risks	44
3.2.3. Writing business with redemption options	46
3.2.4. Writing life insurance with embedded guarantees	48
3.3. Risk transfer activities	49
3.3.1. Hedging with derivatives	49
3.3.2. Reinsurance and retrocession	50
3.3.3. Insurance linked securities and insurance derivatives	53
3.4. Capital, funding and liquidity management activities	55
3.4.1. Mis-management of short-term funding raised through commercial paper or securities lending	55
3.4.2. Raising debt or equity capital	58
3.5. Credit protection activities	58
3.5.1. Credit insurance	58
3.5.2. Financial guarantees	59
3.5.3. CDS writing	61
3.6. Conclusion	63
4. The Impact of regulatory regimes on identified systemic risk issues	65
4.1. Introduction	65
4.2. Assessment of systemically relevant risk activities under the European and U.S. regulatory regimes	66
4.2.1. Derivatives activity on non-insurance balance sheets	66
4.2.1.1. Assessment of European insurance regulation	66
4.2.1.2. Assessment of U.S. insurance regulation	67
4.2.2. Mis-management of short-term funding raised through commercial papers or securities lending	67
4.2.2.1. Assessment of European insurance regulation	67
4.2.2.2. Assessment of U.S. insurance regulation	68
4.3. International regulatory initiatives	68
5. Mitigating measures	71
5.1. Principles of selecting a mitigating measure	71
5.2. Mitigating measures targeted to specific identified issues	72
5.2.1. Measure 1: Implement comprehensive, integrated and principle-based supervision of insurance groups	72
5.2.2. Measure 2: Strengthen liquidity risk management	73
5.3. Additional measures promoting financial stability	74
5.3.1. Measure 3: Enhance regulation of financial guarantee insurance	74
5.3.2. Measure 4: Establish macro-prudential monitoring with adequate insurance representation	74
5.3.3. Measure 5: Strengthen risk management practices	75

Appendix A. Timeline of the crisis	77
Appendix B. Case studies of troubled insurers	87
B.1. AIG	87
B.2. ING	90
B.3. The Hartford	91
Appendix C. Size and diversification of insurers	93
C.1. Size of top 10 European insurers and banks	93
C.2. Size of top 10 North American insurers and banks	94
C.3. Diversification of European insurers	95
Appendix D. Insurer wind-ups: Equitable Life and HIH	97
D.1. Case study: the failure of Equitable Life Assurance Society in the U.K.	97
D.2. Case study: the failure of HIH Insurance in Australia	99
Appendix E. EU insurance regulation: Solvency II	103
Appendix F. U.S. insurance regulation with focus on RBC	105
Appendix G. Swiss insurance regulation: the Swiss Solvency Test (SST)	107
Appendix H. Solvency II and Basel II: a comparison of critical aspects	109
References	111
Glossary	113

Exhibits

Exhibit 1: Breakdown of insurance premiums by line of business and geography	7
Exhibit 2: Premiums per capita in life and non-life insurance (in USD, 2008)	8
Exhibit 3: Chronology of the crisis – market developments 2007-2009	11
Exhibit 4: U.S. financial stress index – 2007-2009	12
Exhibit 5: Re-capitalisation and credit losses	13
Exhibit 6: Rise and fall of wholesale funding and interbank lending	13
Exhibit 7: Borrowing rates during the crisis	14
Exhibit 8: Insurance pricing during the crisis	14
Exhibit 9: Crisis impact by exposure to banking in operations	15
Exhibit 10: Insurance companies affected during the crisis	16
Exhibit 11: AIG revenues by division	17
Exhibit 12: Monoliners' exposures during the crisis	19
Exhibit 13: Monoliners' correlation to the housing markets	19
Exhibit 14: Insurers' cash-flows by source	20
Exhibit 15: Operating net cash-flows and investments by major European insurers	21
Exhibit 16: Estimated cash coverage of insurance companies	21
Exhibit 17: Insurance debt issuance during the crisis	22
Exhibit 18: Definitions of systemic risk and systemic relevance	23
Exhibit 19: Economic capital by risk source	24
Exhibit 20: Interconnectedness: insurance vs. banking	25
Exhibit 21: Worldwide reinsurance capital inflows 1990-2008	27
Exhibit 22: Concentration of European primary insurance markets	27
Exhibit 23: Concentration of the global and U.S. reinsurance markets	28
Exhibit 24: Timing of World Trade Centre claims payments	28
Exhibit 25: Approach for assessing systemic relevance	33
Exhibit 26: Universe of activity categories carried out by insurance companies	34

Exhibit 27: Inter-connections of key risk activities in which insurers can engage	35
Exhibit 28: Insurers' assets are significantly lower than banks' assets and capital markets assets	36
Exhibit 29: Insurers' exposure to other financial institutions	37
Exhibit 30: Insurers and the equity markets	37
Exhibit 31: Illustration of convexity mismatch	38
Exhibit 32: Example of impact of programme trading – Dutch pension fund hedge on euro long-term swap rates (December 2008)	39
Exhibit 33: Catastrophe losses vs. bank failures	41
Exhibit 34: Catastrophe loss coverage	42
Exhibit 35: Timing of insurance claim settlement – example of medical liability and World Trade Centre	43
Exhibit 36: Illustrative example: risk of jump in longevity (U.K.)	45
Exhibit 37: Case study on asbestosis	45
Exhibit 38: Effect of financial crisis on German life lapse rates	47
Exhibit 39: Allianz surrenders and financial resources (2008)	47
Exhibit 40: Illustration of reinsurance spiral	51
Exhibit 41: Comparison of insurance, reinsurance and retrocession gross written premium volumes	52
Exhibit 42: Cession and retrocession rates for major primary insurers and reinsurers	52
Exhibit 43: ILS market growth and insurers' exposure to ILS	54
Exhibit 44: Evolution of weather derivatives	54
Exhibit 45: Liquidity risk from stock lending and commercial paper funding	56
Exhibit 46: Losses averted by bail out of AIG's securities lending operations	56
Exhibit 47: Coverage of short-term liabilities by operational cash-flows and liquid assets	57
Exhibit 48: Overview of credit insurance market	59
Exhibit 49: Size, substitutability and interconnectedness of monoliners	60
Exhibit 50: AIG involvement in CDS and its interconnectedness to major banks	61
Exhibit 51: Example of disconnection between CDS notionals and underlying debt	62
Exhibit 52: CDS sellers and buyers by sector (December 2006)	62
Exhibit 53: AIG revenues 2005 by business lines	87
Exhibit 54: Size of top 10 European insurers compared to top 10 banks	93
Exhibit 55: Size of top 10 North American insurers compared to top 10 banks	94
Exhibit 56: Relative premium contributions by European countries for European top insurers	95
Exhibit 57: Equitable Life lapse rates 2000-2004	98
Exhibit 58: U.K. and Euro area GDP growth rates and U.K. pensioner income	99
Exhibit 59: National Australian economy and dwelling market	100
Exhibit 60: Pillar structure of Solvency II	103

Acknowledgements

This Geneva Report is the product of a collective exercise comprising a steering committee, several working groups and many individual efforts that drafted and discussed all the texts plus a series of comments from outside experts and external support from Oliver Wyman—all under the auspices of The Geneva Association.

It is part of a larger effort by The Geneva Association to stimulate and to conduct work on the credit crisis, new regulatory initiatives and their impact on insurance.

Steering Committee Members

- *Aegon*: Patricia **Plas**
- *Allianz*: Volker **Deville**
- *Aviva*: Jim **Webber**
- *AXA*: Benoît **Claveranne**
- *Met Life*: Stan **Talbi**
- *Munich Re*: Jo **Oechslin**
- *Swiss Re*: Raj **Singh**
- *The Geneva Association*: Patrick M. **Liedtke**
- *Zurich Financial Services*: Axel P. **Lehmann**

Working Group Members

- *Aegon*: Christian **Pierotti**, Patricia **Plas**
- *Allianz*: Michael **Buttstedt**, Arne **Holzhausen**
- *Aviva*: Hugh **Francis**, Tim **Hall**, Nick **Kitching**
- *AXA*: Benoît **Claveranne**, Fabrice **Lorillon**
- *Generali*: Gianfranco **Vecchiet**
- *Lloyd's*: Alastair **Evans** , Gavin **Steele**
- *MAPFRE*: Luigi **Lubelli**
- *Met Life*: Lori **Evangel**, Susan **Greenwell**
- *Munich Re*: Matthias **Kubicek** , Michael **Menhart**
- *Partner Re*: François **Vilnet**
- *Prudential plc*: Miles **Celic**, Sven **Kasper**, Paulette **King**, Sally **Padget**
- *Prudential Financial*: Elisa **Puzzuoli**
- *SCOR*: Philippe **Trainar**
- *Sul America Seguros*: Oswaldo **Mario**
- *Sun Life Financial*: Claude **Accum**
- *Swiss Re*: Philippe **Brahin**, Astrid **Frey**, Thomas **Hess**, Karen **Hudson**
- *The Geneva Association*: Patrick M. **Liedtke**, Jan **Monkiewicz**
- *Tokio Marine*: Makoto **Hori**, Masaaki **Nagamura**
- *TrygVesta*: Martin Bøge **Mikkelsen**
- *Vittoria Assicurazioni*: Andrea **Acutis**
- *Zurich Financial Services*: Peter **Buomberger**, Daniel **Hofmann**, Roy **Suter**

The Geneva Association thanks Oliver Wyman for the external support.

External Support

- *Oliver Wyman*: Alexandre **Carrion**, Claudia **Fell**, Bernhard **Kotanko**, Andrew **Rear**

Foreword

Based on the targets put forward by the G20, preliminary considerations were given in 2009 to introducing macro-prudential supervision. The discussion hinges on the question of whether and to what extent systemic risks exist and how these risks can be addressed by supervisory regulations.

Following the re-establishment of the Financial Stability Forum as the Financial Stability Board in April 2009, the discussion took on a new intensity. In October 2009, the FSB—in cooperation with the IMF and the BIS—published a report on systemic risks that included concrete definitions and a description of first regulatory approaches. Then in January 2010, the Joint Forum published a report addressing key issues and containing concrete recommendations with regard to financial market regulation. With respect to (re)insurance, the IAIS has of course also played a significant role for some time on systemic risks.

In the past, there was no perceived need to specifically address systemic risk in insurance but, given recent developments, it was high time for the insurance industry to engage in the debate on systemic risks and the way they are handled in terms of regulation and supervision.

The present report is devoted to this task. The Geneva Association, numbering almost 80 CEOs from the world's largest insurance and reinsurance undertakings among its members, has with the help of individual members taken up the challenge of structuring and more accurately presenting key aspects of the discussion surrounding the topic of systemic risks in the insurance industry.

This appears to be necessary as in the public debate the business model of the insurance industry is unfortunately not always sufficiently demarcated from the business model of other financial services providers, such as the banks. The way systemic risks are treated must, however, take account of precisely these specific characteristics of the business models and particular activities carried out by institutions.

This report is designed to enrich the ongoing discussion although it is clear that the debate on systemic risks will not end with the publication of this report.

It is important to me to pay recognition to the professional work of those who have contributed to this report. The completion of this first comprehensive report on systemic risks in the insurance industry within such a short time is a remarkable achievement, for which I would like to thank the authors and contributors on behalf of all Geneva Association members.

Dr Nikolaus von Bomhard
President of The Geneva Association
Chairman of the Board of Management, Munich Re Group

Executive summary

The financial crisis has exposed flaws in the supervisory system and engendered calls to further regulate the financial sector. Among the many proposals under consideration or implementation is the idea of applying more stringent supervision and, perhaps, more onerous regulations to “systemically relevant institutions”. This proposal is usually conceived as applying to banks. However, some institutions and governments have recently suggested that a similar approach be taken to insurers. This report examines the performance of the insurance industry during the crisis, assesses the application of the FSB’s proposal on systemic risk to insurance, and develops initial recommendations to address current regulatory gaps and strengthen industry risk management practices.

Banks and insurers played markedly different roles in the financial crisis: not only were banks, not insurers, the source of the crisis, banks were also much harder hit by it. Excluding those insurers with large quasi-banking operations, insurers received less than USD 10 billion in direct State support during the crisis, compared with over USD 1 trillion given to banks.

The insurance business model—encompassing both insurers and reinsurers—**has specific features that make it a source of stability in the financial system.** Insurance is funded by up-front premiums, giving insurers strong operating cash-flow without requiring wholesale funding. Insurance policies are generally long-term, with controlled outflows, enabling insurers to act as stabilisers to the financial system. During the crisis, insurers maintained relatively steady capacity, business volumes and prices.

Those few insurers who experienced serious difficulties, most notably AIG, **were brought down not by their insurance business but by their quasi-banking activities.** Similarly, the troubled “monoliners” (FSA, AMBAC, MBIA *et al.*) concentrated exclusively on financial guarantees and CDS writing and trading. More than 90 per cent of State support to insurers went to those with significant, failing non-insurance businesses.

The FSB, BIS and the IMF recently gave their definition of systemic risk, which was supported by the G20 finance ministers and central bank governors. Although the FSB definition is only one among many put forward in recent months, it is the most commonly cited and provides a starting point for the purposes of this report.

The FSB uses three criteria to assess the systemic risk presented by an institution: size, interconnectedness and substitutability. The IAIS has added time—that is, the speed of loss transmission to third parties—as a fourth criterion. This is of particular relevance to insurance, as insurance claims, unlike banking obligations, do not immediately generate cash outflows.

We do not dispute these criteria for systemic risk. Even more importantly for the regulatory purposes, they show how systemic risk accrues, not to firms, but to specific activities of those firms.

Applying the FSB criteria to the main activities of insurers and reinsurers, we conclude that none pose a systemic risk. These activities include investment management (investing policy and shareholder's funds), liability origination (providing protection and guarantees), risk transfer (through reinsurance, securitisation, etc.), and capital management.

None of these pass the test for systemic relevance, for at least one of the following reasons:

- their limited size means that there would not be disruptive effects on financial markets;
- the slow speed of their impact allows insurers to absorb them, such as capital raising over time or, in a worst case, engaging in an orderly wind-up;
- features of their interconnectedness mean that contagion risk would be limited.

We find **that only two, non-core activities of insurers could have the potential for systemic relevance**, assuming that they are conducted on a huge scale and using poor risk control frameworks:

- derivatives trading on non-insurance balance sheets;
- mis-management of short-term funding from commercial paper or securities lending.

Current and already approved insurance regulatory regimes, such as Solvency II in the European Union, **adequately address insurance activities**. The remaining question is whether existing regulation adequately mitigates potential systemic risk from these non-core activities or whether it needs supplementing or replacing with new measures.

We conclude that principle-based group supervision applied to all entities within an insurance group (regulated and non-regulated), supported by sound industry risk-management practices, will mitigate potential systemic risk related to these activities.

Solvency II represents such a comprehensive and economic based regulatory framework that it should not be confused with Basel II, despite numerical equivalence.

We also believe that insolvencies need not be avoided at any price. Faced with a very large event, an insurer can fail; but, in contrast to what we have witnessed in the banking sector, **winding-up an insurer is an orderly process that does not generate systemic risk**. We believe cross-border crisis management remains an area requiring improved coordination among supervisors.

In seeking to close remaining gaps in the supervisory framework, **regulators should avoid the temptation to place special burdens on specific institutions**. This approach could distort the insurance market by skewing pricing, reducing aggregate market risk-bearing capacity, drawing supervisors' attention away from risky activities going on elsewhere, and creating moral hazard in these "too big to fail" institutions. **The consequences of getting systemic risk reforms wrong would not only be severely damaging to the insurance industry but to the economy as well.**

We recommend five measures. The first two are put forward **to address gaps in regulation and industry practice** identified in this report; measures three to five aim **to strengthen financial stability**:

- 1. Implement comprehensive, integrated and principle-based supervision for insurance groups.*
- 2. Strengthen liquidity risk management.*
- 3. Enhance regulation of financial guarantee insurance.*
- 4. Establish macro-prudential monitoring with appropriate insurance representation.*
- 5. Strengthen risk management practices.*

These measures demonstrate the industry engagement to contribute to the discussion on systemic risk. The industry stands ready to take any action necessary to maintain stability in the insurance system itself, contribute to the stability of the overall financial system, and perform its enabling role in the real economy.

0. Introduction

0.1. Purpose of this report

The financial crisis has engendered widespread calls to further regulate the financial sector. Among the many proposals under consideration or implementation is the idea of applying more stringent supervision and, perhaps, more onerous regulations to “systemically relevant institutions”. This proposal is usually conceived as applying to banks. However, some institutions and governments have recently suggested that a similar approach could be taken to insurers.

This report examines this proposal.

Unless stated otherwise, the term “insurance” is held to mean both primary and reinsurance. For the avoidance of doubt, the financial guarantors known as “monoliners” are excluded from this meaning.

0.2. Report structure

In this chapter we give a brief introduction to the insurance industry, its economic role and its main business models. In Chapter 1 we examine the different roles played by banks and insurers in the recent financial crisis, which has generally hit insurers far less hard than banks.

Chapter 2 considers the FSB’s proposed criteria for designating an institution as systemically relevant. We conclude that, in the first instance, it is not insurance institutions but insurance activities that should be considered in relation to systemic risk.

Chapter 3 is devoted to examining the main risk activities of insurers in light of the FSB criteria. We conclude that these criteria explain why most insurers’ activities do not pose a systemic risk like some banking activities do.

Having identified two activities that can potentially add to a systemic risk scenario, Chapter 4 considers the extent to which they are already adequately dealt with by existing regulations.

Finally, in Chapter 5, we suggest means for closing the gaps in current regulations and propose ways of improving our own practices.

0.3. The economic and social role of insurers

Insurers’ main functions—the functions of insurance—are the provision of protection by accepting risks from policy-holders, pooling these risks, managing them actively and potentially transferring them in part to reinsurers.

Due to their role and the long-term horizon of many insurance contracts, insurers have large amounts of investments under their management to back future claims and are therefore significant players, with other financial institutions, in financial intermediation and capital accumulation.

0.3.1. Providing protection for individuals and their possessions

Insurance provides a mechanism for the pooling and transfer of the financial consequences of risk. In exchange for a premium, the insurer commits to financially compensating the policyholder for expected losses resulting from the contract, operating expenses and capital costs.

Insurance activities are broadly divided into life and non-life insurance. Life insurance protects against the loss of family income due to disability or death or against the risk of outliving your financial resources. Non-life insurance contracts provide protection against damage, loss, or injury to the insured, as well as legal liability for damages caused to other people or their property. Reinsurers provide protection to insurers themselves.

The recourse to insurance allows people and businesses to engage in activities that otherwise would be too fraught with the risk of losses. The absence of insurance would contribute to risk aversion and dampen the entrepreneurial spirit and many business initiatives would not be undertaken. Without insurance, no one could afford to take the risks necessary to grow a healthy economy.

Insurance is also a major contributor to economic welfare and fairness and an essential provider of social protection:

- Contractual savings, particularly life insurance and pension, play an essential role in providing long-term financial security and growth, in particular in countries where this role is not covered by the State.
- Non-life insurance helps individuals and firms hedge against important risks—accidents, property, fire, interruption of productive activity, general and professional liability, motor—thus allowing them to engage in several economic activities and expand the production frontier.

Because they assume risks, insurers pay particular attention to managing these risks, including transferring them to reinsurers. Insurers also invest greatly in helping their policyholders manage and mitigate their own risks. The risks insurers take on are diverse, and insurers constantly look for new areas in which they may accept as insurable some of the risks faced by other actors in the economy.

Insurers are not the only entities to accept risks—banks also accept risks. However their risks are fundamentally different from insurance risks. Insurance risk is idiosyncratic and, for the most part, independent of the economic cycle. By accepting short-term, liquid demand deposits and granting long-term loans, banks assume two major risks: credit risk related to lending activities and liquidity risk due to the mismatch arising from borrowing short and lending long. These bank-specific risks tend to be correlated with the economic cycle.

0.3.2. Financing the economy through the premiums raised

For life insurance and many lines of non-life insurance, claims payments occur many years after premiums have been collected. Consequently insurers have stable asset portfolios to manage with a long-term horizon. Their investment activities in equities and bonds provide a key link in capital markets, supporting the market place for savers and borrowers.

Insurance therefore plays a key role in financial intermediation by re-investing long-term savings through debt and equity holdings. Insurers' funding profiles and diverse customer bases allow them to take a long-term asset allocation, which is key for financing enterprises with long-term capital.

Insurers see investment risk differently from asset managers as an insurance company cannot ignore the liability side of its balance sheet. A typical asset manager invests on behalf of clients and is focused on maximising the value of investments relative to a prescribed benchmark. But in insurance, the investment function must not only achieve adequate returns, it must manage the potential mismatch in assets and liabilities as a result of changes in capital market conditions.

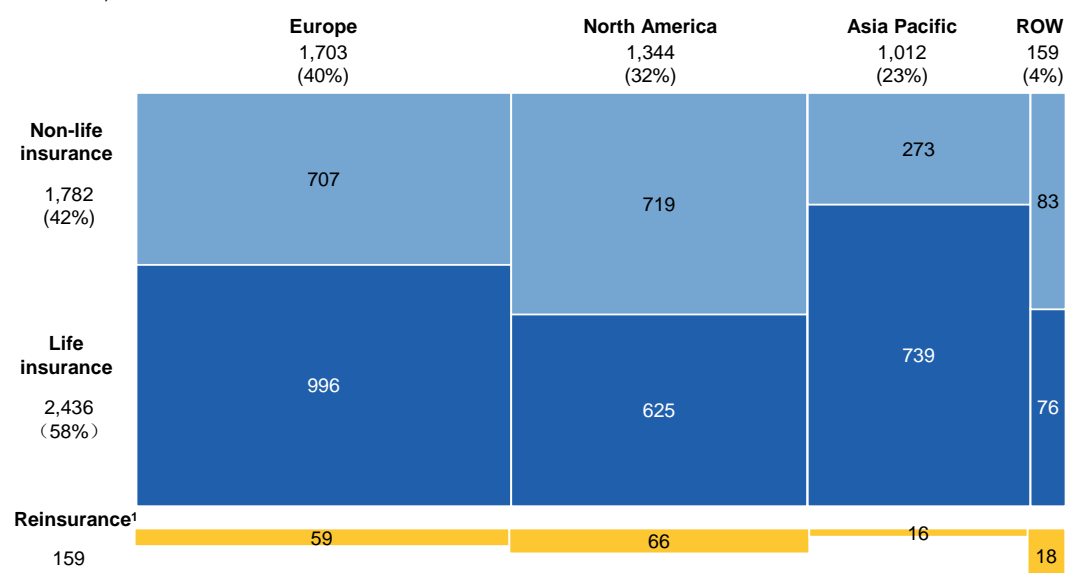
0.4. The importance of insurance in numbers

The importance of insurance is reflected in the volume of premiums generated and assets managed.

Worldwide insurance premiums amount to USD 4.4 trillion, which represents 7.3 per cent of worldwide GDP. The exhibit below shows the split of insurance premiums by geography and between life and non-life.

Exhibit 1: Breakdown of insurance premiums by line of business and geography

Premium volume by business segment
USD BN, 2008



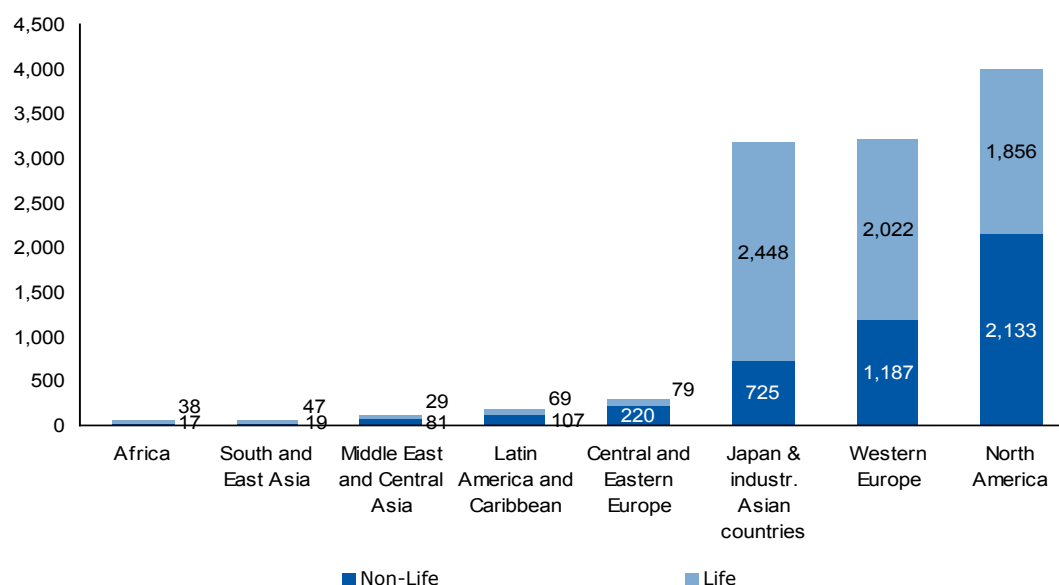
Source: Swiss Re sigma, IAIS Global Reinsurance Market Report 2009
1. Gross reinsurance premiums shown by region of ceding insurer

Insurers have USD 18.7 trillion of assets under management,¹ which is roughly 11 per cent of the world's total financial assets.

Insurance penetration is highly correlated with the level of development of countries. OECD countries achieve very high penetration levels with premiums per capita for both life and non-life of around USD 3,000 per capita (2008), as opposed to less than USD 500 in developing countries.

1. International Financial Services London Research, October 2009.

Exhibit 2: Premiums per capita in life and non-life insurance (in USD, 2008)



Source: Swiss Re Facts and Figures 2008

0.5. The different types of insurers' business models

Insurance activities are carried out by different types of players. These are:

- pure life insurers;
- pure non-life insurers (Property & Casualty Insurers);
- composite insurers (mix of life and non-life insurers);
- reinsurers;
- insurers with large “non-insurance” operations;
- monoliners/financial guarantee.

Life insurance and non-life insurance must be provided in different legal entities; this is understood to have become a general requirement in all regulatory jurisdictions out of a desire to protect life insurance investments (held on behalf of savers) from a default in a non-life insurance company of the same group. Many, but by no means all, of the large global insurers, are composite, offering both life and non-life policies to make best use of their distribution network and customer reach. The life and non-life insurance businesses continue to be separate legal entities. All insurers carry out some form of investment management activity. Various parts of the investment activity may be outsourced, but the critical responsibility for appropriate management of asset-liability matching remains with the insurer in any case.

Reinsurers are “insurers for insurers”, allowing insurers to reduce their exposure to peak losses and concentration. Over the last 150 years, reinsurance has evolved as an effective means of coping with the growing number and increasingly complex nature of risks, representing an essential provider of risk diversification on a global basis and stabilising factor for the insurance system, and thus the wider economy.

More recently, some insurers have moved into areas of other financial services to varying degrees:

- Certain insurance groups contain a bank alongside their insurance subsidiaries and utilise the opportunities to cross-sell. This takes the common distribution model of bancassurance (retailing insurance products through an agreement with a bank) one step further.

- Moreover, in line with financial innovation, insurers have become involved in derivative activities. Certain insurers have gone beyond using these instruments for hedging their own investments and set up dedicated subsidiaries transacting in complex derivative instruments.
- Finally, certain groups have developed into financial conglomerates with substantial banking and derivative trading activities.

We discuss the impact of the banking crisis on the banking subsidiaries of insurers in Chapter 1.

Monoliners have a different business model from other insurers. Monoliners sell only, in one form or another, financial guarantees for investors on a financial instrument. These differences in business model came to the fore in the recent crisis as monoliners' risk profiles were similar to that of a bank, due to the predominance of credit risk. In Chapter 5 we put forward our view that the regulation of monoliners should be consistent with that of banks carrying out the same activity.

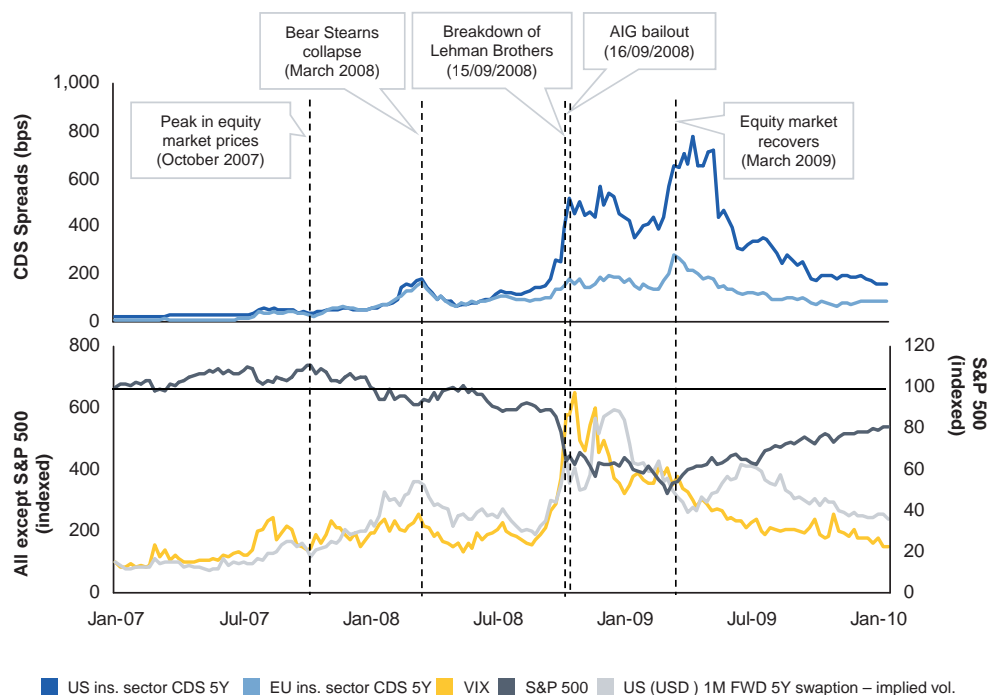
1. Setting the scene

We begin in this chapter by describing the different roles of banks and insurance firms in the financial crisis, and its different effects on them. This is important when considering the extension to insurers of regulatory proposals initially designed for banks.

1.1. The financial crisis: the different effects on banks and insurers

The story of the financial crisis is now familiar, and a detailed timeline of the crisis is provided in the appendix. Declining property values and climbing default rates in the U.S. led to write downs in mortgage assets. In 2007 Countrywide, the largest subprime mortgage originator in the U.S. became insolvent and Bear Stearns bailed out two of its hedge funds that had invested heavily in risky securities. In March 2008, Bear Stearns was rescued from failure by JP Morgan.

Exhibit 3: Chronology of the crisis – market developments 2007-2009



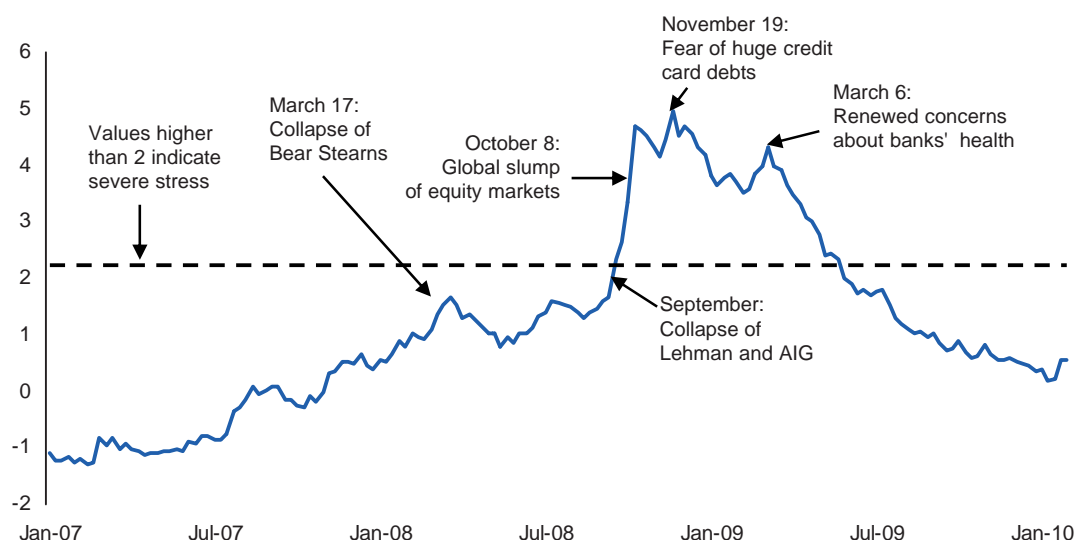
Source: Bloomberg, Datastream (US CDS spreads have been adjusted to exclude AMBAC and MBIA)

By October 2008 AIG, Freddie Mac and Fannie Mae had been rescued with taxpayers' funds and Lehman Brothers had been allowed to fail. Uncertainty about the solvency of major banks

with exposure to “toxic assets” caused the interbank markets to seize up. To stave off economic calamity, governments propped up the financial sector with extended deposit guarantees and massive infusions of debt and equity capital.

Not all kinds of financial firm were equally responsible for the crisis, nor equally affected by it. Specifically, the crisis had a less dramatic affect on insurers than on banks. The crisis hit insurers later, required far less additional capital and had less affect on new business volumes.

Exhibit 4: U.S. financial stress index – 2007-2009



Source: Zurich Financial Services

The index is a weighted average of the following seven weekly data series: Spread on corporate bond in the high yield sector, Spread on corporate bond in the investment grade sector, Equity volatility measured by CBOE VIX, Equity index measured by S&P 500, LIBOR-T-Bill spread, Spread on 1-yr mortgage rate, Spread on conventional fixed mortgages. Each series is filtered by a stationary-inducing transformation (for example log-differenced) and is standardised, in other words each series has mean zero and standard deviation one. The weights of each series is determined by a principal component analysis. Finally, the compound series is standardised.

1.1.1. Insurers vs. banks: capital and capacity

Losses in the insurance industry have been only a sixth of those at banks, and the new capital raised only a ninth. AIG alone accounts for 58 per cent of new capital in the insurance sector and 36 per cent of the credit losses, **which were incurred not in the course of characteristic insurance activities but by AIG’s massive credit default swap (CDS) exposures**. Excluding AIG from the figures, banks had to raise 20 times more capital than insurers.

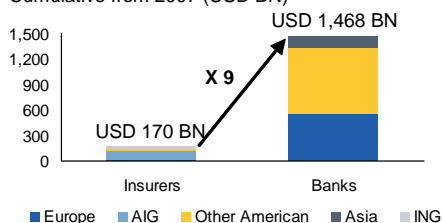
These comparatively small losses underscore that the insurance industry has lost little business capacity, as measured by shareholders’ equity. In fact, most insurers were in a position to absorb comparatively large credit losses on their balance sheets, whereas many banks had to take recourse to public funding.

Exhibit 5: Re-capitalisation and credit losses

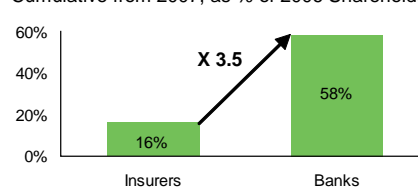
Banks suffered larger losses and required more capital on an absolute basis... as well as on a relative basis

Total capital raised¹

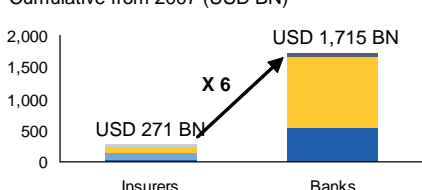
Cumulative from 2007 (USD BN)

**Total capital raised**

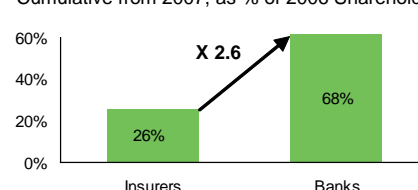
Cumulative from 2007, as % of 2006 Shareholders Equity

**Credit losses**

Cumulative from 2007 (USD BN)

**Credit losses**

Cumulative from 2007, as % of 2006 Shareholders Equity



Source: Bloomberg (as at 10 Feb 2010), Oliver Wyman analysis, Datastream

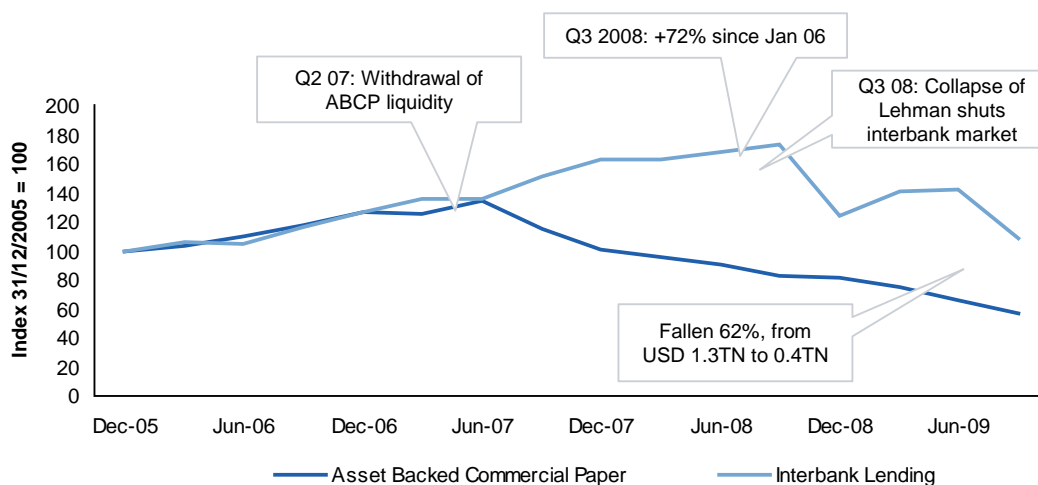
1. This is equity and preferred share capital raised, from states and through the capital markets. It does NOT include asset relief or lending provided by states that did not require a capital consideration

1.1.2. Insurers vs. banks: stable volume and pricing

In the run up to the crisis, leverage increased materially. Asset-backed commercial paper in issuance peaked at the end of 2007, falling away during 2008 as appetites for the underlying securities declined and Bear Stearns was rescued by JP Morgan. As the crisis deepened, interbank lending dropped by more than half in the U.S. and liquidity was rapidly withdrawn from financial markets.

Exhibit 6: Rise and fall of wholesale funding and interbank lending

US Asset Backed Commercial Papers (ABCP) in issuance & US Interbank lending volume
Indexed at 100 in December 2005

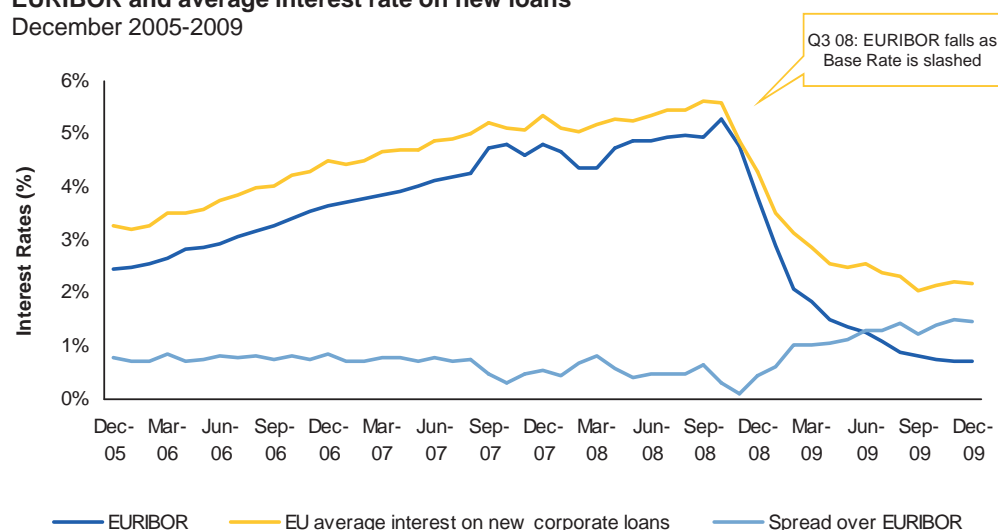


Source: US Federal Reserve, Oliver Wyman analysis, Federal Reserve Board

During the crisis, central banks pumped liquidity into the banking sector in an attempt to drive down interest rates and encourage private sector borrowing. However, there was a significant increase in complaints about credit availability and credit cost by business clients and consumers.

Exhibit 7: Borrowing rates during the crisis

EURIBOR and average interest rate on new loans
December 2005-2009



Source: ECB, Oliver Wyman Analysis

However, insurance premiums have remained relatively stable during the crisis, reflecting the industry's superior capital position. Insurance markets remained liquid and a "clearing" price was always available.

Exhibit 8: Insurance pricing during the crisis

Non-Life Insurance price changes in Europe (% from previous year)

Casualty			
	Q1 & Q2 2007	Q1 & Q2 2008	Q1 & Q2 2009
France	10-20	10-20	0
Germany	10-20	10-20	0-10
UK	10-20	10-20	0-10
Italy	0	0-10	0
Spain	10-20	10-20	20-30
Property			
	Q1 & Q2 2007	Q1 & Q2 2008	Q1 & Q2 2009
France	10-20	10-20	0-10
Germany	10-20	10-20	0-10
UK	10-20	0-10	0-10
Italy	0-10	0-10	0-10
Spain	10-20	20-30	20-30
Motor			
	Q1 & Q2 2007	Q1 & Q2 2008	Q1 & Q2 2009
France	10-20	0	0
Germany	10-20	0-10	0
UK	10-20	0-10	0
Italy	0	0-10	0-10
	X% Decrease	Flat	X% Increase

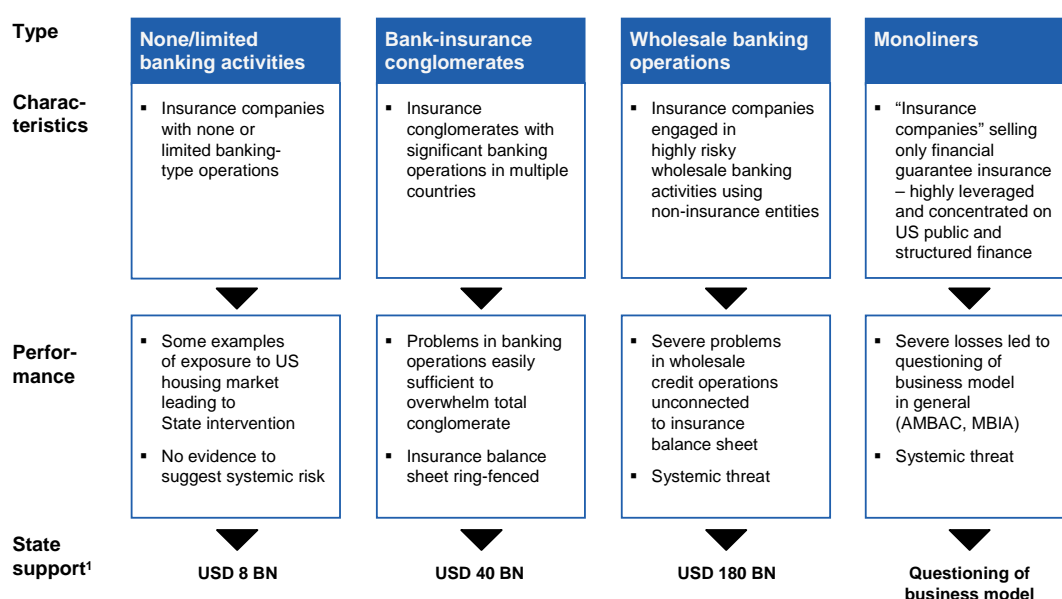
Source: Marsh EMEA Insurance Reports 2007, 2008 and 2009

1.2. The effects of the crisis on the insurance industry

Although the crisis has generally had far less effect on insurers than banks, some insurers did run into serious trouble. For example, in the U.S. as of mid-2009 only three insurance companies² had taken TARP³ funds. At the time 592 banks had accessed the programme. In general, the severity of insurers' losses depended on their business model. Specifically, those insurers with large banking operations or other exposure to credit risk suffered the greatest losses: more than 90 per cent of the State support to the entire insurance industry was given to those few insurers with significant banking activities.⁴

Exhibit 9: Crisis impact by exposure to banking in operations

Size and risk of banking operations within insurance companies triggered insurers' performance



1. State support reflects capital injections and asset support provided by states. Exchange rates as of 31.12.2008
Source: Bloomberg, Company Reports, Oliver Wyman press search, Oliver Wyman analysis.

1.2.1. Insurers with limited banking activities

Insurers with limited banking operations incurred limited losses. Despite the turmoil in the interbank lending markets, the insurance markets remained open and insurers operated as normal.

Insurers' were contaminated by the banking sector in several ways:

- mark-to-market decreases in valuation of (subprime) mortgage-backed securities, corporate bonds and equities held by insurers;
- reduced liquidity of certain assets;
- increased volatility of financial markets (e.g. for variable annuities);
- exposures to defaulted banks (e.g. Lehman);
- liquidity crunch in the banking operations of insurers;
- general economic slowdown.

Life insurers suffered greater losses than non-life and composite insurers because they had relatively greater exposures to financial instruments, through embedded derivatives in liabilities

2. U.S. Department of Treasury Office of Financial Stability Transactions Report (for the period ending July 16th 2009).

3. Troubled Asset Relief Program.

4. State support reflects capital injections and asset support provided by States.

and larger investment portfolios. The U.S. life insurers The Hartford and Lincoln received State aid to bolster their capital, having suffered losses from their exposure to devalued financial instruments. In Japan, Yamato Life filed for bankruptcy. U.S. credit market exposure and high levels of anxiety on Dutch financial markets, contributing to widespread fears that any large Dutch provider could be at risk, led AEGON to accept temporary State aid.

Nevertheless, life insurers' exposure to CDS and other structured products was small compared with banks'. This is a result of their strict underwriting policies and modest levels of activities undertaken off balance sheet or through subsidiaries.

Exhibit 10: Insurance companies affected during the crisis

<p>Lincoln National Corporation US Life Insurer</p> <ul style="list-style-type: none"> Lincoln received USD 950 MM of funding through the US Troubled Asset Relief Programme Having suffered 5 consecutive loss making quarters, their capital position had been eroded Losses were chiefly generated through their exposure to the US housing market, through securitizations and direct lending Market commentators did not consider Lincoln to be in immediate solvency danger, and that the recourse to TARP funds may have been opportunistic The funds have yet to be repaid 	<p>Yamato Life Japanese Life Insurer</p> <ul style="list-style-type: none"> 33rd largest Japanese life insurer Filed for bankruptcy on 10 October 2008, nearly a month after the rescue of AIG Debts exceeded assets by ¥11.8 BN (USD 117 MM) Operational inefficiency resulted in a high cost base In an attempt to cover these costs, Yamato chased higher yields, investing in the US housing markets Bankruptcy was a result of poor investment and operational management, rather than liquidity or exposure to other financial institutions
<p>The Hartford US Composite Insurer</p> <ul style="list-style-type: none"> USD 1.7 BN realized investment losses in 2008 (40% on CMBS portfolio) Losses on assets trigger USD 1.0 BN of charges for guarantees in VA business from Q3 2008 to Q3 2009 <ul style="list-style-type: none"> VAs accounted for over 20% of The Hartford's USD 3 BN profit in 2007 VA guarantees include annual withdrawals of up to 7% USD 5.9 BN raised capital <ul style="list-style-type: none"> USD 3.4 BN capital injection by TARP USD 2.5 BN invested by Allianz 	<p>AEGON International Life Insurer (HQ in Netherlands)</p> <ul style="list-style-type: none"> Historic exposure to US credit markets from large US operations (~ 2/3 of its business) <ul style="list-style-type: none"> Total gross credit exposure of €390 MM to Lehman and Washington Mutual €2.5 BN unrealised losses on credit portfolio 2008 strategy shift - already re-balancing geographic profile Dutch financial sector events created contagion fears €3 BN injection from Dutch government to bolster capital and allow AEGON to retain AA rating <ul style="list-style-type: none"> 33% repaid in December 2009

Source: Oliver Wyman analysis, annual reports, press research

1.2.2. Bank-insurance conglomerates

Unsurprisingly, bank-insurance conglomerates were hit harder by the crisis than pure insurers. There is little difference between the impact of the crisis on a bank-insurance conglomerate (e.g. Fortis) and on an insurance-bank conglomerate with a similar bank operation (e.g. ING).⁵

ING is the largest insurance/bank conglomerate. Including asset relief ING received more than USD 40 billion in State support. Its difficulties stemmed from its banking operations and especially its acquisition of a U.S. thrift when expanding its online savings division. This acquisition made ING subject to regulation by the Office of Thrift Supervision (OTS). To comply with local thrift regulation, which requires more than 55 per cent of assets to be allocated to mortgages, ING acquired a large portfolio of MBS, backed by Alt-A mortgages.

When default rates on Alt-A mortgages began to climb, the market value of the MBS portfolio plummeted, requiring ING to increase the quantity of capital it held against them. In 2008, ING reported fair value losses of €2.6 billion on credit assets and

5. By bank-insurance conglomerate we mean a combined bank/insurance group listed as a bank; by insurance/bank conglomerate we mean a combined bank/insurance group listed as an insurer.

€1.7 billion on equity securities. In October 2008 the Dutch government invested €10 billion capital in ING and in February 2009 it took over 80 per cent of ING's Alt-A portfolio at 90 per cent of its face value for €20 billion.⁶

The bank insurance model has however not been invalidated as a result of the crisis since not all bank-insurance conglomerates were however hit by the crisis. Conglomerates with banks that had strong liquidity positions and low involvement in structured products came out of the crisis relatively unharmed (BNP Paribas, HSBC, Crédit Agricole).

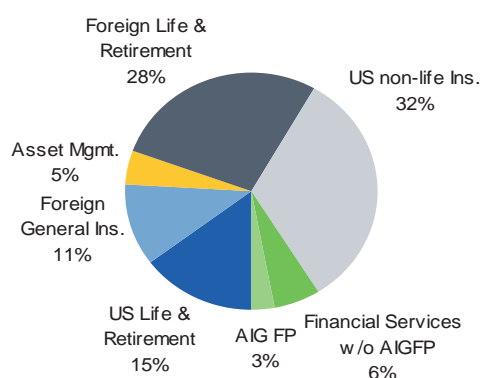
1.2.3. Insurers with wholesale banking operations: AIG

AIG was the headline near-failure in the insurance industry. However, the source of trouble was not its insurance activities but its Financial Products division (AIG FP). AIG FP was founded in 1987 as AIG's capital markets division, domiciled in London. Since the AIG holding company was registered with an "equivalent regulator", the US Office of Thrift Supervision (OTS), AIG FP was able to evade regulation by the U.K. Financial Services Authority (FSA).

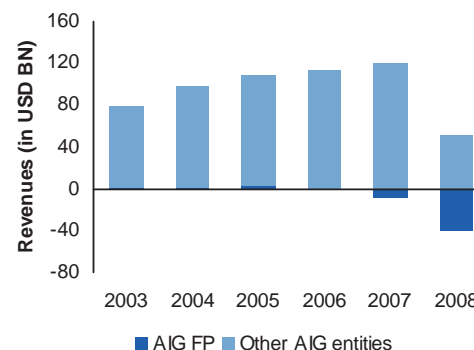
Although AIG FP had always contributed only a small portion of AIG's revenues, it made highly leveraged transactions. As of September 2008, the notional value of AIG FP's derivatives portfolio, concentrated in U.S. housing market and corporate CDOs and CLOs, was USD 2.7 trillion, of which USD 440 billion in written CDS was guaranteed by AIG Holding.

Exhibit 11: AIG revenues by division

AIG 2005 revenues by business lines¹



AIG FP vs. AIG revenues 2003-2008



Sources: AIG Annual Reports

1. 2005 revenues shown as they represent the peak of AIG FP's contribution to AIG revenues

AIG's problems began in 2007. Following downgrades of U.S. subprime securities, AIG's CDS counterparties demanded cash collateral. In September 2008, AIG's credit rating was downgraded from AA- to A-, triggering further cash collateral calls on its CDS contracts and securities lending programme. Unable to meet these calls, AIG was bailed out by the U.S. Treasury on 18th September. By the end of 2009, AIG had received a total of USD 182 billion of taxpayers' funds.⁷

There are three important features of AIG FP's business that should be noted. First, it was highly leveraged: the total exposure of AIG FP was massively greater than its asset base. Such leverage is not possible in a regulated insurance business. Second, the collapse was triggered by a collateral call, not an actual credit event. Again, this is generally not possible in insurance

6. ING annual reports.

7. USD 70 billion government investment, USD 60 billion credit line and USD 52.5 billion to buy mortgage-linked assets owned or backed by AIG (Bloomberg).

contracts, which pay out only when an insured event (a fire, theft, loss of life, etc.) has happened. Third, using regulatory arbitrage, AIG FP operated effectively unregulated. Responsibility for supervision has been acknowledged by the OTS. Even though the OTS was aware of AIG FP's CDS exposure and the guarantees issues by AIG, the OTS did not attribute any liquidity risk to this situation. Had it done so, the OTS would have had the power to request reduction of CDS exposure.

That AIG was engaged in these activities at this scale was clearly a factor which worsened the global crisis significantly. Interestingly, however, it caused limited damage to the core insurance businesses of AIG.

1.2.4. Monoliners

The group of financial guarantors known as the “monoliners” (FSA, AMBAC, MBIA et al.) were among the casualties and arguably among the causes of the crisis. However, they have a very different business model from traditional insurers, with their exclusive concentration on financial guarantees. It has been argued that the monoliners played a role in generating and amplifying the crisis, and questions have been raised about their business model.

Monoliners have historically provided financial guarantees to reduce the borrowing cost of U.S. municipalities (credit enhancement). Their sole business was to take credit risk. The credit risk historically taken was diversified municipal risk of high quality. Municipals had very low losses historically. As a result, monoliners had a capital position based on that low risk credit profile. They branched out into structured finance in the 1990s first insuring timely payment of interest and principal of funded cash bonds; they later moved into financial guarantee associated with CDS of investment grade corporate credit. Lastly they took on financial guarantees associated with CDS of CDO and MBS that were super AAA rated.

These activities have the potential to transmit losses when the credit rating of the provider of the financial guarantee is downgraded. This leads to a devaluation of the wrapped securities and mark-to-market losses for whoever holds them.

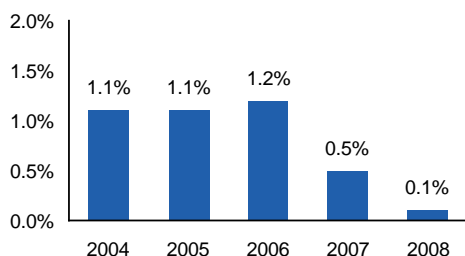
The monoliners built up undiversified, highly leveraged portfolios, taking advantage of the fact that a CDS backed by MBS requires less capital coverage than a municipal bond. This business model relied heavily on strong credit ratings (as did AIG FP) and, at the same time, was vulnerable to errors of risk estimation.

Monoliners generally did not agree to post collateral under their collateral servicing agreements because they lacked sufficient liquidity to support collateral calls. This heightened anxiety at their counterparties, who became concerned that these institutions would collapse leaving the counterparties unprotected. This situation effectively created a confidence crisis in the monoliners even at high ratings.

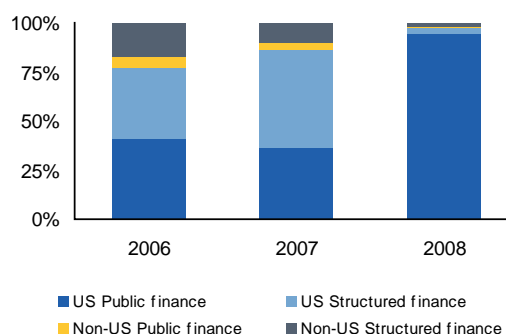
Monoliners' business is different to traditional insurance, and we would suggest that regulators consider the systemic risk from such institutions exactly as they would for any highly-concentrated credit institution in the banking sector or elsewhere.

Exhibit 12: Monoliners' exposures during the crisis**Monoliners' leverage****MBIA**

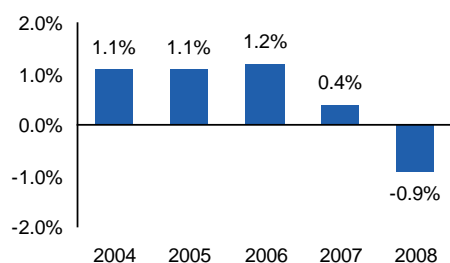
Equity/net par amount outstanding

**Monoliners' exposures****MBIA**

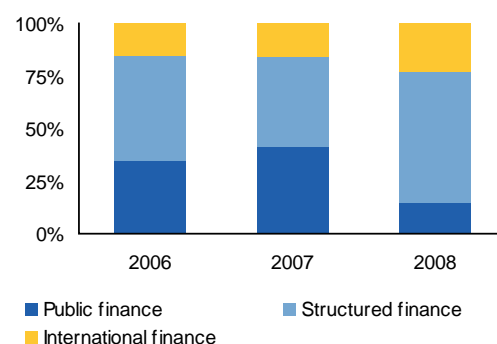
Net par amount written by bond type

**AMBAC**

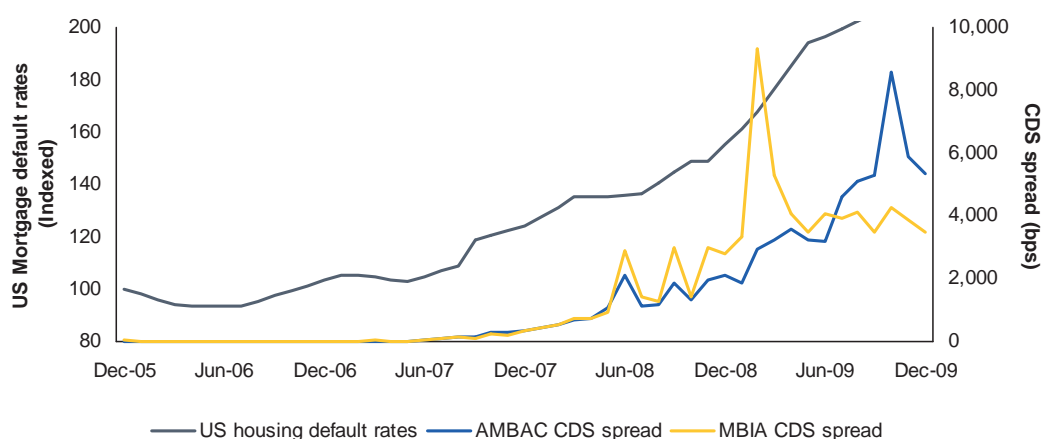
Equity/net par amount outstanding

**AMBAC**

Gross par amount written by bond type



Source: MBIA and AMBAC annual reports

Exhibit 13: Monoliners' correlation to the housing markets**Indexed US Mortgage Default Rates and CDS spread time series****Evolution of S&P ratings**

Source: Datastream, Oliver Wyman Analysis

1.2.5. Conclusion

The insurance sector as a whole did not suffer the severe and widespread losses that the banking sector did. Where insurers encountered difficulties it was predominantly through their non-insurance activities.

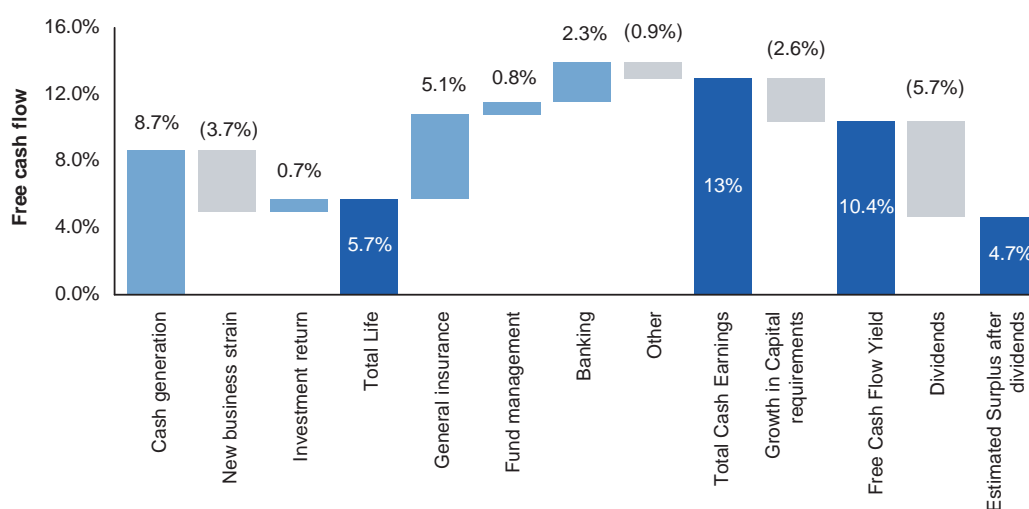
1.3. Why did insurers fare better?

Insurers do not rely on wholesale market funding for liquidity. They fund themselves through premiums, with long-term capital to support risk-taking positions. Their asset bases, which are substantial compared to their cash-flows, mostly comprise highly marketable securities. Whilst insurers do invest in some illiquid or higher-risk securities, their strong tradition of enterprise risk management (which strengthened after the previous 2001-2003 equity crisis) and highly regulated balance sheets both serve to limit the proportion of assets at risk.

Thus, during the crisis this natural long-liquidity position allowed insurers to be largely unaffected by the liquidity crunch, and insurers' investment activities, which are guided by the need to match liabilities, would have enabled them to survive even a prolonged and turbulent market downturn.

Exhibit 14: Insurers' cash-flows by source

Composition of Free Cash Flow yield for European insurers – the majority of cash is generated by the life Value of In Force (VIF) business unwind, FY09E

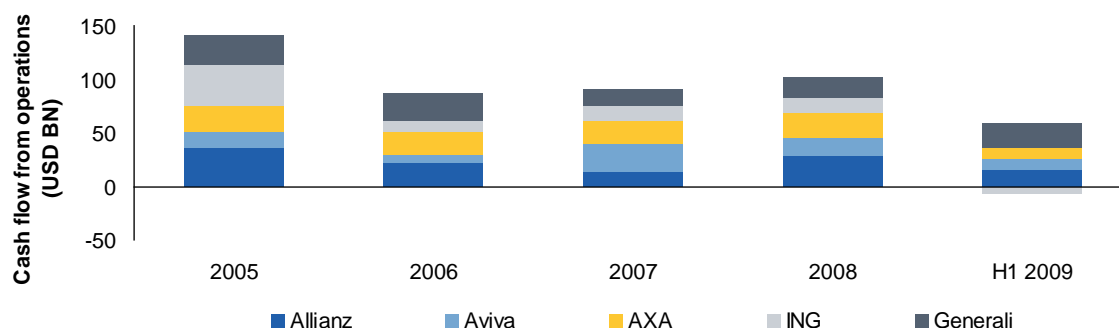


Source: *Fat Tail Friday*, Morgan Stanley Research estimates July 18 2008

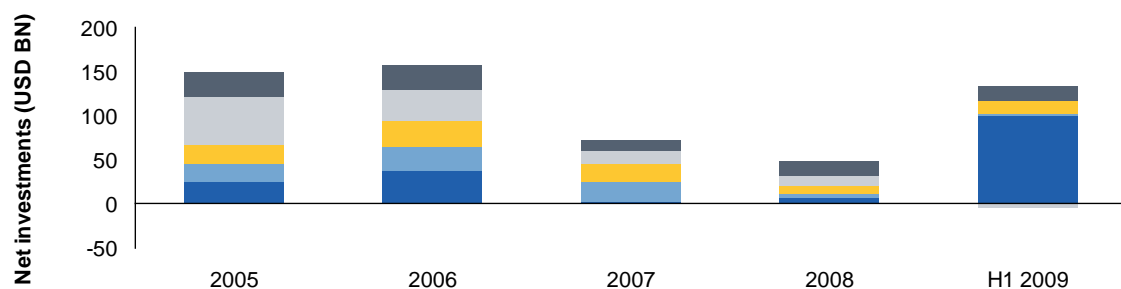
The dependability of insurers' cash-flows from large back books of reliable institutional and retail customers allowed them to continue to make net investments in securities at a time when banks were forced to sell securities.

Exhibit 15: Operating net cash-flows and investments by major European insurers**Net cash flows from operating activities**

Top 5 European insurers

**Net investments**

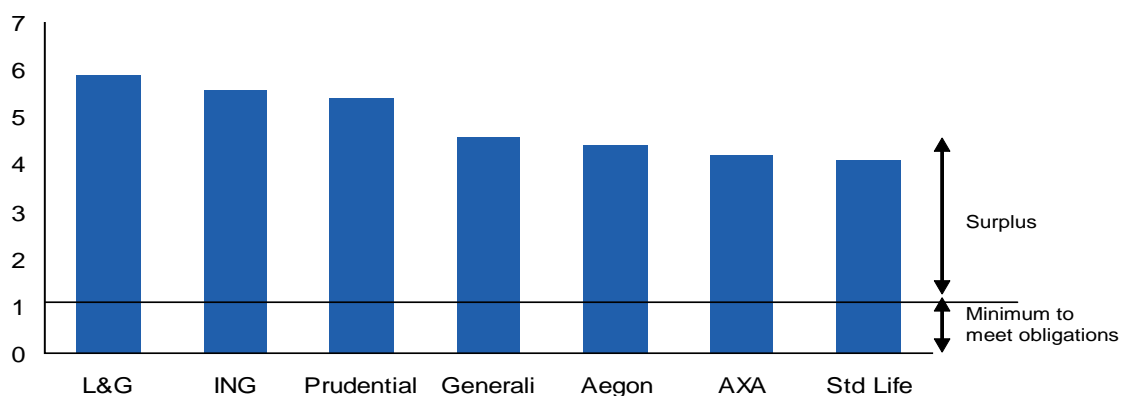
Top 5 Insurers



Source: Annual Reports, Oliver Wyman Analysis

1. Top 5 insurers by assets at 31.12.2006 in USD terms

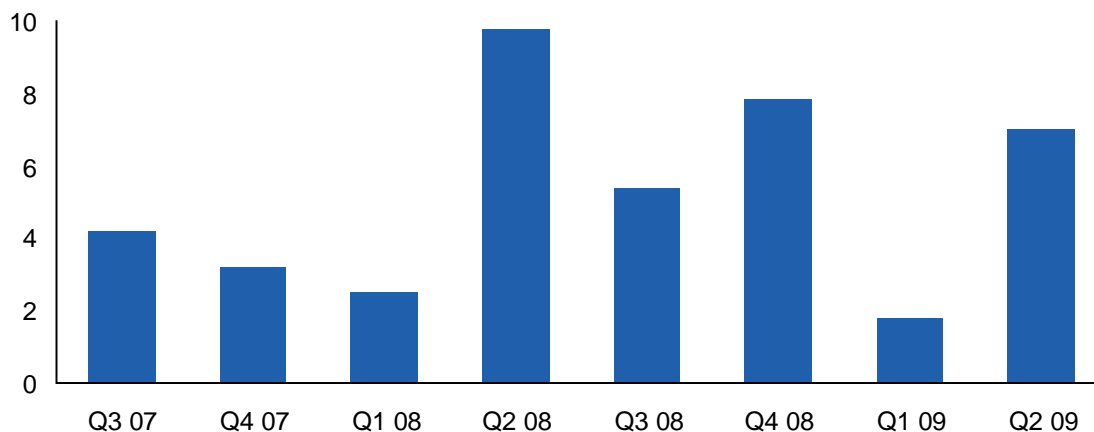
The strength of insurers cash-flows, and the relative stability of their balance sheets, meant that insurers were able to meet their obligations and, where necessary, to raise new debt capital.

Exhibit 16: Estimated cash coverage of insurance companies**Estimated cash interest coverage of European life insurers¹**Source: Company data. *European Life* Goldman Sachs 2009

1: Normalised cash flow, pre-interest and tax, (excluding impairments) cover of interest expense

Exhibit 17: Insurance debt issuance during the crisis

**Debt issuance by European Life Insurers
2007-2009 (€BN)**



Source: Company data. *European Life* Goldman Sachs 2009

1.4. Conclusion

With a few notable exceptions, the insurance industry passed through the crisis relatively unscathed. Those insurers that encountered the most significant difficulties suffered through over-exposure to non-core activities. AIG is a clear example of this. It was brought down not by its insurance businesses but by its capital markets subsidiary, AIG FP. Consequently, any additional regulation for systemic risk needs to take into account the actual activities by which an insurer might pose systemic risk: this is the focus of our work in this report.

2. FSB and IAIS definition of systemic risk

The FSB and the IMF recently defined what systemic risk means to them.

G20 finance ministers and central bank governors endorsed this definition.

Exhibit 18: Definitions of systemic risk and systemic relevance

Definition of Systemic Risk (FSB)	Criteria for identification of systemically relevant institutions
<ul style="list-style-type: none">▪ “The risk of disruption to the flow of financial services that is (i) caused by an impairment of all or parts of the financial system; and (ii) has the potential to have serious negative consequences for the real economy”▪ Fundamental to this definition is the notion that systemic risk is associated with negative externalities and/or market failure and that a financial institution’s failure or malfunction may impair the operation of the financial system and/or the real economy	<ul style="list-style-type: none">▪ Size: “The volume of the volume of financial services provided by the individual component of the financial system”▪ Interconnectedness: “Linkages with other components of the system”▪ Substitutability: “The extent to which other components of the system can provide the same services in the event of a failure”▪ Timing: Allow for the fact that systemic insurance risk does not typically generate immediate shock effects, but plays out over a longer time horizon

Source: FSB, IAIS

The FSB definition is the most commonly referenced when systemic risk is discussed in supervisory and regulatory forums. We will use this definition as a starting point for the discussions in this document although there is an active and ongoing debate about the definition of systemic risk.⁸

The FSB has set out some criteria—size, interconnectedness and substitutability—by which the relevance of particular institutions to systemic risk may be assessed. The FSB has also specified secondary criteria, qualified as contributing factors, that potentially increase the vulnerability of some institutions: namely complexity,⁹ leverage and liquidity risk and large mismatches.

8. Note: One company represented by The Geneva Association in this report disagrees with the FSB definition.

9. An institution can be qualified as complex if it

- (a) operates diverse types of activities through numerous legal entities (e.g., simultaneously operating banking, insurance and securities subsidiaries)
- (b) operates across borders with centrally managed capital and liquidity (as opposed to simpler networks of national subsidiaries)
- (c) has exposures to new and complex products and markets that have not been sufficiently tested.

Complexity per se would not be enough to guarantee a large systemic impact. However, countries may see complexity as a source of vulnerability—in particular if complexity is also associated with lack of transparency, difficulties in understanding the exposures taken by the institution, and the potential magnification of information asymmetries in the case of a systemic event (Source: *FSB Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations*).

The IAIS have proposed adding time to these criteria, reflecting the critical role that timing (speed) plays in whether an event transmitted into the financial system can be absorbed by the system. We agree with this addition, and note its particular importance to insurance.

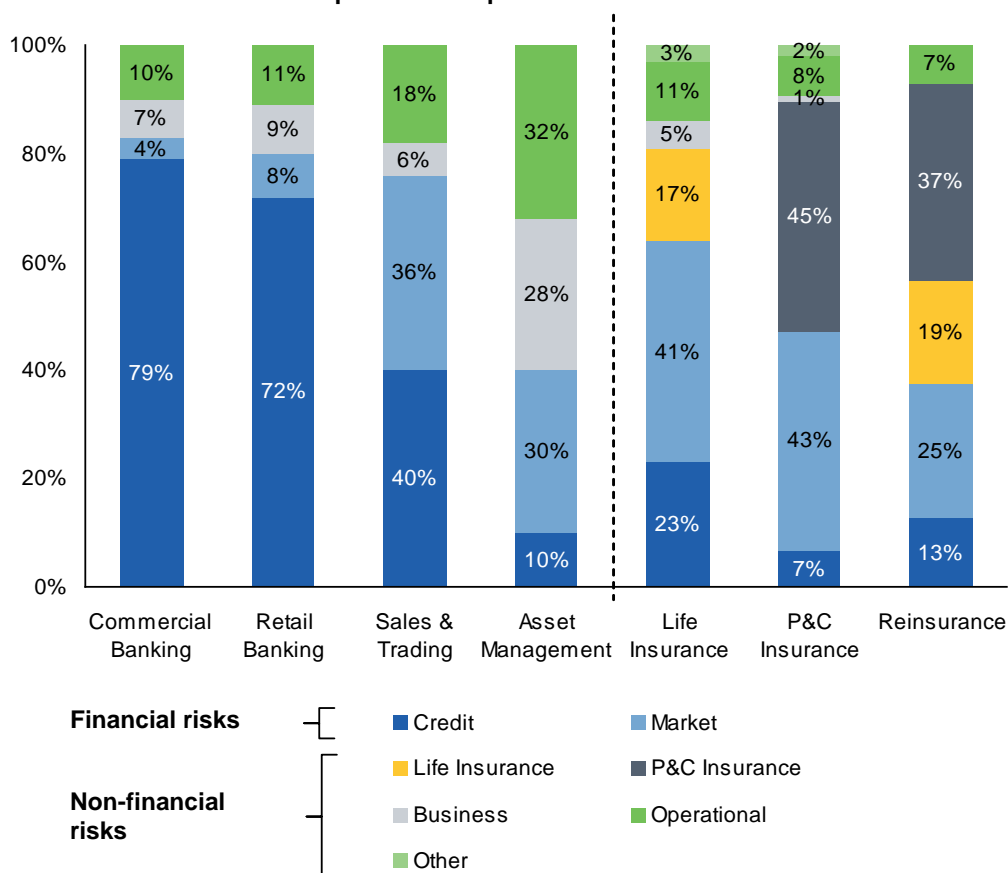
However, even whilst accepting the basic criteria that the FSB has put forward, it is important to note that the impact of these criteria on financial system risk can be very different for different activities. In this chapter we illustrate this point with reference to different activities that financial institutions, be they banks or insurers—might carry out. Our aim is not to argue that the criteria are wrong, or that they do not apply to insurers, only that they need to be applied to **activities** and not to **institutions**. Applying the criteria blindly to whole institutions risks adding an additional regulatory burden on system-stabilising institutions whilst potentially missing some institutions carrying out activities which do pose a systemic risk. Focusing on a list of institutions is unlikely to detect or manage systemic risks more effectively; instead, it is likely to encourage risk migration, lead to underestimation of systemic risk and create distorting moral hazard.

2.1. Size

Size is a crude measure of risk. If no account is taken of Economic Capital, then assets and market capitalisation do not measure risk. For example, large insurers are typically well diversified both geographically and across lines of business. This reflects their business model, which causes them to be exposed to a wide range of insurance, market, business and other risks. Because these

Exhibit 19: Economic capital by risk source

Breakdown of Economic Capital for European banks and insurers



Source: 2006 ECAP Survey, – IFRI CRO Summary, prepared by Oliver Wyman – Companies' Annual Reports

risks are for the most part idiosyncratic and largely uncorrelated, the total risk to the institution is less than the sum of the individual risks. This diversification helps explain the resilience of most large insurers during the crisis, and it is notable that a **typical** large insurer is more diversified than a **typical** large bank. Thus size needs to distinguish between concentration of exposures and dilution of risk through diversification.

Size is of course important, and it need not always be the case that a large bank is less diversified than a large insurer. But therefore, the significance of size for systemic risk depends on the composition of an institution's activities, its respective size and its interplay with other systemic risk factors, such as interconnectedness. It is not size as such that presents danger but **undiversified size**. This is the lesson of the monoliners. Taking size as an institutional variable ignores this problem, and risks the wrong judgements being made about systemic relevance.

2.2 Interconnectedness

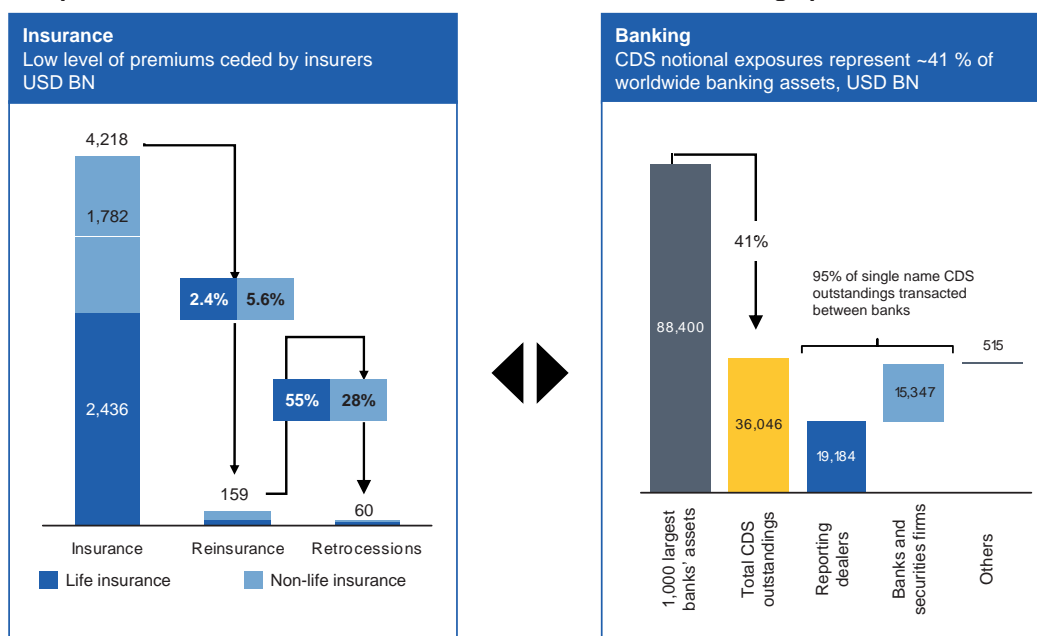
Interconnectedness is a necessary condition for systemic relevance. Only if risk can be transmitted can an institution or its activities present a risk for the "system".

Interactions between institutions within the financial sector are of different kinds, including, for example, cross-ownerships, payment systems interactions and explicit risk transfer operations (reinsurance, derivatives).

But apparently similar types of interconnectedness can have quite different effects on the financial system. By way of example, we consider two types of risk transfer activity: reinsurance transactions between insurers and reinsurers, and CDS transactions between banks. Both involve several parties. However, whereas reinsurance transactions mitigate systemic risk (by sharing the existing risks among many players and allowing diversification of exposures), CDS transactions can exacerbate it. And, whereas reinsurance transactions are a small proportion of the aggregate insurance balance sheet, pre-crisis CDS trading was significant in relation to the total banking balance sheet.

Exhibit 20: Interconnectedness: insurance vs. banking

Comparison of inter-connectedness between insurance and banking operations



Source: Swiss Re sigma, IAIS Global Reinsurance Market Report 2009, BIS, Oliver Wyman analyses

Note: It should be noted that the insurance values are a flow whereas the CDS is a stock Figure. However, the comparison of the proportions is a valid one.

Reinsurance effectively shares a risk whose size is limited to the underlying insurable interest, between several parties, and allows diversification of exposures. Moral hazard is mitigated because the primary insurer remains exposed to a portion of any losses in a reinsurance transaction. This links the destiny of the ceding insurer and the reinsurer in any transaction.

In the context of natural catastrophes the structure of the insurance industry gives it two lines of defence. Reinsurers take on “peak risks” and act as a first line of defence for extreme events (e.g. catastrophes), providing a firewall that protects primary insurers from massive losses and potential failure. In the event of peak losses causing the failure of reinsurers, the capital of primary insurers provides a second line of defence. It is in theory possible for an event to be so huge that it overwhelms the entire insurance industry, but this would then be a national or global catastrophe of unimaginable scale (for example, Hurricane Katrina was well within the industry’s capacity). In this circumstance the event would have caused the loss, not the activities of insurance companies.

Interbank CDS transactions, by contrast, can disconnect the risk from holding the underlying exposure. When Lehman Brothers defaulted in September 2008, it had USD 155 billion in outstanding debt, yet USD 400 billion of CDS referencing this debt had been sold. It is therefore possible for the CDS losses arising from an event to impact many more market participants in a substantial way than the event itself; the market interconnectedness can lead to a contagion of the whole system.

This contagion is aggravated by the problem of opacity. The complexity of many derivatives and the fact that many are traded over-the-counter rather than through exchanges make it difficult to assess the risk position of interbank counterparties. This opacity was an important factor for the loss of confidence at the peak of the crisis in late 2008. Inter-insurance firm transactions enjoy a much higher degree of transparency, being dominated by a small number of standard mechanisms that are well understood by the players involved and the wider market.

Again, we do not argue that interconnectedness is not a relevant criterion for assessing the systemic risk of an insurer. Rather, we point out that the interconnectedness can be a highly significant factor for some activities, whereas for others interconnectedness is of little relevance.

2.3. Substitutability

The substitutability of an institution for a financial service must be assessed by considering two questions:

- Does the institution have any technical specificities or play such a unique role in a market that it would be difficult to substitute an equivalent actor in the short-term if the institution were to disappear?
- Is the capacity that the institution deploys to its market so large or unique that others could not step in with capacity sufficient to enable the market to clear?

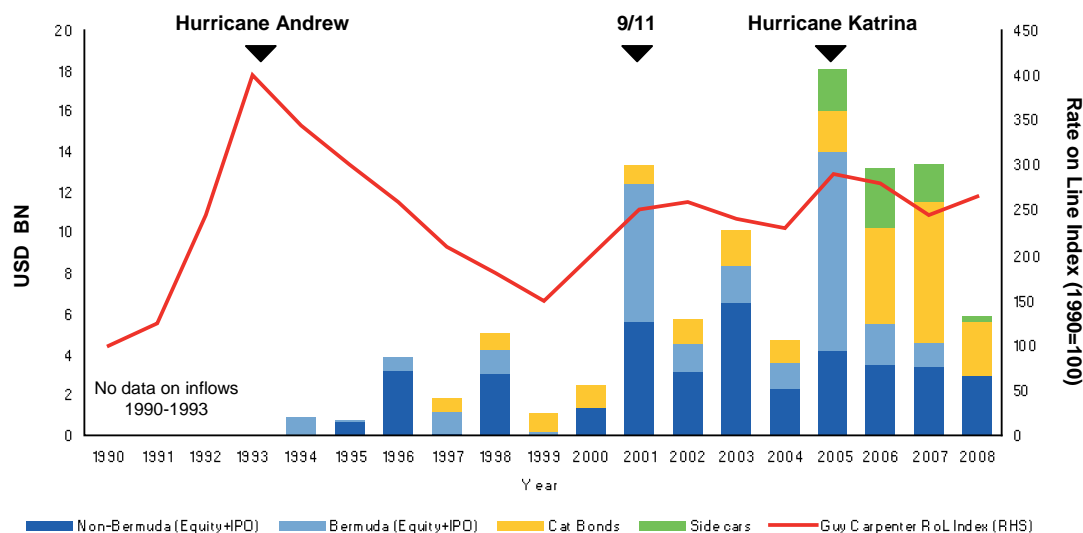
By these tests, insurance activity is substitutable, and therefore not systemically relevant by this criterion. Firstly, no insurer has a monopoly in any material line of insurance, nor does one institution play a central market role such as clearing or acting as a securities exchange.

Secondly, insurance capacity is substitutable. Insurers derive their capacity to write business from a number of sources, including external capital. However, we can see reinsurers as the ultimate providers of capacity in the system: so long as reinsurers are offering capacity, insurers will write business. But capacity in the reinsurance market is easily substituted. After a natural catastrophe, reinsurance capacity declines and reinsurance prices typically increase for several years. This cycle attracts new capital flowing to both existing reinsurers and new entrants (including capital markets through side-cars and cat bond securitisations) while (expected) higher profits top up

capital reserves. Because these profits are not risk-free there is no arbitrage opportunity, and therefore the cycle is long-lasting enough to restore sufficient capacity to the system.

Exhibit 21: Worldwide reinsurance capital inflows 1990-2008

New capital flows into nat cat reinsurance industry and nat cat reinsurance rates



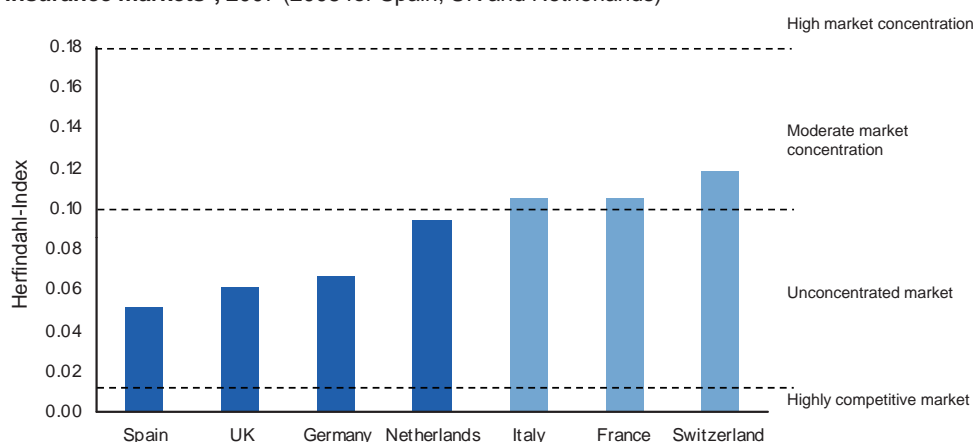
Source: Thomson, Guy Carpenter, AON Benfield, Dealogic, Oliver Wyman analysis

Of course, the recapitalisation of the industry after a major catastrophe does not happen overnight. However there is also no overnight substitutability problem. First, the timing criterion raised by the IAIS is relevant here. While an immediate substitute would be required for several banking activities, this is not the case for all insurance services (and as we note in section 2.6, the process for winding-up an insurer also means that this loss of coverage would not be immediate).

Second, the insurance and reinsurance markets are highly diversified by the usual measures within each country and worldwide for reinsurance, so only an event which destroyed the entire industry could make it impossible to purchase necessary insurance cover.

Exhibit 22: Concentration of European primary insurance markets

Herfindahl-Index of primary insurance (life and non-life combined) for major European insurance markets¹, 2007 (2008 for Spain, UK and Netherlands)



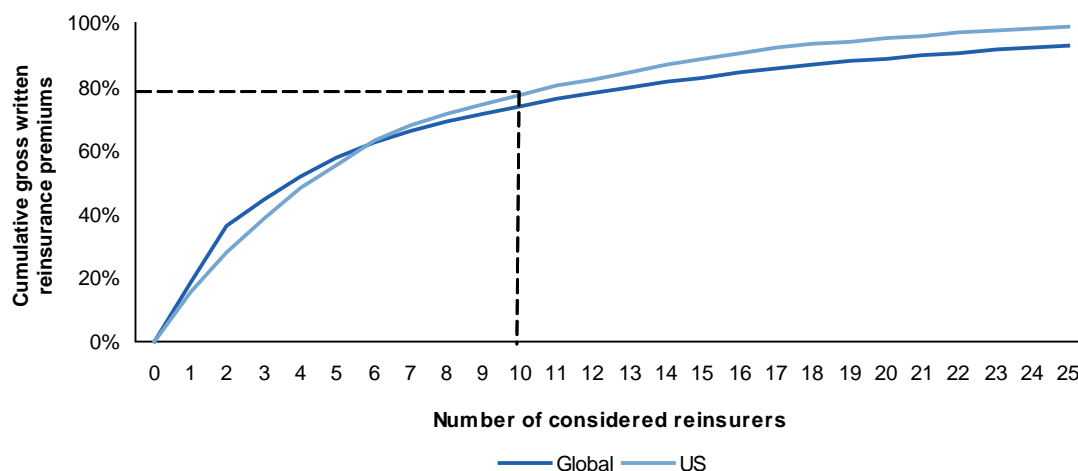
Source: Oliver Wyman European Insurance Database 2008

¹ Index based on gross premiums written by European insurers. Index < 0.01: highly competitive; 0.01 ≤ Index < 0.1: un-concentrated market; 0.1 ≤ Index < 0.18: moderate concentration; 0.18 ≤ Index: high concentration

Exhibit 23: Concentration of the global and U.S. reinsurance markets

Cumulative premiums by the largest reinsurers

Ranked in descending order by gross written premium, 2008



Source: AM Best, IAIS Global Reinsurance Market Report 2009, OW Press Research

1. Based on the Top 35 global reinsurers (gross written premium 2008: USD 156 BN) and the total gross written reinsurance premium according to the IAIS Global Reinsurance

Market Report 2009 (2008: USD 159 BN) which is only considering reinsurers writing reinsurance in excess of USD 800 MM

2. Based on the Top 25 U.S. reinsurers (gross written premium 2008: USD 37.2 BN of total U.S. gross written premium of USD 37.7 BN)

Note: The Herfindahl index is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them; defined as the sum of the squares of the market shares of the 50 largest firms

Due to the organisation and structure of the insurance and reinsurance markets, substitutability is therefore not as relevant for insurance companies as it is for banks where exchanges and payment systems are critical.

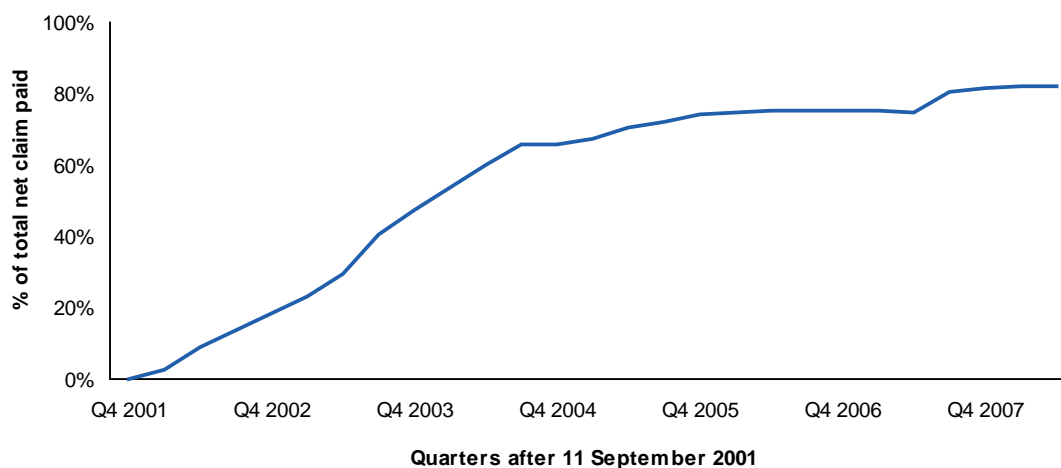
2.4. Timing

Insurance claims operate much more slowly than the margin call, collateral and depositor claims on banks. For example, less than half of the claims on the World Trade Centre were settled two years after the event. This is a direct consequence of the nature of large insurance claims: they rely in many cases on multiple policies, court judgements, and individual claimants.

Exhibit 24: Timing of World Trade Centre claims payments

Timing of World Trade Centre Insurance Claims

Cumulative proportion of claims made over time



Source: Reinsurance Association of America, Catastrophe Loss Development Study

The failure of a bank and the consequent closure of the wholesale funding markets could trigger the collapse of the banking system very quickly. By contrast, the wind-up of an insurer is likely to be a more orderly process, as discussed in Chapter 2.6. The slow pace of failure increases “substitutability” by providing the time required to rebuild industry capital and capacity. We can thus argue that insurance firm failures present less systemic risk than bank failures. However in doing so, we note that the difficulties caused by AIG’s Financial Products division presented a huge and immediate systemic threat in the judgement of U.S. policy-makers: this again points to the need to consider activities, rather than institutions, in considering systemic relevance.

2.5. Contributing factors to the assessment of systemic importance

Each of the three further “contributing factors” (leverage, liquidity/mismatches and complexity), independently, would not create systemic risk, but should be considered alongside the main criteria.

We can take leverage and liquidity together, as in banking activities leverage (for example the use of wholesale funding to increase the institution’s lending capacity relative to its deposit base) and liquidity mismatches both serve to expose the institution to the risk of the wholesale market drying-up for a period of time.

But for typical insurance business, the concept of leverage is different from banking, and therefore the nature of liquidity risk is different. Insurance activity is self-funding through premium inflow, with long-term sources of capital used to support the risks accepted. In other words, leverage is not part of the business model of insurance and insurance companies do not require leverage to function.

Insurers do have to maintain appropriate liquidity, as they do have payments to make to policy-holders. Many of these payments are planned claims and benefit payments, but in some instances policy-holders have the ability to accelerate payments, through policy surrenders. These payments are funded, first, through premium inflows, and next through sales of securities held. Insurers are not reliant on wholesale funding to meet policy-holder redemptions or for any other core insurance activity.

Consequently whilst liquidity is a relevant issue for all financial institutions, the nature of the risk is very different for different activities, as are the metrics needed to measure this risk and the actions required to mitigate it.

Finally, the FSB raises complexity as a contributing factor. Complexity by itself is not a relevant issue, except in so far as intra-group transactions, by preventing an orderly wind-up, exacerbate the systemic risk from the group’s activities. For banks, this is particularly the case where the intra-group transactions are also inter-country. But for an insurance group not carrying out banking activities, intra-group transactions are used for capital management efficiency, should not interfere with orderly wind-up (this is discussed in more detail below), and should not make the regulation of the overall entity more complex as each insurance balance sheet is a regulated entity. Consequently, for certain activities, complexity is a significant contributing factor; for other activities it is of no relevance.

2.6. Wind-up and run-off: insurance industry experience

While regulation attempts to limit the possibility of insolvencies, and in particular insolvencies caused by imprudent management decisions, company failures as such should not be considered as something to be prevented at any cost. The disappearance of old and appearance of new market participants is an essential element of market economies.

However, regulation is an important factor in providing stability of the insurance market, by defining rules or principles that prevent failures under circumstances that could lead to a systemic collapse, as well as giving protection to the rights and entitlements of policy-holders and other policy beneficiaries. The experience of the insurance industry in wind-up cases contrasts with the banking sector. Insurance company wind-ups and exits from markets are traditionally conducted in an orderly manner.

First, claims are settled normally. Since insurers are required to hold reserves against claims advised by policy-holders, as well as for incurred but not yet reported claims, an accelerated wind-up process is avoided. Valuation of outstanding insurance obligations, in particular the valuation of loss reserves, is fully assessed as part of the wind-up process.

Second, supervisors' early intervention allows the insurer's management to work with the appropriate regulator to ensure the best course of action to protect the policy-holders and to affect a transfer of business to other market participants.

Third, there are low lapse rates in life insurance during run-off as compared to banks (bank runs), though slightly higher than on a going concern basis. For life insurers, since lapses are usually connected to significant penalties for policy-holders, lapse rates across the life portfolio of liabilities during insurer wind-ups cannot be compared to bank runs. Hence there is no immediate increase in need for liquidity. Also, the run-off of closed life portfolio is a sound business for some insurers.

Fourth, insurance company failures extend over many years, often long before formal wind up proceedings are started, since liabilities mature over an extended period of time. The long maturity of liabilities allows for the recovery of market values of tied assets (see below for definition) which cannot be accessed by any creditors other than the policy-holders.

Fifth, from a systemic perspective it is important to note the unique portfolio structure of insurers. Insurers lack two-way trading portfolios as they mostly have just one set of liability holders (their policy-holders) and just one set of assets (their investments). Accordingly, netting, collateral and counterparty risk spirals do not represent major risks in the case of insurer wind-ups.

In summary, the wind-up of insurers (insurance companies, not non-insurance entities in insurance groups) strongly mitigates the systemic impact of the insolvency event. In this respect insurers differ strongly from banks due to the insurance business model and additional stabilising elements stemming from existing insurance regulation.

Moreover, insurer wind-ups gain further stability thanks to existing regulatory frameworks. The following exemplifies typical common elements of regulatory approaches (details depend on local law).

- Strict regulation is imposed for reserves covering liabilities. In several jurisdictions there are so-called “tied assets” that have to match the insurance reserves in amount and that must be invested in a secure way according to more or less prescriptive investment rules. Also there are requirements to hold significant reserves against claims “incurred but not yet reported” (and not just “reported but not yet settled”).
- Policy-holders' claims generally receive privileged treatment in insurer's insolvencies, through privileged ranking or other mechanisms.
- Supervisors have far reaching powers ahead of an actual insolvency. These include retraction of the license, forced run-off, and transfer of books of policies to more stable peers or into new separate entities.
- During insolvency proceedings supervisors can act as liquidators or order deconsolidation of entities.

Conclusion

Insurer and bank wind-ups and bankruptcies are not comparable as they are driven by different business models with different unfolding mechanisms and consequences. The orderly nature of such insurer wind-ups actually contributes to the stability of the financial system. However, we see that the nature of cross-border wind-ups warrants further examination of the coordination between regulators at the national and international level.

Case studies of the wind-ups of Equitable Life and HIH can be found in the appendix.

2.7. Conclusion on the FSB and IAIS criteria for systemic risk

In this report we do not dispute the criteria for systemic risk put forward by FSB and IAIS. Even more importantly for the regulatory purposes, they show how systemic risk accrues, not to firms, but to specific activities of those firms.

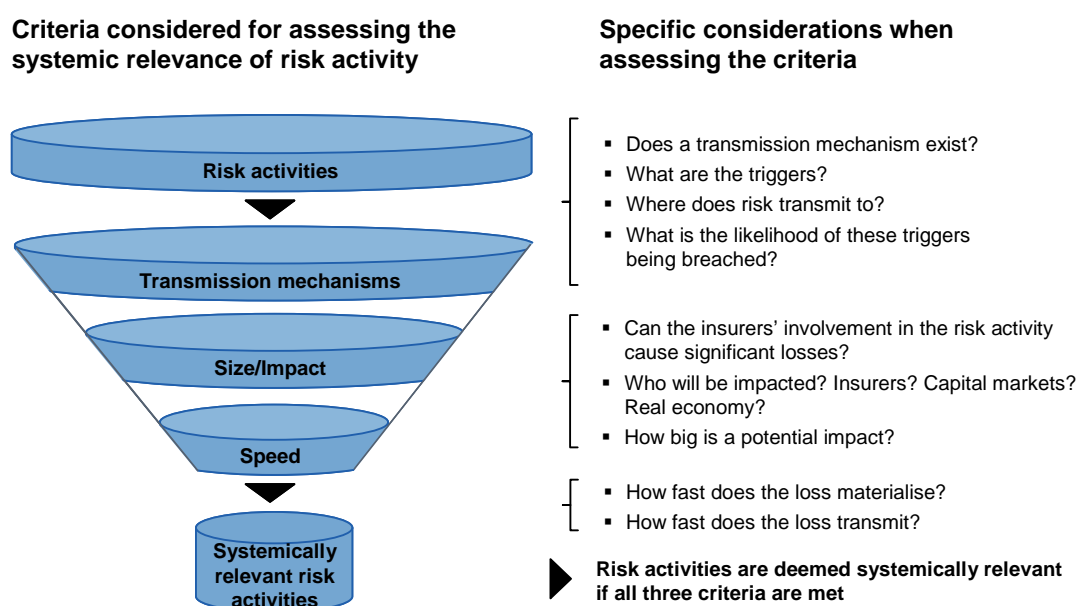
- Size can indicate the systemic risk presented by an institution when its exposures are concentrated in one area. However, when size is accompanied by diversification, it may indicate reduced systemic risk.
- Interconnectedness is an essential criterion in assessing systemic risk relevance. However, different highly interconnected activities can show very different speed and impact of transmission, and therefore have quite different implications for systemic risk.
- Substitutability risk in the insurance industry depends on the speed of the financial impact of a “crisis event”. A crisis of the kind we have seen in banking, which accelerates over time, allows no time for the market to recapitalise. By contrast, a major insurance event will decelerate over time, giving the market time to recover.

Consequently, in the next chapter we argue for an approach that will apply the FSB criteria to the risk activities that insurers engage in rather than to an insurance company viewed as a single entity.

3. Assessing systemic relevance of insurers' risk activities

As explained in Chapter 2, the FSB's criteria need to be applied to risk **activities** rather than to insurance companies as a whole. In this chapter we use a filter approach to assess the activities of insurers for systemic relevance, using the approach described in Exhibit 25 below.

Exhibit 25: Approach for assessing systemic relevance



Source: Oliver Wyman analysis

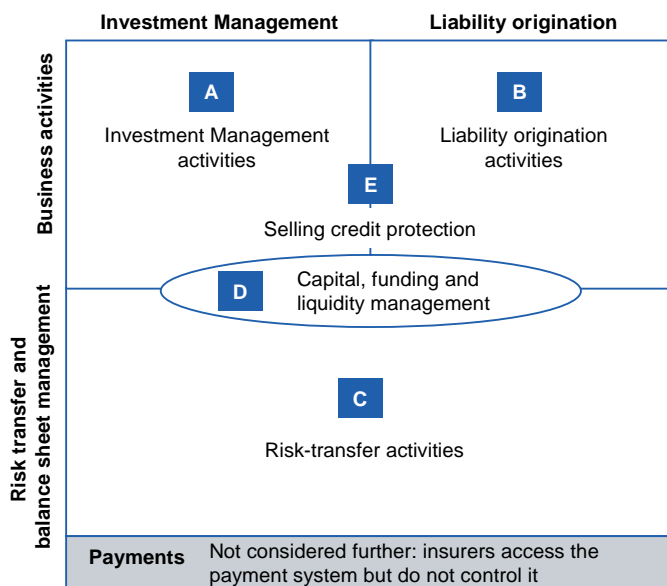
As counterparties for risk transfers and holders of large amount of assets, insurers typically engage in several interrelated activities. These are presented in Exhibit 26 on the next page.

From these high level activity categories, we have derived a list of specific activities that are interconnected to other parts of the financial system and which therefore need to be assessed for their potential to create systemic risk. It is important to note that many of these activities are not carried out by all insurers; some activities, particularly for credit protection activities (activities E), are decidedly marginal for almost all insurers.

Some of the activities within the universe are “core” insurance activities that almost all insurance companies engage in like reinsurance or hedging. However, other activities such as financial guarantees or CDS writing are marginal activities for most insurers and can be considered

“non-core”. Moreover, credit default swaps are not considered insurance contracts and are not subjected to insurance regulation.

Exhibit 26: Universe of activity categories carried out by insurance companies



- A** Investing policyholders' and shareholders' investments, as cash or through derivatives
- ALM and Strategic Asset Allocation
 - Derivatives activities on non insurance balance sheets

- B** Traditional insurance business of originating liabilities by providing protection/guarantees
- Underwriting catastrophe risks
 - Underwriting long term risks
 - Writing business with redemption options
 - Writing life business with embedded guarantees

- C** Transferring insurance and market risks to third parties
- Hedging with derivatives
 - Reinsurance and retrocession
 - Insurance linked securities and derivatives

- D** Capital raising, short-term and long-term funding, liquidity management for investment management and liability origination operations
- Treasury related-activities
 - Long-term capital raising

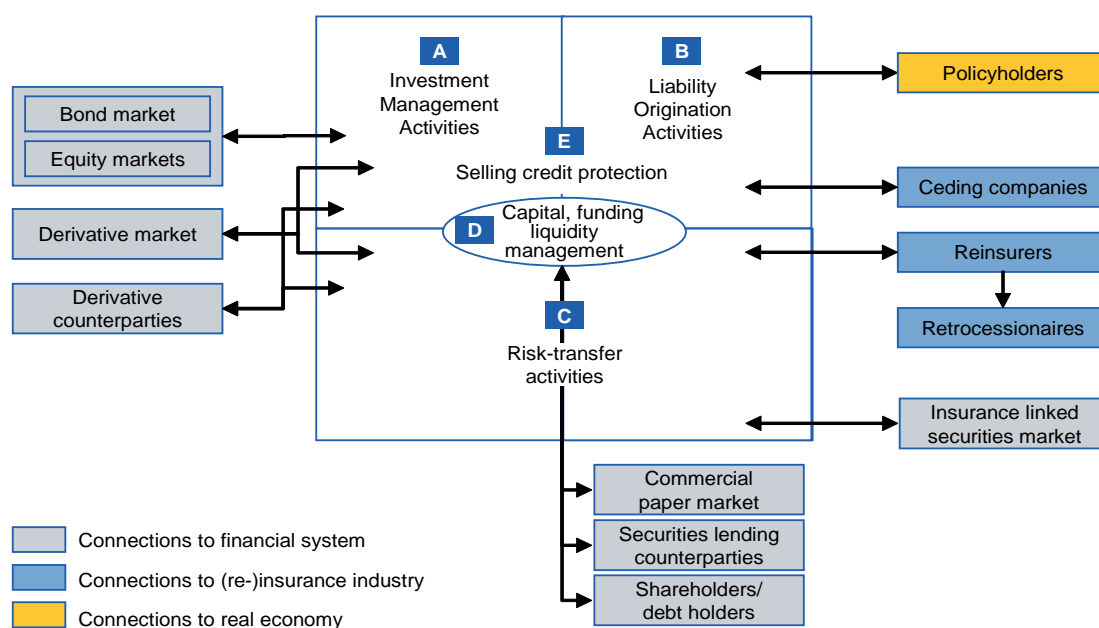
- E** Selling credit protection
- Credit insurance
 - Financial Guarantees
 - CDS writing

Source: Oliver Wyman assessment

The activities within the universe of potential insurers' activities connect insurers to a wide variety of other financial market participants.

Purely intra-group transactions do not affect third parties and so cannot be considered systemically relevant. We do, however, take account of intra-group transactions and complexity on the external activities that we consider.

Each of the interconnected activities listed above will be assessed in the following sub-sections by applying the approach described.

Exhibit 27: Inter-connections of key risk activities in which insurers can engage**Inter-connections of key risk activities in which insurers are engaged**

Source: Oliver Wyman assessment

3.1. Investment management activities

In this section, we assess each of the risk activities grouped by their broad category, since risk activities in these categories are often interconnected, with similar counterparties in the financial system.

Please note that the asset management services provided by insurers for third parties are not considered in the investment management activities detailed below.

3.1.1. Asset liability management and strategic asset allocation

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> ▪ Efficient investment of assets and hedges to replicate liability profile ▪ Long-only investment in risky assets, including credit assets 	<ul style="list-style-type: none"> ▪ Forced sale of assets creates downward market dislocation ▪ Insolvency of financial institution, drop in equity prices result in loss for insurers and may trigger sale ▪ Convexity mismatch between assets and liabilities leads to sale of assets with capital losses ▪ Simultaneous sale of assets by many insurers as a result of a breach of programme trading triggers 	<ul style="list-style-type: none"> ▪ Forced sale must be to meet a liquidity need, or be driven by regulation ▪ Liquidity need will need to exceed liquid financial resources of insurer and trigger a forced sale ▪ Sell-off must be rapid and large in comparison to traded market volumes

Insurers hold large amount of assets that they manage against their liability-driven benchmark. Insurers' investment function therefore differs from third-party asset managers which are managing against a market benchmark (whether an asset class index or a cash index).

Insurers' investment management can be decomposed into asset liability management (ALM) and strategic asset allocation. Asset liability management involves investing in assets and derivatives to replicate insurers' liability profiles and match their expected claims. Strategic asset allocation aims to deliver higher investment returns to shareholders and policy-holders. These activities are a fundamental part of the core business of insurance.

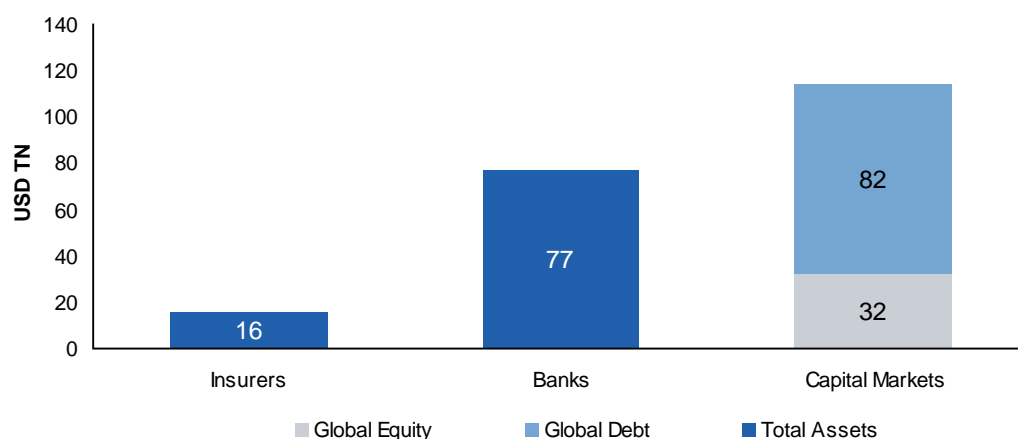
The volume of premiums received by insurers and the horizon of some claim payments make them large investors in the capital markets. At the end of 2008, the total assets of insurers represented 14 per cent of global debt and equity. This contrasts with banks' assets, which are almost five times as large. However, the long time horizon of insurers' cash out-flows means that they are long-term investors. A systemic risk could only arise if insurers' trading activities were such that they created financial instability through asset disposals.

We examine four potential triggers:

- exposures to other financial institutions;
- investments in equities;
- investment in callable bonds;
- programme trading (the use of price triggers).

Exhibit 28: Insurers' assets are significantly lower than banks' assets and capital markets assets

Total assets and the capital markets USD TN, 2008¹



Source: BIS, World Federation of Exchanges, Datastream, Oliver Wyman Analysis
1: Except Global Debt, which is notional outstanding as at 31 March 2009

3.1.1.1. Exposures to other financial institutions

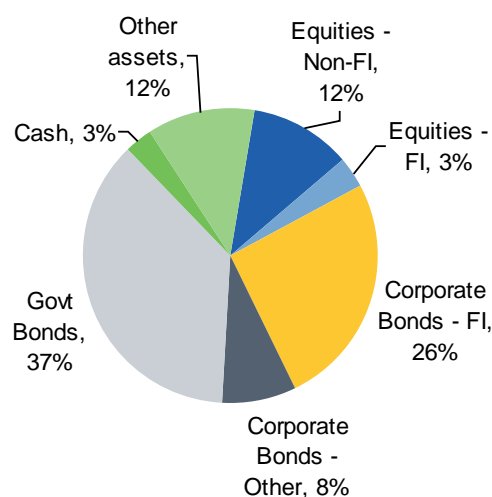
Insurers are large investors in the shares and bonds of other financial institutions. Through this transmission channel, insurers can be severely affected as a result of a stress in financial institutions, such as banks, as any other institution, household or individual would be affected. However, thanks to their highly diversified exposures and exposures to financial institutions in line with the industry weight in equity and debt indices, insurers would not transmit such an impact to other parts of the financial system or amplify this risk, thereby attenuating the systemic

risk. This is due to the fact that insurers have positive cash-flows and liquid securities that could be liquidated first.

Exhibit 29: Insurers' exposure to other financial institutions

Composition of European Insurers' Investment portfolio and their investments in Financial Institutions (FI)

2008 Estimates



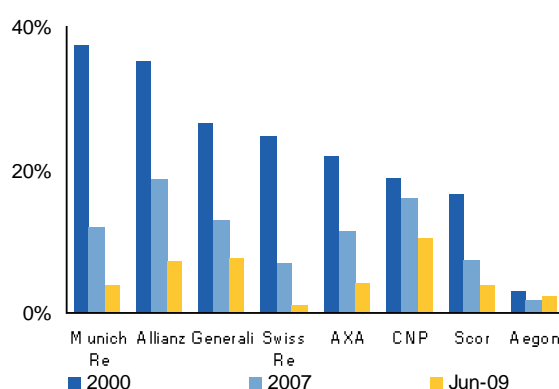
Source: ECB, Dealogic, Datastream, Oliver Wyman estimates

3.1.1.2. Investment in equities

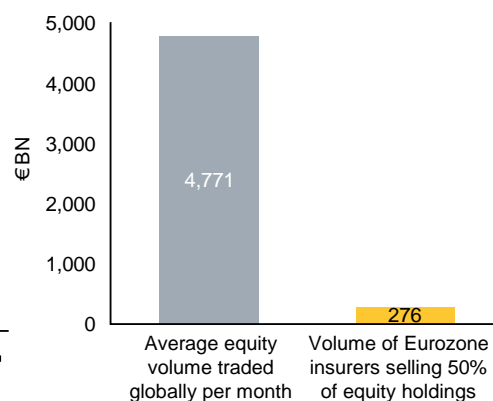
European insurers in particular have significant equity holdings; however, only 14.8 per cent (€552 billion) of European insurers are in equities. A severe drop in equity prices would impact European insurers' assets, as it would impact other investors. As illustrated by Exhibit 30 the investment in equity of insurers has dramatically dropped since 2000. Insurance investment in equity markets is therefore much more limited than what is commonly perceived by observers. Therefore, even a widespread and massive insurance divestment from equity would not by itself (everything being equal) be sufficient to trigger a disruption of the market.

Exhibit 30: Insurers and the equity markets

Evolution of European Insurers' Equity holdings as % of total assets, 2000-2009



Comparison of stress scenario equity sell-off volumes vs. monthly equity trading volumes



Source: Natixis Securities, Oliver Wyman analysis, ECB, World Federation of Exchanges

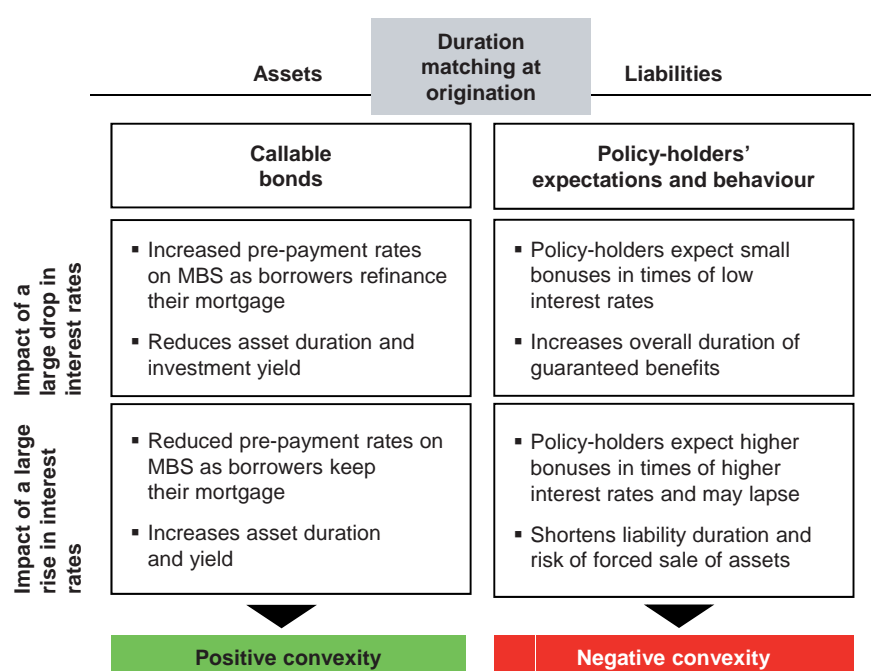
Note: Although the comparison is between global equity volume and Eurozone insurers' equity assets (which are global equities), we believe that the severe divestment by such a significant group of insurers demonstrates the limited potential impact

During the crisis, insurers generally held their equity positions despite falling equity prices and were able to absorb losses. This confirmed that insurers trade on different triggers than other investors, mainly due to their liability-driven benchmark, thereby reducing rather than increasing systemic risk.

3.1.1.3. Investment in callable bonds

Callable bonds are instruments that allow the borrower to choose when to repay the loan, within restrictions. Exhibit 31 below illustrates the risk of investing in them.

Exhibit 31: Illustration of convexity mismatch



Source: "The Expectation game", J. Oechslin, M. Aellig, O. Aubry, J. Wicke – Life Pensions magazine November/December 2005

Many insurers bought structured assets, most of which include a callable feature (through pre-payments), particularly sensitive to interest rate movements. Since callable bonds, such as mortgage-backed securities, have a positive convexity (as opposed to liabilities which generally have a negative convexity), insurers' investments in callable bonds increase their convexity mismatch.

However, insurers' convexity mismatch is insufficiently large to create systemic risk. The main European insurers owned €235 billion of ABS¹⁰ as of 2007. This represents around 11 per cent of these insurers' fixed income portfolio¹¹ and a lower portion of their overall investment portfolio; it only represents roughly 3 per cent of worldwide structured product outstandings. This is insufficient to cause disruption either from forced sale or price falls. And these figures themselves overstate insurers' convexity risk: since 2007 both U.S. and European insurers have progressively moved away from structured assets with the most negative convexity, such as RMBS.

10. Asset Backed Securities includes, amongst others, the subsets Residential Mortgage Backed Securities (RMBS), a pool of mortgage loans to individual borrowers secured against the property, and Commercial Mortgage Backed Securities (CMBS), a pool of mortgage loans to corporate borrowers on the same terms.

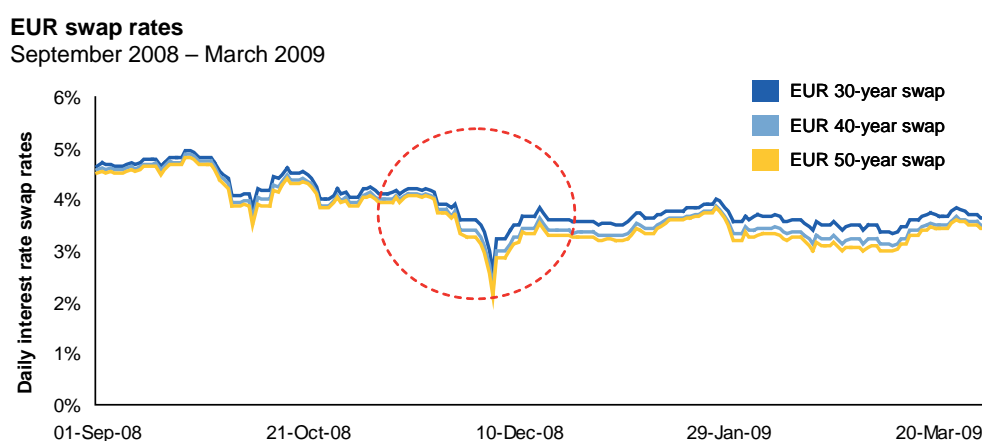
11. Source: Merrill Lynch 2008 report – Positions as of December 2007.

3.1.1.4. Programme trading

Programme trading, automated trading using price triggers or stop-loss limits by insurers and pension funds, can sometimes have an acute effect on market prices, especially in low volume markets. However, these price effects are typically short lived.

For example, in the week of 1 December 2008, the Dutch pension funds' average cover ratio dropped to about 95 per cent as long-term interest rates fell sharply. Several funds tried to close their interest rate position by buying long-term swaps, creating an increased demand for them. Combined with a decreased supply from investment banks in this shallow market, the increased demand almost brought the swap market down. The Euro 50-year swap rate declined by 13 per cent on 3 December 2008, and by 18 per cent on the following day. However, the market returned to pre-dip levels within a few days.

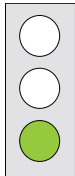
Exhibit 32: Example of impact of programme trading – Dutch pension fund hedge on euro long-term swap rates (December 2008)



Source: Bloomberg

Conclusion

Despite the speed with which risk transmission occurs in the financial markets, insurers' activities in ALM and strategic asset allocation cannot be deemed systemically relevant. As shown above, insurers' trading volumes are of insufficient size relative to total market volumes to have systemic impact, without even mentioning the insurers' trading behaviour.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Many insurers with same triggers and investment reactions (programme trading) 	<ul style="list-style-type: none"> Insurers holdings of risky assets (e.g. equity) are low compared to trading volumes Insurers have positive cash-flows and liquid securities that could be liquidated first Investment management is liability driven, as opposed to focused on absolute returns 	<ul style="list-style-type: none"> High due to interaction with financial markets and marking-to-markets 	 <p>Not systemically relevant</p>

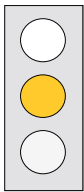
3.1.2. Derivatives activities on non-insurance balance sheets

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Trading in uncovered (non-credit) derivatives or assets with embedded uncovered derivatives (e.g. callable bonds) 	<ul style="list-style-type: none"> Derivatives collateral calls exceed financial resources creating impact on counterparty 	<ul style="list-style-type: none"> Derivatives must be uncovered and the margin call must exceed liquid financial resources

The use of derivatives by regulated insurance entities is tightly restricted in major jurisdictions. Derivatives may be used only to reduce an insurer's risk profile or for the sake of efficient portfolio management (derivative markets are often more liquid than the markets for equivalent cash assets). Taking uncovered derivative positions in an attempt to secure higher yields is therefore prohibited for insurance-regulated entities.

However, insurers can still undertake derivative transactions other than for hedging in unregulated or differently regulated entities. As already discussed, the trading activities of AIG FP in London were regulated not by the U.K.'s FSA but indirectly by the OTS in the U.S.. Such "supervisory arbitrage" uses the absence of an effective group supervision requirement in some jurisdictions to take advantage of differing capital requirements. IFRS standards, moreover, require disclosing only the mark-to-market values of these trades, not their exposures. Yet the existence of a parent company guarantee can lead to group-wide contamination from the unregulated entity, as exemplified by AIG.

This kind of derivatives trading if conducted on a massive scale clearly has the potential to quickly transmit significant losses beyond the entity concerned and into the wider financial sector. It should be considered potentially systemically relevant. The important factor, however, is that this activity is restricted to non-insurance balance sheets in jurisdictions without an effective group supervision regime. In Chapter 5 we propose a mitigating measure to address this point.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Positions booked in a non insurance entity with no regulatory capital Positions not captured in insurers' economic capital or regulatory capital Many insurers with same triggers and hedging reactions (programme trading) 	<ul style="list-style-type: none"> Insurers can build significant derivatives' exposures that go unnoticed and create significant inter-connectedness with financial markets (e.g. AIG) 	<ul style="list-style-type: none"> Due to mark-to-market and collateral calls 	 <p>Potentially systemically relevant</p>

3.2. Liability origination activities

These activities are central to insurers' role of providing protection to policy-holders, whether these guarantees are financial, related to assets or to individuals. By providing protection, insurers expose themselves to the following risks:

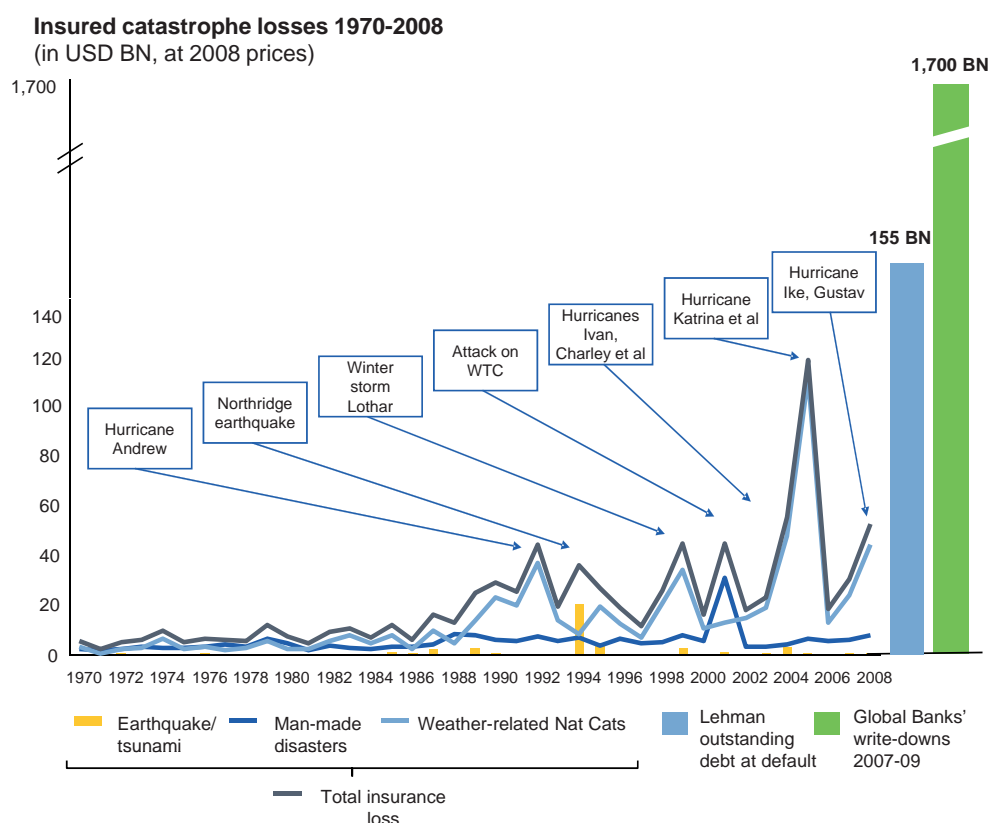
- catastrophic losses: low probability, high impact events, in life and non-life;
- underestimation of claims as risks turn out systematically greater than could have been expected, or as they are affected by changes in the legal environment (e.g. asbestosis, medical liability);
- unexpectedly high policy lapse rates (the insurance analogue of a “run on the bank”);
- embedded options and guarantees without effective hedging to mitigate the loss.

3.2.1. Underwriting catastrophic risks

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> ■ Significant loss from natural or man-made catastrophe, or from pandemic mortality event causes industry-wide collapse 	<ul style="list-style-type: none"> ■ Many insurers exposed to the same event ■ Exposures often reinsured (see risk activity “reinsurance and retrocession”) 	<ul style="list-style-type: none"> ■ Event must be large in comparison with industry capital base ■ Claims payments must exceed industry liquid financial resources at the time they fall due or exceed industry capital

Catastrophic losses cover natural and man-made catastrophes (mainly a non-life risk) and pandemic catastrophes (mainly a life risk).

Exhibit 33: Catastrophe losses vs. bank failures



Source: Swiss Re Sigma 2009; Oliver Wyman analysis

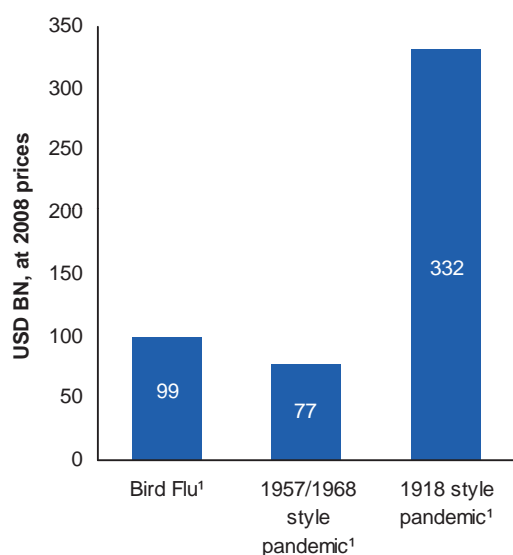
Insuring such events presents the possibility of loss transmission, if only because the same event is often covered by several insurers, and often reinsured. However, to be systemically relevant, the losses must be high in relation to the financial resources of the insurance industry.

And, although catastrophic events can sometimes entail extremely large losses, they are typically small in comparison to the failure of a major bank. Even the losses of USD 73 billion associated with Hurricane Katrina—that were spread over several insurers and reinsurers—were less than Lehman Brothers’ outstanding debt (USD 155 billion) when it filed for bankruptcy.

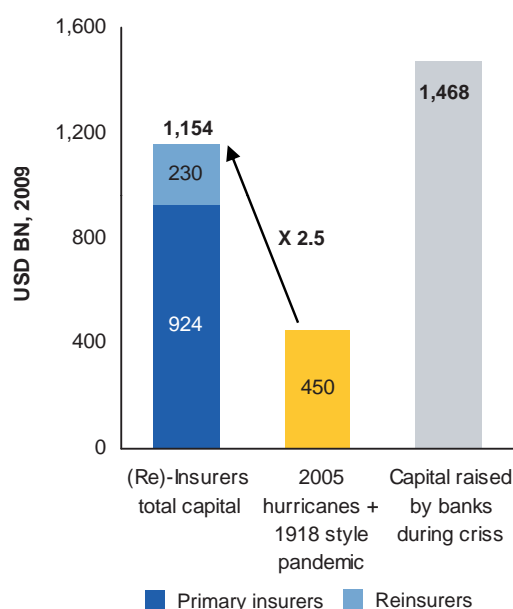
Although man-made catastrophes are becoming more frequent and more severe, they are nothing like large enough to pose a systemic risk. Furthermore, insurers’ and re-insurers’ aggregate capital suffices to cover even huge potential catastrophes: enough to cover three times the worst year in catastrophic losses (2005) combined with a pandemic of historic proportions in the same year.

Exhibit 34: Catastrophe loss coverage

Estimated potential insurance losses from worldwide pandemics



Combined losses of pandemics and nat cat losses could be covered by insurers and reinsurers



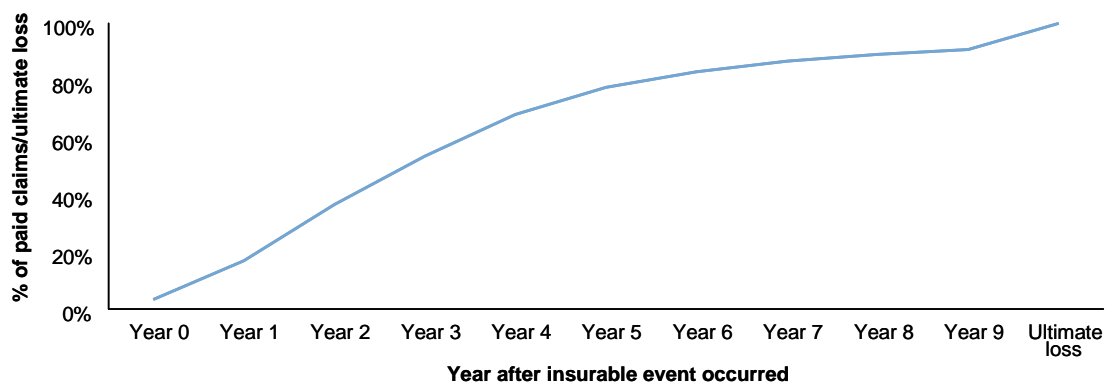
1. Oliver Wyman analysis, based on estimates from Munich Re and Risk Management Solutions, Bloomberg, DataStream. 1957/68 (Asian/Hong Kong Flu) style pandemic and 1918 style (Spanish flu) pandemic losses are based on estimates for mortality losses only. The likelihood of a 1918 style pandemic of huge loss of life is estimated to be 1 in 400.

Catastrophe losses do not pass the speed test for systemic relevance. Claims in the case of a catastrophe would not be paid out immediately, as they are made up of thousands of individual claims, each of which needs to be assessed and paid individually. Not only does this reduce potential liquidity implications, it provides time for reinsurers to rearrange their investment portfolios, build up reserves in anticipation of the coming payment on claims and re-capitalise.

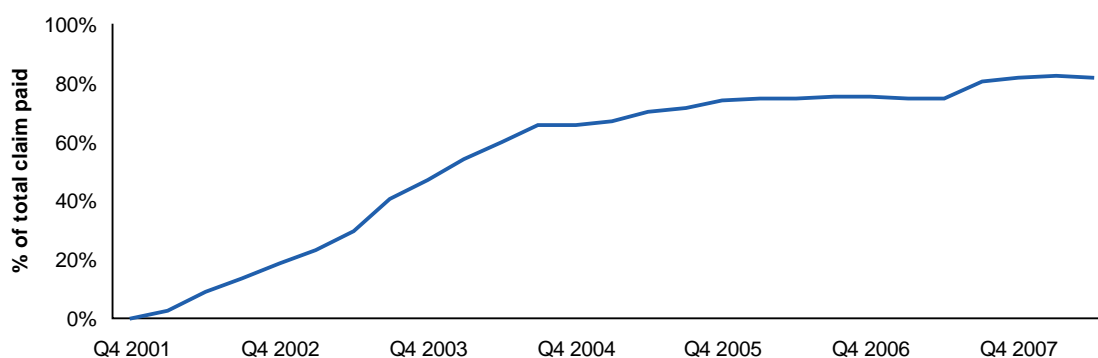
Insurers (generally smaller reinsurers) do on occasion fail because a particular event was too large for them to handle. However, in these circumstances the orderly wind-up process for insurers, which was discussed in Chapter 2, slows down the impact of the insolvency, and ensures that the total loss to the system is no greater than the individual catastrophe.

Exhibit 35: Timing of insurance claim settlement – example of medical liability and World Trade Centre

Timing of payout (US medical liability policy)



Timing of payout (World Trade Centre event claims)



Source: Reinsurance Association of America, Catastrophe Loss Development Study, 2008; Swiss Re Sigma 2009

Conclusion

In conclusion, given the limited size of losses and the slow pace at which they are incurred, the provision of catastrophe insurance is not systemically relevant.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Concentration of exposures by some insurers 	<ul style="list-style-type: none"> Potential natural catastrophe and pandemics not significant compared to available insurers' and reinsurers' capital 	<ul style="list-style-type: none"> No immediate cash-flow problem Time for orderly wind-up/recapitalisation 	<div> <div></div> <div></div> <div></div> </div> <p>Not systemically relevant</p>

3.2.2. Underwriting long-term risks

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> ▪ New information on existing issue causes whole industry to be under-reserved (e.g. longevity risk) ▪ Change in legal environment or regulatory regimes may lead to an increase in claims (e.g. asbestosis, medical insurance) ▪ Transition to a low interest rate or high inflation environment may lead reserves to be underestimated (e.g. due to guarantees) 	<ul style="list-style-type: none"> ▪ Many insurers exposed to the same issue 	<ul style="list-style-type: none"> ▪ Event must be large in comparison with industry total financial resources (since event emerges slowly over time, this does not cause liquidity crunch)

As insurers must make predictions of claims many years in advance, they can be found to be systematically under-reserved for certain risks. This also can arise because of changes in the legal environment, for example asbestosis legislation; developments in medical care leading to longer life expectancy.

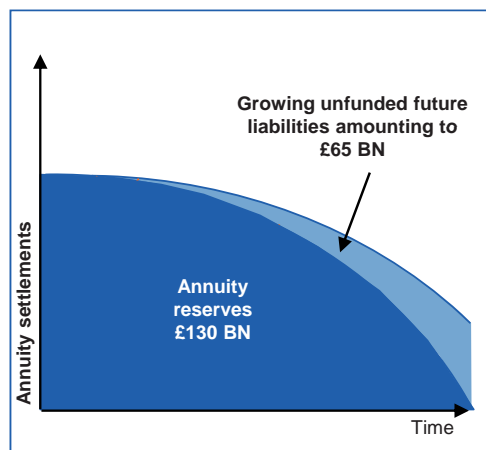
These effects can be large, but the effect on reserving takes a very long time to be felt. Consider, as an extreme example, the effect of an extraordinary medical breakthrough that would increase life expectancy such that annuities liabilities would increase by 50 per cent over time (this would correspond to a medical breakthrough that would make all males aged 60 immortal), leaving insurers under-reserved by 33 per cent. Taking the U.K. as an example, this amount would be 140 per cent of the market capitalisation of the U.K. life insurance industry (before any tax deduction effect that could arise from these losses).

However, such an event would not emerge immediately. Information about changed life expectancy will emerge over years, as illustrated in Exhibit 36, leading to steady reserve and price write-ups for annuity products rather than a one-time effect. This effect results from the fact that, year by year, new information will emerge on topics like the cost of the new medical treatment and the corresponding number of people that can access and afford it. This information would be likely to change and progress over time.

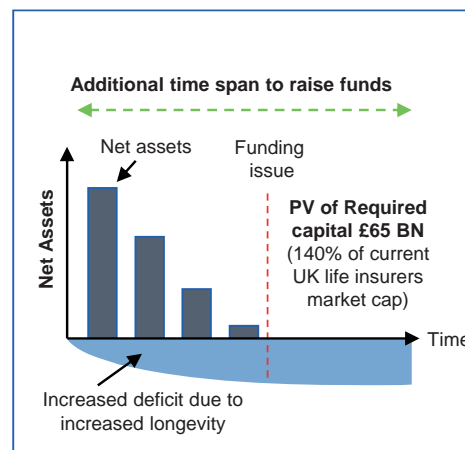
Even an event like “cure for cancer” would thus not lead to a one-time reserve increase, as any information on the effect of such a medical breakthrough must be valued realistically by the actuaries when determining reserves. The “cure for cancer” is a rather good example to illustrate that medical progress has happened over decades in a field and may finally lead to a complete cure. Nevertheless it would be the result of decades of new medical research and thus information for the actuary to determine reserves and by no means a one-time event, like the insolvency of Lehman that hit the capital-markets within days.

Exhibit 36: Illustrative example: risk of jump in longevity (U.K.)

Under-reserving of certain risks could lead to a 50% increase in liabilities for UK life insurers...



...which would lead to a capital shortfall that needs to be compensated



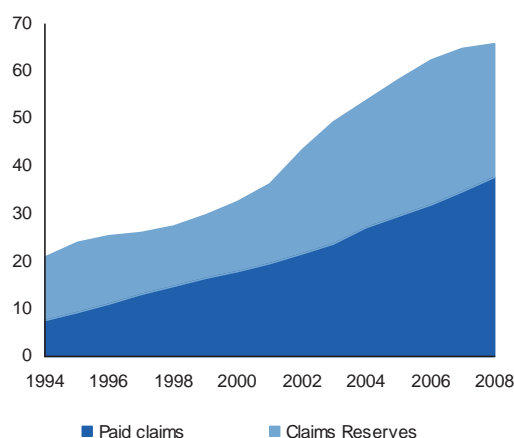
Source: The Pensions Institute, Oliver Wyman analysis

The nearest historical example of under-reserving by insurers is the experience from the asbestosis claims during the 1990s and since 2000. The reserve write-up was significant, but increased gradually over time. Insurers were able to fund their increasing liabilities through profits thrown off by other business lines, or to raise extra funding where required.

Exhibit 37: Case study on asbestosis

The impact of soaring asbestosis liabilities could be absorbed by the insurance industry as claims reserves rose over time

Estimated US Insurers' payments and reserves for asbestosis 1994-2008 (USD BN)



- Total estimated costs are USD 200 BN
 - ~30% for US insurers
 - ~30% for foreign insurers
 - Remaining USD 70-90 BN to be borne by defendants with exhausted insurance cover
- Increases in reserves were gradual
 - Volume and value of claims developed over time
 - Between 1994 and 2006, on average 5% of the total liabilities were funded per year
- The creeping nature of developing claims allows time to restore the financial health of the insurance industry



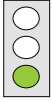
Source: Insurance Information Institute, AM Best; Oliver Wyman Analysis

In the case of a transition to a low interest rate environment, the liability-driven ALM process used by insurers insulates much of the in-force business from reinvestment risk. However under-reserving can also arise when some liabilities could not be hedged by available market instruments and interest rates drop significantly (as happened in Taiwan). In these cases, while the in-force business' shortfall will be funded over time, new business can be re-priced with new, lower guarantees. The residual risk is therefore exposure to unhedged interest rate risk associated

with annual premium contracts. The losses on these contracts would emerge over time and can be mitigated by new business profits as well as profits from in-force business. Therefore, a failure of an insurance company that would be caused by a prolonged low interest rate environment would not likely be potentially systemically relevant.

Conclusion

We have taken longevity risk as an illustrative example, and asbestosis as a historical example here, but the same principle applies in all cases. Under-reserving, while it should be definitely avoided, does not create a systemic risk because its effect on reserves emerges over a long period of time.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Legal environment driving up claims inflation Change in macro-economic environment 	 <ul style="list-style-type: none"> Significant uncertainty on some major risks (mainly long-term risks) 	 <ul style="list-style-type: none"> Write up of liabilities to occur over time No immediate cash-flow problem Leaves time for orderly wind-up or regulatory changes 	 <p>Not systemically relevant</p>

3.2.3. Writing business with redemption options

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Policy-holders acting on their right to reclaim funds 	<ul style="list-style-type: none"> Forced liquidation of investments (see risk activity ALM and Strategic Asset Allocation) 	<ul style="list-style-type: none"> Lapse must be likely, e.g. due to absence of surrender charges or early lapse penalties Cash-flow impact must be large in comparison with industry liquid financial resources

The risk here is that policy-holders with life savings products create large cash outflows for insurers by lapsing at unexpectedly high rates. This would force insurers to liquidate investments, driving down prices and exacerbating losses.

To assess this risk it is first important to distinguish between assets in unit-linked contracts and assets held on an insurer's own account. Investments in unit-linked contracts (€1.5 trillion in Europe in 2008)¹² present less systemic risk, even where they do not have surrender charges acting as a disincentive to lapse. Unit-linked asset classes are tightly prescribed with the result that in almost every case the assets are highly marketable. In the limited cases where the investments could become illiquid (such as property), unit-linked policies contain liquidity covenants which can be used to delay paying surrenders. Investments held on an insurer's own account present more risk. Although they also have surrender charges, some of the assets backing the liabilities may be illiquid, and no liquidity covenant applies. Consequently the insurer is exposed to a liquidity risk if they are unable to meet the redemption from available cash-flow.

12. Committee of European Insurance and Occupational Pension Supervisors (CEIOPS), Statistical Annex 2008, <http://www.ceiops.org>.

Lapse rates are generally low in life insurance contracts, due to the long-term nature of the investment. Even in the event of negative media coverage about an insurer's security, lapse rates remain relatively stable (for example mutual company Equitable Life in the U.K. which became insolvent did not experience massive surrenders¹³). Exhibit 38, below, demonstrates the marginal impact that the financial crisis had on German lapse rates.

Exhibit 38: Effect of financial crisis on German life lapse rates

Evolution of lapse rate on life protection
Example of German life insurers' lapse rates (regular premium policies)

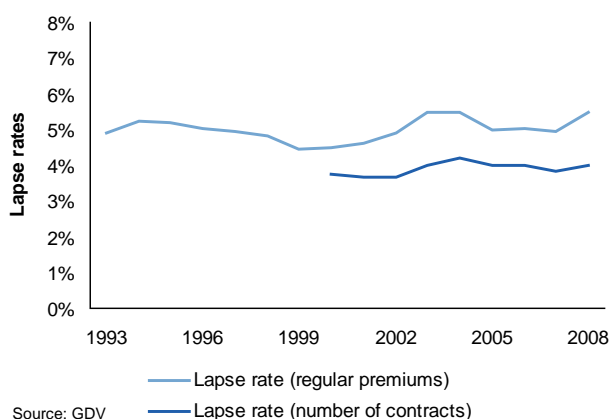
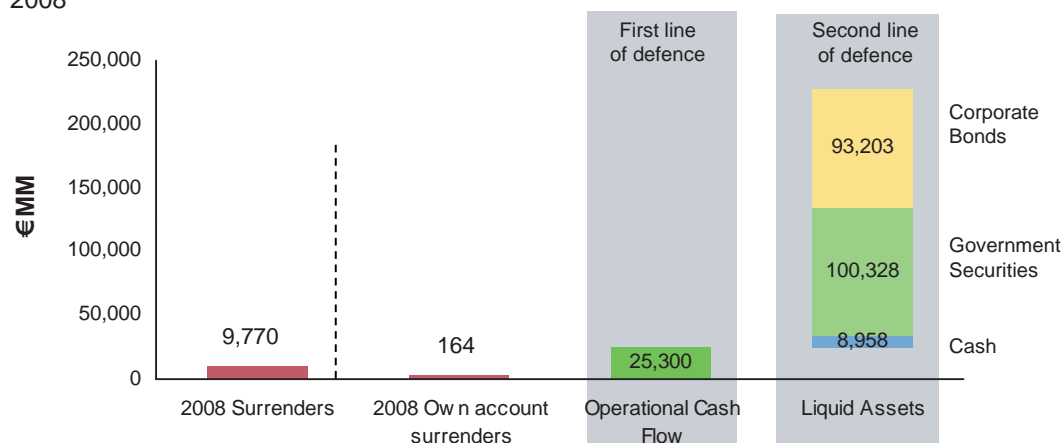


Exhibit 39: Allianz surrenders and financial resources (2008)

Example: Allianz surrenders vs. cash-flows and liquid financial resources
2008



Source: Allianz 2008 Annual Report, Oliver Wyman analysis

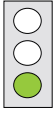
Not only are lapse rates low on an absolute basis, but, significantly, the value of lapses is negligible when compared to the possible sources of financing for such a redemption. As an example, Exhibit 39 illustrates lapse activity at Allianz in 2008. Total surrenders were €9.77 billion, of which only €164 million were non-unit linked, and therefore not covered by separate account assets. The lapse rate would have to be 154 times higher to exceed Allianz's annual cash-flow from operations and 1,386 times higher to exhaust the combined operational cash-flow and liquid financial resources. Thus, even in the case of a sudden increase in lapses, insurers generally have a sufficient flow of premiums and liquid financial assets to cover even extreme lapse levels.

13. See the appendix for an analysis on Equitable Life lapse rate development.

Even in the extreme case of surrenders higher than available liquid resources the amount of investments that insurers would have to sell would be limited compared to trading volumes in a given market. See 3.1.1.

Conclusion

We conclude that lapse rates pose no systemic risk.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Absence of surrender charges in product design or covenant on liquidity of investments in unit funds 	<ul style="list-style-type: none"> Volume not big enough compared to liquid financial resources Less likely due to surrender charges and tax disincentives 	<ul style="list-style-type: none"> Insurance liabilities less quickly available than bank deposits 	 <p>Not systemically relevant</p>

3.2.4. Writing life insurance with embedded guarantees

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Policy-holder options/guarantees not hedged in capital markets 	<ul style="list-style-type: none"> Insolvency causes impact on others with financial exposure to the insurer 	<ul style="list-style-type: none"> Event must be sufficiently large and wind-up would need to be sufficiently uncontrolled to cause market paralysis

Life insurers may offer guaranteed returns or offer options to policy-holders as part of some products. Not all of these can be hedged (e.g. long-term options). This forces some insurers to retain these risks. In other cases, insurers find themselves with unhedged positions because their hedges fail or because they elect not to hedge.

Variable annuities have been identified by some as source of systemic risk because some insurers rely on dynamic hedging to hedge embedded guarantees. Since variable annuities offer policy-holders investment upside with financial protection, they pose a number of risk management challenges. Their guarantee features transfer multiple risks to insurers, which must all be managed concurrently: equity market risk, interest rate risk, basis risk and policy-holders' behaviour risk.

Financial risks arising from variable annuities can be managed in four ways:

- no hedging – naked (covered in this section);
- reinsurance (covered in section 3.3.2.);
- static hedging (covered in section 3.3.1);
- dynamic hedging (covered in this section).

In theory, dynamic hedging relies on the availability of derivatives, which may not be available during periods of market distress. However, dynamic hedging, for example of variable annuities, is mainly done through futures which have remained available at all times.

- Market instruments used to hedge the liability profile of the guarantee are liquid and traded by many counterparties. The insurer can minimise the cost of its hedging strategy and reduce counterparty risk through strict collateral agreements.

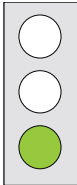
- Guarantees generally payoff over a period that covers many market cycles. So even if market turmoil undid an insurer's hedging strategy, the problem would be relatively short lived. The hedging strategy could be re-established when market conditions return to normal. Variable annuities are effectively long dated put options and insurers offering them can therefore afford to take a long-term view and leave options unhedged for some time (bearing the risk and capital themselves).

When unhedged, embedded options and guarantees can damage insurers' solvency positions following adverse market movements. Insurers could find themselves insolvent on a present value or market-consistent basis. Not only is this not specific to variable annuities in a market consistent solvency regime, but even in this case, they face no immediate cash shortage so that they can continue their operations.

Of course, solvent insurers with unhedged embedded options or guarantees may sell their risky assets in an attempt to reduce their solvency margin requirements and improve their margin coverage. But as we noted in risk activity "asset liability management and strategic asset allocation", this sell-off would not be material relative to traded market volumes, so would pose no systemic threat.

Conclusion

Rather than creating systemic risk, insurers help to absorb economic shocks. Where these shocks are too great, it is possible that an individual insurer may need to be restructured or wound-up; but as we have seen in Chapter 2 this is an orderly process. Embedded options and guarantees, whether in variable annuities or other products, pose no systemic risk.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> ■ None 	<ul style="list-style-type: none"> ■ Volume of assets that insurers can dispose of is not big enough compared to total market ■ Options limited to size of liabilities 	<ul style="list-style-type: none"> ■ No immediate cash-flow problem ■ Option to allow for recovery over time ■ Time for orderly wind-up or recapitalisation 	 <p>Not systemically relevant</p>

3.3. Risk transfer activities

To manage their own risk profile, insurers engage in risk transfer activities. These relate to the risks they have taken through either investment in risky assets or origination of liabilities.

3.3.1. Hedging with derivatives

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> ■ Hedging market positions or policyholder options with derivatives¹⁴ 	<ul style="list-style-type: none"> ■ Hedge counterparty fails, leaving insurer unhedged and liable to fail (leading to situation of unhedged embedded options and guarantees) 	<ul style="list-style-type: none"> ■ Event must be sufficiently large ■ Wind-up would need to be sufficiently uncontrolled to cause market paralysis ■ Event could impact several insurers, all with exposure to the same counterparty

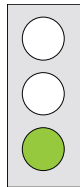
Insurers may wish to (temporarily) hedge some of the risk they have taken on, whether through the guarantees and options embedded in the liabilities or through the assets they have invested in. This presents insurers with the risk that the counterparty to the hedge may fail.

For hedging purposes, insurers typically trade foreign exchange (FX), interest rate and equity derivatives, since these correspond to the financial risks guaranteed by insurers. The respective derivative markets are less concentrated than the CDS market, which insurers and monoliners use mainly to gain exposure to credit risk, rather than for hedging. Whereas CDS are only traded over the counter, FX, interest rate and equity derivatives are traded and cleared through exchanges.

Insurers' over the counter activity is also well-controlled. Insurance regulatory regimes require collateralisation and diversified counterparties, and the range of derivatives and their use is tightly prescribed. In particular, as noted above, insurers can use derivatives on an insurance balance sheet only for risk reduction or efficient portfolio management. Consequently insurers' total derivative exposure on insurance balance sheets is limited to a fraction of their total balance sheet size, so a counterparty failure is not large enough to be material compared to their liquid financial resources.

Conclusion

We conclude that insurers' use of derivatives for hedging on an insurance balance sheet is not systemically relevant. We have already addressed the issue of derivatives activity on non-insurance balance sheets.

Aggravating factors	Size/Impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Covenants for collateralisation based on IFRS or credit rating 	<ul style="list-style-type: none"> Volumes of trading limited by risk of liabilities or assets Collateralisation often in place Hedging mainly in FX, equity and interest-rate derivatives that are less tail risks than other risk factors (e.g. credit) 	<ul style="list-style-type: none"> Marking-to-market and collateral calls have immediate effect on solvency and on liquidity 	 <p>Not systemically relevant</p>

3.3.2. Reinsurance and retrocession

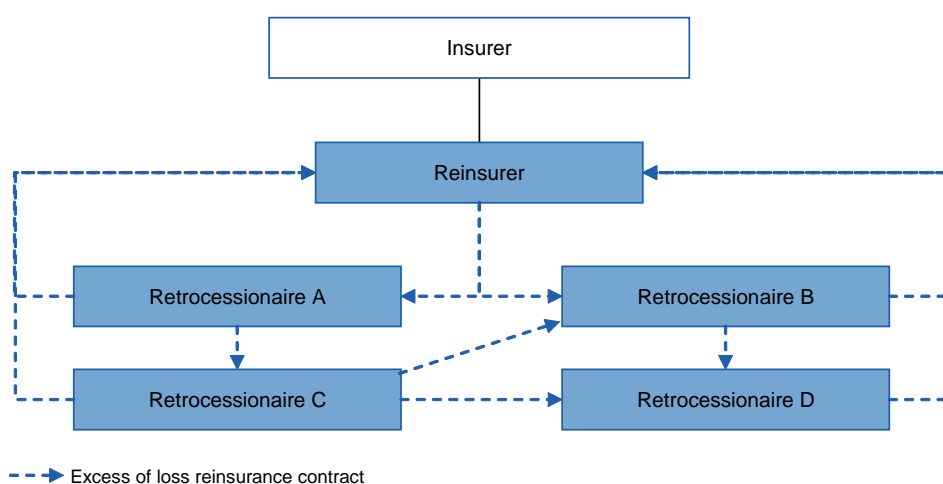
Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Ceding life or non-life risks to reinsurer 	<ul style="list-style-type: none"> Reinsurer fails causing instability in ceding insurer Reinsurance spiral: an insurer unwittingly accepts back risks as inwards reinsurance that he has reinsured outwards 	<ul style="list-style-type: none"> Event must be large in comparison with liquid financial resources of involved parties Involved parties must together be large enough for their failure to be a systemic shock

14. This activity differs from "Derivatives trading on non-insurance balance sheet" which covers derivatives positions for taking risk, as opposed the derivatives activity here which is only for hedging.

Insurers use reinsurance as a tool of balance sheet management and to reduce any concentration of exposures. Reinsurance activities could be highly interconnected through multiple retrocession and co-insurance contracts. The failure of a reinsurer could transmit losses back to primary insurers.

In the past we have observed some cases of reinsurance “spirals”, where interconnectedness caused a serious issue for a part of the insurance sector. Reinsurance spirals could appear in successive reinsurance and retrocession transactions when underwriters share their exposures through excess of loss contracts through co-insurance treaties. Some re-insurers can be heavily interconnected and accumulate concentrated exposures unknowingly. A reinsurance spiral would be revealed when severe catastrophes occurred simultaneously. Whilst the likelihood of a serious spiral occurring today is vanishingly remote, we admit the possibility in order to be sure that we are considering the true worst case.

Exhibit 40: Illustration of reinsurance spiral



But looking at this absolute worst case, we still conclude that, **even given a serious spiral**, the limited size of the underlying event, the low retrocession rates, and the timing of claims payment would prevent the issue becoming a source of systemic risk.

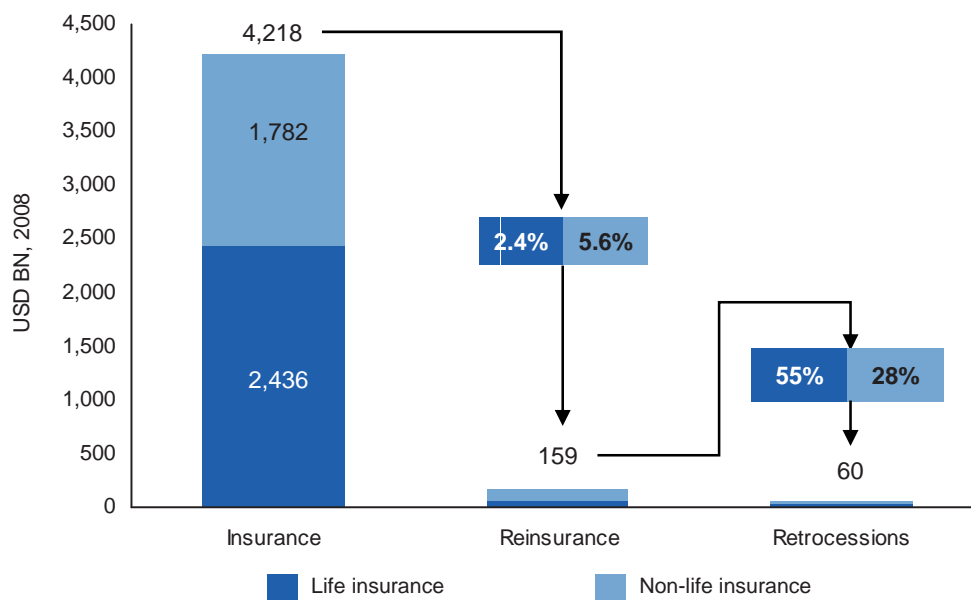
Primary insurers' exposure to reinsurers is manageable given their financial resources. Premiums include payment for the transfer of risk and therefore reflect insurers' risk exposure to reinsurers. Only a fraction of primary insurance premiums are ceded to reinsurers. And the risk is also diversified between large reinsurers, reducing the exposure to any given entity.

More fundamentally, the removal of reinsurance cover would only result in a cash outflow for a primary insurer if the insured event occurred. The delay in timing significantly dampens the transmission effect, as the primary insurer would have the opportunity to realign its risk exposures.

Exhibit 41: Comparison of insurance, reinsurance and retrocession gross written premium volumes

Insurance

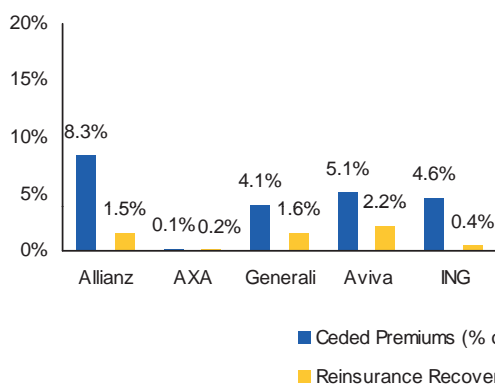
Low level of premiums ceded by insurers, 2008



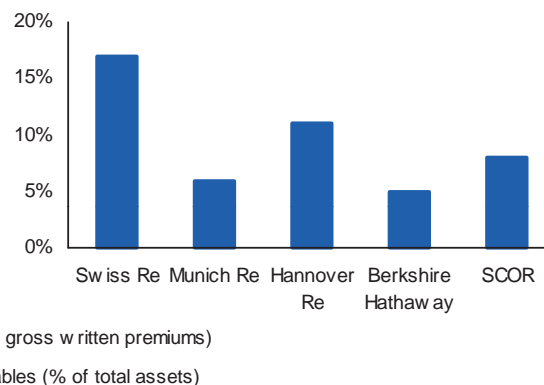
Source: Swiss Re Sigma 2009, IAIS Global Reinsurance Market Report 2009, Oliver Wyman Analysis

Exhibit 42: Cession and retrocession rates for major primary insurers and reinsurers

Significance of reinsurance for Top 5 European Insurers, 2008



Significance of retrocession for Top 5 Global reinsurers, 2008



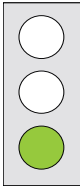


Source: Annual Reports

According to the Group of Thirty (Reinsurance and the capital markets, 2006), even in the hypothetical scenario of a reinsurance failure, primary insurers would be impacted only to a limited extent as only a small share of total insurance premium is ceded to reinsurers. The total loss for the primary insurance industry out of an immediate failure of 20 per cent of reinsurance capacity would be about USD 28 billion—representing less than 2 per cent of global primary non-life insurance premium.

Conclusion

The nature and extent of the activity of reinsuring risk prevents this from being a source of systemic risk.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> ▪ Covenants for collateralisation based on IFRS or credit rating 	 <ul style="list-style-type: none"> ▪ Reinsurance represents only marginal portion of insurance risks ▪ Reinsurance spirals are less likely today, following lessons of spirals and drop in retrocession volumes ▪ Reinsurers have monitoring on concentration of exposures 	 <ul style="list-style-type: none"> ▪ Reinsurance settlements require claims to be assessed and settled 	 <p>Not systemically relevant</p>

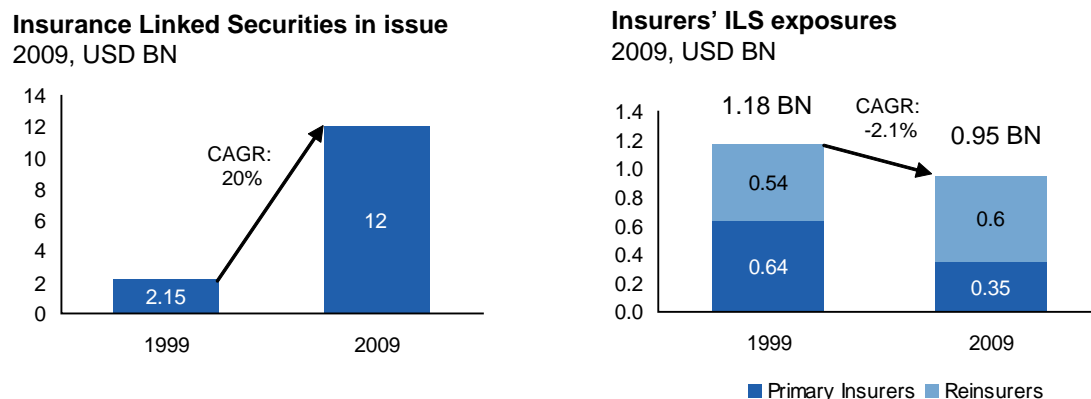
3.3.3. Insurance linked securities and insurance derivatives

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> ▪ Securitising insurance risks into the capital markets ▪ Entering into insurance derivatives to transfer insurance risks 	<ul style="list-style-type: none"> ▪ Insurers buy each other's securities, thereby acting as reinsurers ▪ Insurers not able to transfer the risk to capital markets and have to retain it themselves 	<ul style="list-style-type: none"> ▪ Event must be large in comparison with liquid financial resources of involved parties ▪ Involved parties must together be large enough for their failure to be a systemic shock

Over the last twenty years, insurance linked securities (ILS) and insurance derivatives (e.g. weather derivatives, industry loss warranties (ILW)) have emerged as an effective risk management and capital management tool for insurers. Non-life ILS and ILW provide insurers with a risk transfer tool to offload a share of their risks (e.g. side-cars) or their peak-risks (e.g. cat-bonds) to investors beyond their shareholders; these transactions are particularly beneficial as the depth of financial markets provides a potentially large source of capacity to the industry. Life ILSs also provide a risk management tool for extreme life risks (e.g. mortality risk securitisation) and a source of funding (e.g. embedded value securitisations).

ILS present neither insurers nor the wider financial system with material risk. Despite 600 per cent growth in the market size since 1999, insurers' absolute exposure to ILS has decreased. In 1999 they held 54 per cent of ILS; by 2009 their share had fallen to 8 per cent. If insurers suffered 100 per cent losses on all of their ILS, this would decrease shareholders equity by just 0.09 per cent. Nor do ILS represent a liquidity risk for insurers as proceeds are generally not used to finance assets, but as a collateral for potential losses or securitisations for financing are funded by long-term debt. The basis risk arising from ILS transactions is also minimal for the sponsor insurers, especially since losses due to basis risk will only represent a portion of the overall losses transferred.

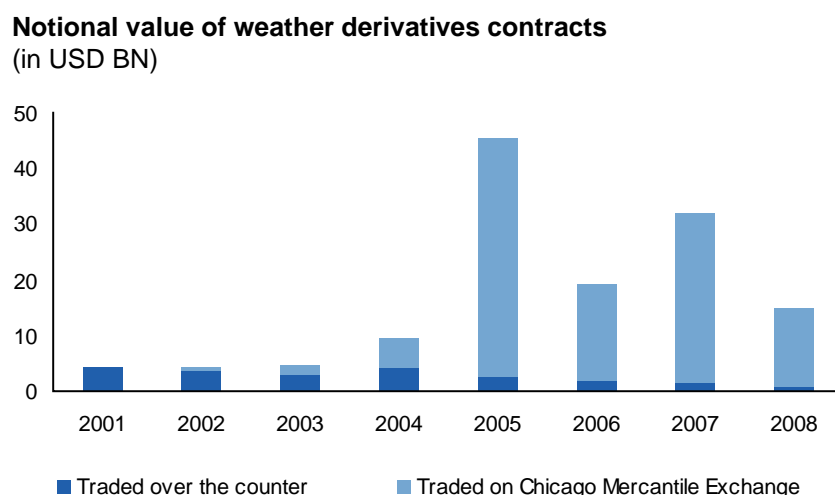
Exhibit 43: ILS market growth and insurers' exposure to ILS



Source: Swiss Re Facts and Figures

Because total losses in the system remain limited to the cost of the insured event, ILS do not amplify the potential losses in the system. Instead, by spreading the cost of losses on insured events, they reduce systemic risk. Insurance derivatives, like insurance linked securities, are not traded in large volumes. The largest outstanding notional value of weather derivatives—the main insurance derivative—was USD 45 billion (in 2005) compared with notional CDS exposures of USD 58 trillion (in 2007).¹⁵ The investor base in these derivatives consists mostly of corporates whose earnings depend on the weather. And most of these derivatives are traded on the Chicago Mercantile Exchange, which frequently involves collateralisation.

Exhibit 44: Evolution of weather derivatives



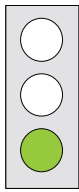


Source: Swiss Re Facts and Figures

Conclusion

The low holdings of ILS by insurers, the generally small outstandings of insurance derivatives and the limitation of losses to the underlying event mean that insurers' activities in the insurance derivatives markets are not systemically relevant.

15. Bank of International Settlements.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Concentration of exposures within an insurer/reinsurers 	 <ul style="list-style-type: none"> Low holdings of ILS by insurers and reinsurers Equivalent to occurrence of a catastrophe 	 <ul style="list-style-type: none"> Through change in mark-to-market or default on bond 	 <p>Not systemically relevant</p>

3.4. Capital, funding and liquidity management activities

The engagement of insurers in liability origination, investment management and risk transfer activities need coordination from a liquidity and capital perspective.

3.4.1. Mis-management of short-term funding raised through commercial paper or securities lending

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Geared investment activity: funding risky asset purchase through short-term debt issuance/ securities lending collateral 	<ul style="list-style-type: none"> Liquidity market dries up Forced sale of investments to meet cash outflow creates downward market dislocation Default on securities lending may create instability in counterparty (often banks) 	<ul style="list-style-type: none"> Forced sale must be to meet a liquidity need: treasury activity must be large in comparison to insurer's cash-flow Collateral must be invested by the lender in risky or potentially illiquid assets

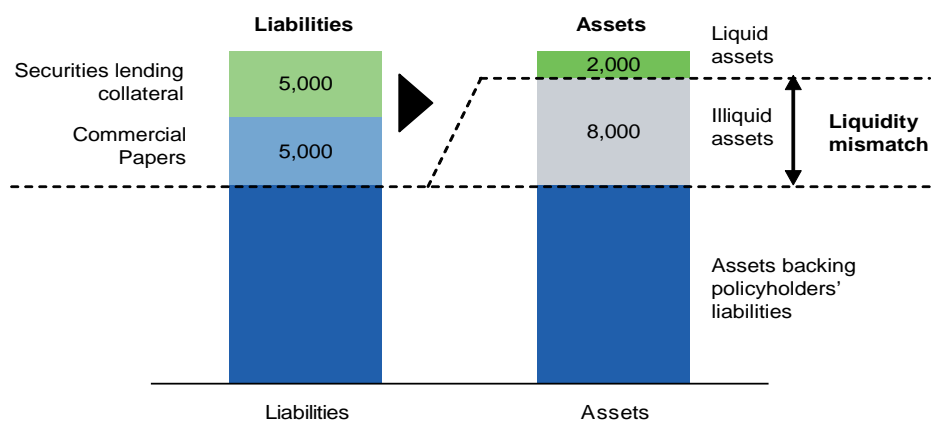
Some insurers utilise their high credit rating and borrowing capacity to raise short-term funding via commercial papers and invest these proceeds in assets offering a higher return, allowing them to earn the spread as a profit.

Insurers also lend securities in their large investment portfolios to short sellers and reinvest the collateral. When the liquidity risk is controlled, the residual risks from this line of business are small, allowing insurers to generate a superior yield for their policy-holders and shareholders.

It is important to note that given an insurer's long-liquidity position, these activities are reasonable and value-adding. Besides, they may not require leverage. If well monitored, they should not be ruled out as they provide liquidity and in the end better return for the companies and their clients. It is only in the case where these activities are conducted on a massive scale, leveraged to a large extent and, at the same time, the collateral is mis-managed that it is possible for the insurer's total liquid financial resources to be insufficient in a liquidity crisis.

These two activities—short-term funding with commercial paper and securities lending—are both reasonable activities that an insurer may carry out to improve the returns they generate for policy-holders and shareholders. If mis-managed, both activities contribute to the same risk: namely, that insurers obtain cash with a very limited maturity, invest the proceeds in assets that are less liquid, and then find this source of funding has dried up. Forced asset sales would then drive down asset values, exacerbating losses. This is illustrated in the exhibit below.

Exhibit 45: Liquidity risk from stock lending and commercial paper funding

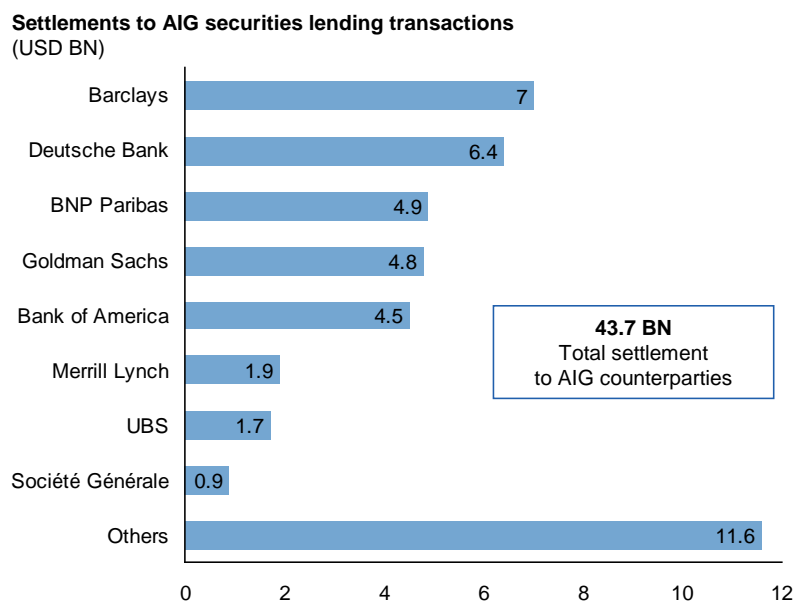


Source: Oliver Wyman analysis

The AIG case shows how liquidity issues arise when the securities lending collateral is invested in illiquid assets. AIG invested more than 60 per cent of the cash collateral it received into MBS. When securities lending transactions were stopped, AIG was unable to liquidate its assets and return (repay) the collateral. If the collateral had been segregated to repay counterparties rather than used to engage in leveraged investing, the liquidity shock encountered by AIG could have been prevented. Alternatively, had AIG retained a sufficient quantity of liquid financial resources elsewhere to cover these positions, the cash drain would have been manageable.

The transmission mechanism for losses through these operations is very swift. Several major banks had sizeable exposures to AIG through securities lending operations, which would have resulted in sizeable losses to these institutions had AIG not been able to honour these transactions, as shown in Exhibit 46 below.

Exhibit 46: Losses averted by bail out of AIG's securities lending operations



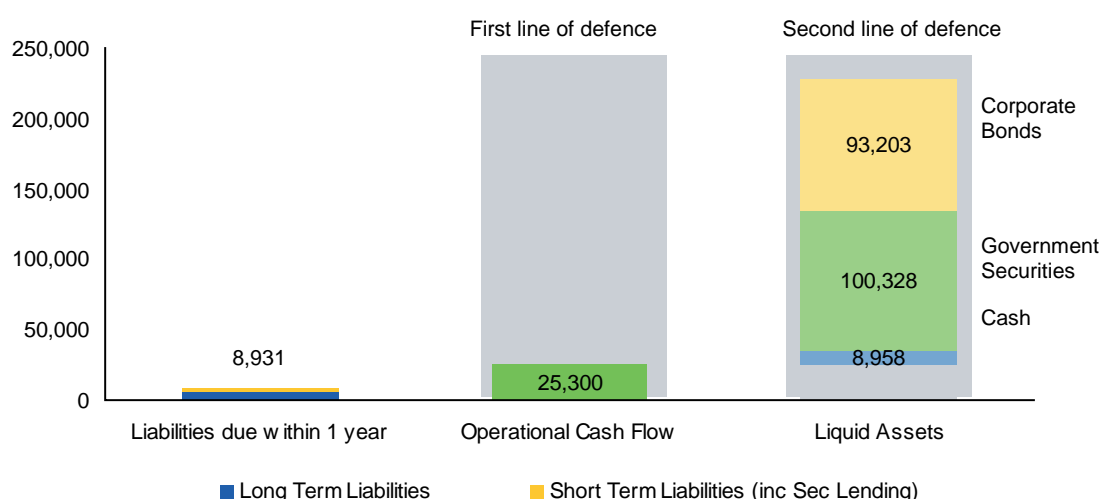
Source: J. David Cummins, NAIC Winter 2009 National Meeting, Perspectives on Systemic Risk, December 3, 2009

The financial crisis was characterised by a shortage of liquidity in banking system. Yet insurers did not suffer systemic liquidity shock. This is, in part, because insurers are prefunded by a steady stream of predictable premium cash-flows and because they practice more careful liquidity management. For example, Allianz holds 39 times their liabilities due within one year

(which includes commercial papers and securities lending collateral) in liquid assets. Unlike the banking system, which relies on short-term funding for day to day operations, insurers are cash-flow positive and have considerable resources with which to meet their liquidity needs.

Exhibit 47: Coverage of short-term liabilities by operational cash-flows and liquid assets

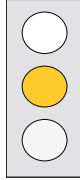
Example: Allianz liabilities and liquid financial resources
2008, €MM



Source: Annual reports, Oliver Wyman analysis

Conclusion

It is difficult to conceive how an insurer could mis-manage their insurance balance sheet to create a liquidity risk of sufficient size to be a material threat to the financial system. Nevertheless, we cannot certainly show that this could never be the case under any circumstances. We therefore conclude that in extreme circumstances short-term funding with commercial paper and securities lending on a massive scale with mis-managed collateral may be systemically relevant, as it would for any other corporate carrying out the same activity. There is nothing specific to the insurance industry here. On the contrary, the strong liquidity of the insurance sector could be beneficial.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Fragile liquidity position due to investment in illiquid assets Covenant based on credit rating downgrade 	<ul style="list-style-type: none"> Volume of CP/ securities lending low compared to available liquid assets However some insurers may have more fragile liquidity positions 	<ul style="list-style-type: none"> In line with term of funding in place. Can be immediate as securities lending transactions can be interrupted at short notice 	 <p>Potentially systemically relevant</p>

3.4.2. Raising debt or equity capital

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Raising debt or equity capital 	<ul style="list-style-type: none"> None unless capital is needed to cover losses from another event 	<ul style="list-style-type: none"> No need to consider this risk activity further (in all events we assume that capital markets are not available to recapitalise the insurer in the short term)

The ability to raise capital is fundamentally an institutional rather than an industry issue. Individual insurers may struggle to raise capital at economic prices, but this could only be an industry issue if the market as a whole indicated that insurance was no longer a viable business model. As discussed previously, the role that insurance plays in society in risk pooling and investment guarantees the permanence of an insurance sector.

Therefore we do not consider this risk activity any further as it is not systemically relevant.

3.5. Credit protection activities

Credit protection activities comprise the following activities:

- credit insurance;
- financial guarantees;
- writing credit default swaps (CDS).

Although credit insurance is a traditional insurance activity (despite its relation to credit risk) in which many insurers are involved, only a few insurers engaged in financial guarantees and CDS writing (which is not subjected to insurance regulation) as these are non-core activities.

Despite being economically equivalent (and as such will be assessed in the same way under Solvency II) in the sense that they all provide cover against credit events, they have importantly different features. For example, whereas credit insurance leads to losses only when the credit event occurs, CDS can lead to cash outflows when the probability of the event increases. For such reasons we discuss each separately below.

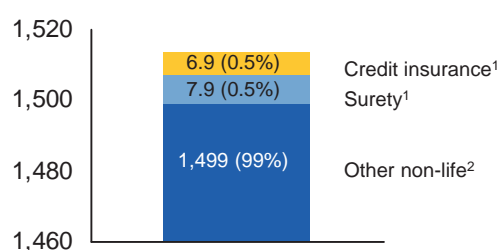
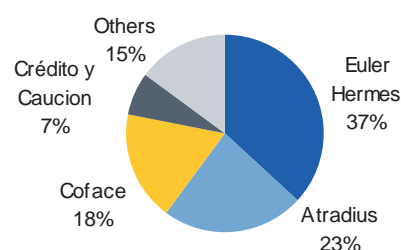
3.5.1. Credit insurance

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Providing credit/trade insurance 	<ul style="list-style-type: none"> Insurer unable to meet loss, causing instability in counterparties 	<ul style="list-style-type: none"> Event must be large in comparison with that insurer's liquid financial resources

Insurers have historically engaged in trade insurance along with the trade finance provided by banks. An insurer's failure to cover insured losses could transmit financial instability into its counterparties.

However, trade and credit insurance fail the tests for systemic relevance of size, (lack of) substitutability and interconnectedness. Credit and surety insurance are relatively small markets, representing less than 1 per cent of global non-life insurance premiums.

Despite their connection to the real economy and international trade via SMEs and exporters, credit insurers are not very connected to the financial system. They provide guarantees to a large number of small participants worldwide with limited financial interaction.

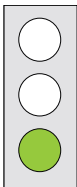
Exhibit 48: Overview of credit insurance market**Worldwide non-life premiums
2006, USD BN****Market shares of
Top 4 credit insurers (2005)¹**

1. Swiss Re Sigma 02/2006: Credit insurance and surety: solidifying commitment

2. Swiss Re Sigma 05/2007: World insurance 2006

Conclusion

The lack of interconnectedness and relatively small scale, mean that credit insurance should not be considered systemically relevant.

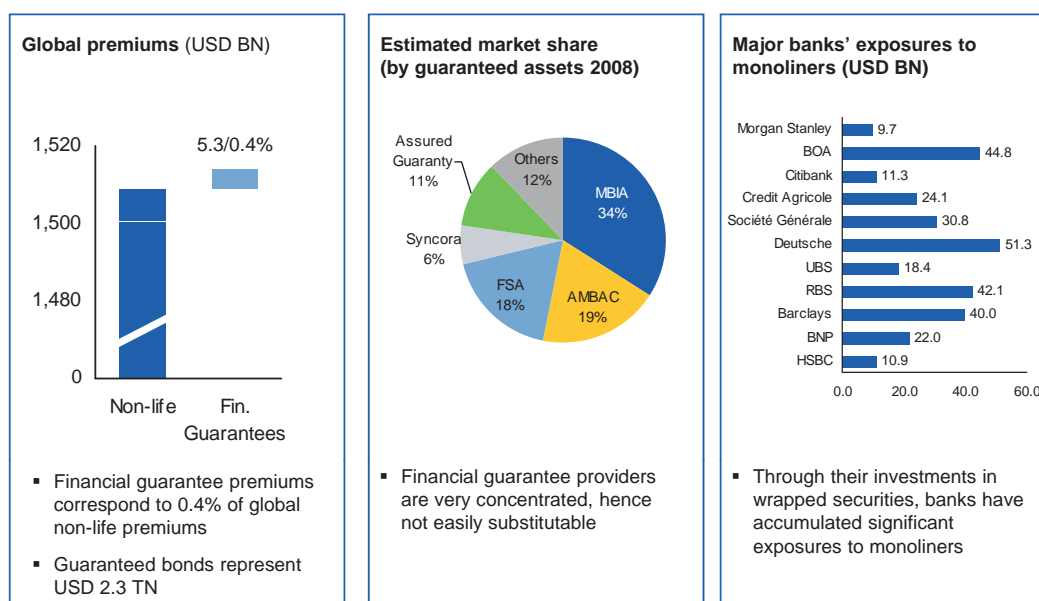
Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Concentration of actors Non-diversification of exposures across industries and geographies 	<ul style="list-style-type: none"> Not connected to financial system 	<ul style="list-style-type: none"> Linked to default of many individual creditors 	 <p>Not systemically relevant</p>

3.5.2. Financial guarantees

Description	Transmission mechanisms/ circumstances	Necessary preconditions
<ul style="list-style-type: none"> Provide credit enhancement to bond issuers 	<ul style="list-style-type: none"> Downgrade of financial guarantee providers leads to downgrade of wrapped securities and drop in market prices Insurer unable to meet loss (in case of default), causing instability in holders of wrapped securities 	<ul style="list-style-type: none"> Event must be large in comparison with that insurer's liquid financial resources Financial guarantee providers must be large and highly leveraged

Although financial guarantees are small in terms of premiums, they cover USD 2.3 trillion of financial assets. They are thereby highly connected to the real economy and to the major banks that have large exposures to the monolinsers.

Exhibit 49: Size, substitutability and interconnectedness of monoliners



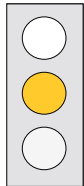
Source: Swiss Re Sigma 02/2006: Credit insurance and surety: solidifying commitment; Swiss Re Sigma 05/2007: World insurance 2006, MBIA and AMBAC annual reports, ECB – Credit Default Swaps and Counterparty Risk, August 2009; Oliver Wyman analysis;

The business models of monoliners are distinguished from other insurers by their highly concentrated (undiversified) portfolios, high leverage ratios and extreme sensitivity to their credit rating (see Exhibit 13: Monoliners' correlation to the housing markets).

These features mean that the downgrade of monoliners could have a systemic impact, forcing investors to reduce their exposures or commit more capital to holding lower-rate assets. The mark-to-market valuation of these securities means that losses would be transmitted very quickly.

Conclusion

In sum, the high degree of inter-connectedness, sensitivity and concentration of the monoliners' business model and speed of loss transmission mean that a monoliner of sufficient size should be considered to be potentially systemically relevant. As we have noted earlier, this is not an issue for the insurance sector as a whole, and we see no reason why a monoliner should not be subject to the same regulation and restrictions (including those under development by the FSB and others) as a bank carrying out a similar activity.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> Dependence on their credit rating Leverage and concentration of monoliners Marking-to-market of securities 	<ul style="list-style-type: none"> Heavily connected to financial system through credit rating of underlying securities 	<ul style="list-style-type: none"> Through mark-to-market and rating of underlying securities 	
Potentially systemically relevant			

3.5.3. CDS writing

Description	Transmission mechanisms/ circumstances	Necessary preconditions
▪ Writing credit default swaps	▪ Insurer unable to meet loss/ margin call, causing instability in counterparty	▪ Margin call or event must be large in comparison with that insurer's liquid financial resources

CDS contracts allow efficient investment in credit because they increase liquidity in credit markets and facilitate efficient investing in credit indices.¹⁶ CDS writing as such does not represent a higher risk than buying a corporate bond, as long as positions are not levered.

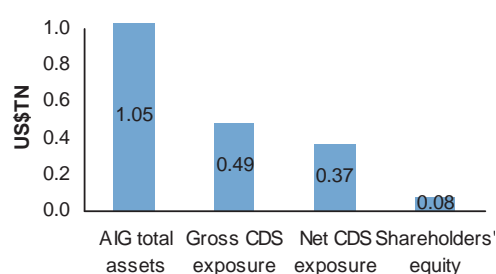
Although CDS are not subject to insurance regulation, insurers appear to be natural sellers of this credit protection, because they tend to have a longer-term investment horizon and are generally less sensitive to the short-term fluctuations arising from CDS mark-to-market valuations. The loss transmission mechanism is simple; if the entity that writes a CDS is unable to cover a loss or meet a margin call, losses will be transmitted to the counterparty.

CDS exposures represented a third of the AIG group's total assets and five times its shareholders' equity. AIG's net CDS exposure amounted to more than double the net notional sold by all DTCC (Depositors and Trust and Clearing Corporation) players although AIG FP was not among the largest players in the CDS market (it ranked only 20th largest by gross exposure).

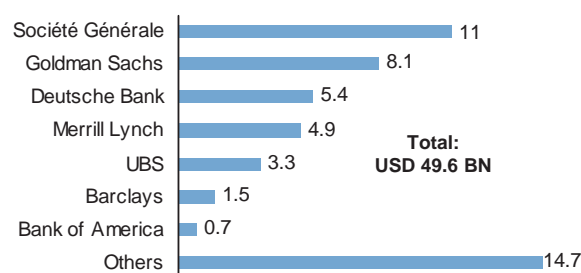
As a result, AIG was heavily interconnected with major financial institutions through its CDS trading. Settlements made to AIG counterparties after its bail-out show how interconnected it was with other major CDS dealers and the potential systemic impact of AIG's failure without the bailout (see Exhibit 50 below).

Exhibit 50: AIG involvement in CDS and its interconnectedness to major banks

Comparison of AIG assets¹, shareholders' equity¹, market value² and CDS exposure³



Settlement during bail-out with AIG counterparties on its CDS deals (USD BN)⁴



1. AIG total assets and shareholders' equity 30.06.2008, AIG 3rd quarter financial supplement 2008

2. Market value 18.12.2006, representing the all-time high, Datastream

3. Exposure through AIG FP only, September 2008, Testimony to the United States Senate by Superintendent Eric Dinallo, March 5, 2009

4. J. David Cummins, NAIC Winter 2009 National Meeting, Perspectives on Systemic Risk, December 3, 2009

As with credit insurance, CDS provide protection against default of underlying credit instruments. However, unlike credit insurance, no insurable interest is required to buy a CDS, the seller does not need to be regulated or to hold reserves. Sellers manage their risk with off-setting positions.

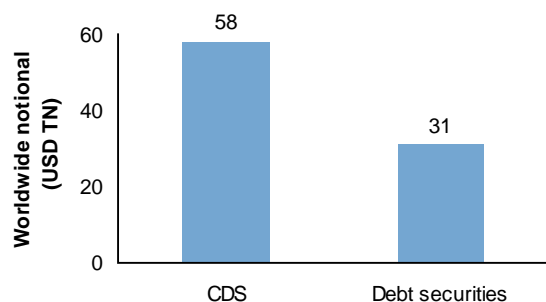
16. Investing in a CDS and holding cash collateral for the same nominal value is equivalent to investing in a corporate bond. CDS writing as such does not represent a higher risk than buying a corporate bond, as long as positions are not leveraged.

The fact that CDS notional exposures are considerably higher than the notional value of the underlying debt suggests that much CDS trading is for taking a credit risk or due to “back-to-back” transactions between main dealers.

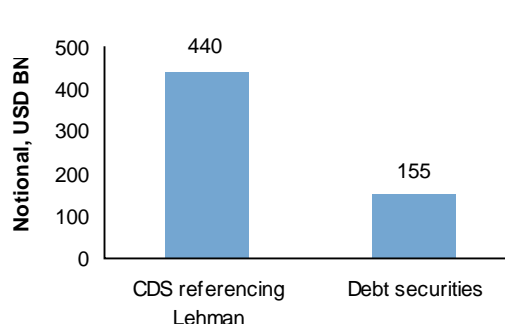
Exhibit 51: Example of disconnection between CDS notionals and underlying debt

Notionals of CDS contracts¹ and debt securities

Worldwide 2007



Lehman Brothers 2007



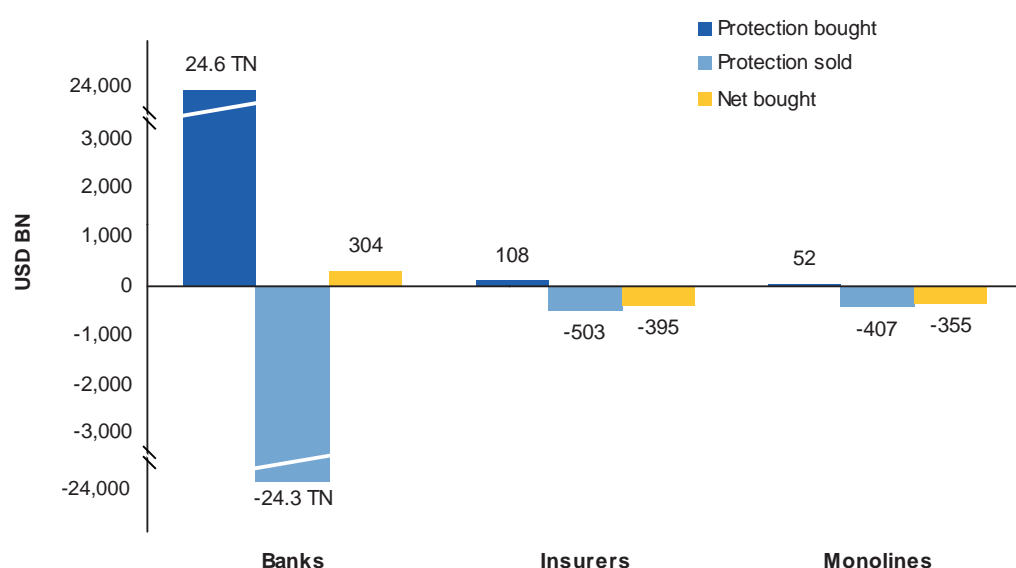
Source: Bank for International Settlements, Quarterly Review Statistical Annex December 2007, Table 19: Amounts Outstanding of Over-the-Counter (OTC) Derivatives; Table 16B: Domestic Debt Securities
1. Both Multi Name and Single Name CDS

Reporting dealers represent the bulk of protection bought and sold, as they mostly trade back-to-back positions. Banks are net buyers of CDS credit protection, offloading some of the credit risk of their corporate books, while insurers are net sellers.

Because many jurisdictions forbid insurers from engaging in speculative derivatives trading within insurance entities, they often conduct CDS trading through unregulated affiliated entities within the group (e.g. AIG FP). Insurers are not forced to disclose volume of these subsidiaries' CDS positions, creating opacity about insurers' exposures to credit risk. However, large insurers usually disclose the gross and net amount of CDS exposure.

Exhibit 52: CDS sellers and buyers by sector (December 2006)



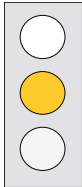
CDSs bought and sold per sector (Dec. 2006)



Source: Credit Default Swaps and Counterparty Risk (ECB), August 2009

Conclusion

The size of CDS exposures, the speed with which they can devalue and the profound interconnectedness they create within the financial sector mean that insurers' (and any financial institution's) activities in this area are potentially systemically relevant.

Aggravating factors	Size/impact	Speed	Systemic relevance
<ul style="list-style-type: none"> ▪ Covenants based on credit ratings for collateralisation ▪ In non-insurance regulated entities ▪ Leverage of positions ▪ No holding of capital against risk of CDS 	 <ul style="list-style-type: none"> ▪ Heavily connected to banks ▪ Not a remote risk as seen during current crisis ▪ Jump to default behaviour of CDS (tail risk) 	 <ul style="list-style-type: none"> ▪ Due to mark-to-market of trades and collateral calls 	 <p>Potentially systemically relevant</p>

3.6. Conclusion

In this chapter we have sought to consider each of the main activities of insurers, applying the FSB's criteria to determine whether or not they are systemically relevant. We have concluded that typical insurance activities do not pose any systemic risk and that only two non-core activities have the potential to be systemically relevant:

- derivatives trading on non-insurance balance sheets, including CDS trading;
- the mis-management of short-term funding raised using commercial paper or securities lending (leading to liquidity risk).

Other activities may, of course, emerge in the insurance industry that create significant risks. That cannot be ruled out, and we propose in Chapter 5 a way to monitor this possibility, however remote. In the meantime, however, we must ask whether the regulations in major financial services jurisdictions are well designed to mitigate the potential systemic risk of the systemically relevant activities so far identified, or whether they must be supplemented with new measures. This is the subject of the next chapter.

4. The impact of regulatory regimes on identified systemic risk issues

4.1. Introduction

In Chapter 3 we assessed the systemic relevance of various risk activities in which insurers may engage. Many of these are frequently mentioned in the debate on systemic risk, e.g. natural and pandemic catastrophes, life lapse, longevity risk and broader market risk arising from forced asset sales. Based on our analysis, we have identified two risk activities with potential of systemic relevance, assuming that they are conducted on a huge scale and using poor risk control frameworks: derivatives activity on non-insurance balance sheets and the mis-management of short-term funding raised through commercial papers or securities lending (leading to a liquidity risk). We have also noted the systemic risk posed by a sufficiently large monoliner and explained that this is more of a banking than insurance activity.

In this chapter we explore how these activities are dealt with under existing and pending insurance regulation in the European Union (EU; including Solvency II regime, adopted 2009 and effective 2012), the United States (U.S.; including NAIC RBC¹⁷ and other model laws) and Switzerland (including the Swiss Solvency Test; SST).

EU and Swiss insurance regulation share a similar foundation. They are largely principle-based frameworks. Both employ economic risk-based capital requirements based on a market-consistent valuation of balance sheets. Both enforce a stronger internal risk culture and enable regulators to respond in a flexible manner to changing circumstances. Finally, both include a concept of group supervision with a dedicated group supervisor. The EU Solvency II regime will explicitly spell out the cooperation of the group supervisor with supervisory colleges.

The numbering used for Basel II and Solvency II is misleading as it implies similar evolutionary States. Solvency II is a comprehensive framework with an economic view that already addresses certain critical aspects that have become evident during the current crisis and that still need to be addressed within Basel II.

The Swiss Solvency Test is the first operating regulatory regime that has established an economic risk-based capital regime and is a precursor to Solvency II in this respect. The Swiss insurance supervision represents the new generation of principle-based regulatory regimes with a strong group perspective on solvency and other more qualitative matters.

U.S. insurance regulation uses a combination of rule-based and principle-based approaches. The valuation of assets and liabilities is based on various principles and rules. The NAIC has proposed various initiatives to modernise solvency regulation, including group solvency assessment and group supervision. The U.S. Administration, at the federal level, is working to introduce a Federal Office of Insurance in order to, among other things, improve international coordination.

17. Risk Based Capital (RBC) according to the National Association of Insurance Commissioners (NAIC).

Further details on the various regulatory frameworks and a comparison of critical aspects between Solvency II and Basel II can be found in the appendix.

In this chapter, after having covered the specific assessment of how systemically relevant risks are covered in the existing insurance regulation, we comment briefly on international regulatory initiatives and the importance of ensuring the consistency of new regulation and accounting standards.

4.2. Assessment of systemically relevant risk activities under the European and U.S. regulatory regimes

This chapter does not aim to provide a comprehensive legal analysis of the European and U.S. regulatory regimes, but gives a general assessment on how these regimes address the systemically relevant risk activities identified in the previous chapter. The exact regulatory obligations of a specific company will have to be assessed on a case by case basis.

4.2.1. Derivatives activity on non-insurance balance sheets

Major jurisdictions prohibit regulated insurance entities to engage in speculative derivatives activity. As a rule, within an insurance group, only non-insurance entities, such as banks, securities brokers or other possibly unregulated entities (depending on local law) can engage in speculative derivatives activity.

Such activity has been identified as potentially systemically relevant in Chapter 3 and its treatment under the existing insurance regulation is summarised below.

4.2.1.1. Assessment of European insurance regulation

Under Solvency II, related credit institutions, investment firms and financial institutions are included in the group solvency of an insurance or reinsurance undertaking.¹⁸ Speculative derivatives activities by a subsidiary of the group, whether regulated or unregulated, therefore translate into a capital requirement at the group level. The riskier the activities, the higher the capital charge.

In addition, regulatory intervention through discretionary capital requirements is possible if a specific risk is not sufficiently covered by the solvency capital requirements. This possibility is open to the group supervisor¹⁹ and to a certain extent also at the local level.

Furthermore, it can be expected that the comprehensive disclosure requirements under Solvency II and the Own Risk and Solvency Assessment (ORSA) will also cover the relevant information. Details of the respective implementing measures are currently under discussion.

The above outlined aspects would thus assure coverage of derivatives activity on non-insurance balance sheets for a group that is subject to Solvency II.

The SST has been introduced in 2006. Swiss insurers and insurance groups have time until end of 2010 to build up the required capital. The calculation of the group SST covers both insurance and non-insurance balance sheets in insurance groups. The SST calculation at group level would address derivatives activity on non-insurance balance sheets either within the consolidated group level calculation that companies can submit or at the level of the relevant legal entity/cluster within the group. It is further likely that such activity would show up in the supervisory reporting.

18. Article 228 of the Solvency II Directive EEA 2009/138/EC.

19. Article 232 of the Solvency II Directive EEA 2009/138/EC.

4.2.1.2. Assessment of U.S. insurance regulation

Derivatives activity conducted by a non-insurance subsidiary of a parent holding company is generally outside the direct supervision of U.S. insurance regulators. The primary responsibility of U.S. insurance regulators is the supervision of insurance subsidiaries of that parent holding company.

Thrift or bank holding companies, with or without insurance subsidiaries, are subject to supervision at the holding company level. The regulator of the holding company will not be a State insurance regulator but a federal institution such as the Federal Reserve (Fed) or the federal Office of Thrift Supervision (OTS). In the case of AIG, however, OTS turned out to be insufficiently resourced to supervise the complex business of AIG's Financial Products division.

4.2.2. Mis-management of short-term funding raised through commercial papers or securities lending

Mis-management of short-term funding raised through commercial papers or securities lending can expose insurance companies to liquidity risk (see Chapter 3). This section provides a brief analysis whether such liquidity risk is picked-up by the existing insurance regulatory framework. As described in Chapter 3, liquidity risk has a lower significance for insurers compared to banks.

4.2.2.1. Assessment of European insurance regulation

Solvency II is conceptually a capital framework. It does not include specific quantitative requirements for liquidity risk, irrespective of which activity it arises from. In order to address liquidity risk, the amount of available capital is less relevant than the liquidity of the available capital. Consequently, EU regulation focuses on the governance process and supervisory reporting to cover liquidity risk.

- Insurance companies and insurance groups are specifically required to have liquidity risk management in place.²⁰
- The Supervisory Review Process (SRP) explicitly requires the supervisors to review and evaluate the compliance of insurance entities and insurance groups with this requirement. In case of non-compliance, the supervisors have a variety of options to react, including imposing capital add-ons.
- Public and supervisory disclosures are required to contain information on the risk exposure, concentration, mitigation and sensitivity. If liquidity risk is material to the undertaking, it has to be disclosed and reported.

The above outlined aspects of Solvency II implicitly address the liquidity risk stemming from a mis-management of short-term funding raised through commercial papers or securities lending.

However, we believe that there is room for further enhancement of the regulatory requirements regarding liquidity risk. In the EU, liquidity contingency plans are being discussed that would have to be reported within a company/group to the board of directors at regular intervals.²¹

The situation in Switzerland is similar to that of the EU. There are no formal requirements regarding the measurement or reporting of liquidity risk. Similar to Solvency II, the SST is a capital regime and does not address liquidity risk under the quantitative requirements. However, the Swiss supervisory framework has proven flexible enough to allow the Swiss insurance supervisor to develop qualitative measures in this area. The basis is the principle whereby all insurance companies and insurance groups need to establish adequate risk management and internal control

20. Article 44 of the Solvency II Directive EEA 2009/138/EC.

21. Lessons learned from the crisis (Solvency II and beyond); CEIOPS; CEIOPS-SEC-107/08; 19 March 2009.

systems and report regularly to the regulator on their risk exposures.²² Based on this, detailed information on liquidity risk management and liquidity risk reporting is required from the large Swiss insurance groups.

4.2.2.2. Assessment of U.S. insurance regulation

State regulators focus on asset adequacy analysis, with a review of liquidity risk management practices through regulatory examinations, surveys, and analyses of individual situations and liquidity stress models. Securities lending activities of the insurance entities are explicitly required to be addressed in the asset adequacy analysis, which reflects the inherent ALM risk.

Liquidity stress tests apply at solo entity level and generally not at the group level. However, if the parent of an insurance group is regulated by the Fed, as result of holding a U.S. bank, the Fed annually reviews the consolidated group liquidity risk exposure and the management's liquidity risk management practices. For insurance regulatory purposes liquidity stress tests apply at the level of the ultimate regulated insurance company and not at the level of the ultimate parent holding company.

Conclusion

The existing regulatory regimes in major jurisdictions address the areas we have identified as potentially systemically relevant to a certain extent.

Supervisory regimes that include a holistic risk-based capital approach at the group level, capture the first activity (speculative use of derivatives on non-insurance balance sheets within the group) without further difficulties. Gaps in the regulatory framework arise where there is no concept of group supervision or where no overall group capital requirement exists.

The answers are less clear with respect to the second activity (the mis-management of short-term funding raised through commercial papers or securities lending) that gives rise to liquidity risk. Regulatory action has been taken with respect to regulatory reporting and company planning. However in this area there is more that could be done, such as liquidity stress testing.

In Chapter 5 we suggest some measures to tighten the supervisory regime around these activities with a view to achieve greater global consistency.

4.3 International regulatory initiatives

Regulation sets the framework for insurers in operating their businesses and the current crisis stressed the importance of international regulatory cooperation to develop consistent regulation particularly for groups. Currently, there are numerous initiatives that act as the stimulus for regulatory and prudential reforms.

The International Monetary Fund (IMF) and the World Bank acknowledge the importance of resilient and well-regulated financial systems across all geographies. In order to identify the strengths and vulnerabilities of a country's financial system and to determine how key sources of risk are being managed, the IMF and World Bank have been conducting their Financial Sector Assessment Programme for more than ten years.²³

We support the commitments taken to implement these programmes throughout the full membership and are ready to discuss further the findings of that report with these institutions to contribute to this their exercise.

22. Articles 96 and 197 of the *Ausführungsverordnung zum Versicherungsaufsichtsgesetz* (Implementing Measure for the Law of Insurance Regulation).

23. <http://www.imf.org/external/NP/fsap/fsap.asp>

In order to increase the strengths of countries' financial systems and reduce the vulnerabilities internationally, the International Association of Insurance Supervisors (IAIS) recently approved the development of a common framework for the supervision of internationally active insurance groups.²⁴ Another important IAIS initiative regards the functioning of international supervisory colleges. The IAIS has been receiving industry support in its efforts since the beginning of these initiatives.²⁵

Furthermore, there is an ongoing debate around consistent international accounting standards. This is an important debate, and one which should reflect the specifics of the insurance industry. In particular, insurers are long-term investors, and focus on managing the relationship between assets and liabilities, rather than managing assets independently of liabilities.

These and other discussions, led by, among others, the Joint Forum and the Financial Stability Board, will definitely make a positive contribution to the stability of the wider financial system, when implemented.

However, regulatory reforms can potentially counteract their own objective. Examples are the unintended consequences resulting from changing asbestosis requirements, leading to retrospective under-reserving in prior years. Similarly, the Financial Services Authority stress tests in 2001 to 2002 led to significant forced sales of equities into falling markets.

Consequently, regulatory and prudential reforms need to take into account the specific nature of the insurance business model, must be well-considered and implemented carefully in tight cooperation with the insurance industry.

In the light of the ongoing international debate on regulation, the outcome of which remains very much uncertain, we have summarised appropriate mitigating measures in Chapter 5. These measures are put forward with the aim to support and strengthen the stability of the insurance sector, and to mitigate pro-actively any systemic risk potentially arising from insurance activities.

24. www.iaisweb.org, IAIS press release.

25. *Insurance Risk Management Response to the Financial Crisis*, CRO Forum, April 2009.

5. Mitigating measures

This report has comprehensively reviewed the activities of insurers and reinsurers for their relevance in systemic risk. We have found that the insurance sector is in a very strong position. While insurers are not immune to the effects of financial instability, insurers and reinsurers do not trigger systemic risk.

However, for insurers and reinsurers, we have shown that two non-core activities have the potential to be potentially systemically relevant, if conducted on a massive scale and without appropriate risk management.

In this chapter we present some suggestions as to mitigating measures which should be in place to deal with these activities. These proposals should serve as basis for further work and discussion. They also reflect the ongoing discussion at the IAIS and Joint Forum. However, once they have been developed into proposals and then implemented in a cost-effective manner, we are confident that their combined effect will eliminate any remaining areas that could potentially add to systemic risk in the activities of insurers and reinsurers.

Before moving on to the proposed measures themselves, we first consider the principles we have used to develop them. We then present two sets of measures: in Chapter 5.2 those that specifically close identified gaps as described above; then, in Chapter 5.3, broader measures which will ensure that any future risk that emerges is captured and handled quickly. With these in place, all insurers and reinsurers will continue to be sources of stability in the financial system, as indeed was the case with almost all insurers and reinsurers during the recent financial crisis.

5.1. Principles of selecting a mitigating measure

Policy-makers and supervisors could take a broad range of potential actions ranging from the specific and narrow, to the broad and general. There are four principles which should be taken into account when selecting the appropriate measure

- The measure should target the issue as effectively as possible, of course minimising the risk of the issue not being resolved, but also minimising the disruption to other activities, or to market participants who, because of their regulatory jurisdiction or business activities, are not themselves exposed to the issue in question.
- The measure should not be defeated by innovation. Activities and instruments are constantly evolving; mitigating measures must be able to keep pace with this evolution. This possibility might, for example, lead us to principle-based rather than rules-based measures.
- The measure should not constrain innovation that would ultimately respond to market needs.
- The measure should be cost-effective relative to the issue it resolves. Whilst a widespread and deeply significant issue may warrant an expensive solution, a more limited issue

should ideally be mitigated through a measure which does not involve a long-term drain on resources.

The consequences of a poorly-chosen mitigating measure are significant on both sides. An ineffective measure may give false comfort, and thus expose the system to risk. Applying inappropriate rules only to a few institutions will likely distort the entire market and its dynamics and create market unfairness. Distortions of competition would appear because increased capital requirements for institutions perceived as systemically relevant would have to be passed on through pricing while players perceived as not systemically relevant would be in better position to face aggressive price competition. Furthermore, the process of identifying the few institutions those rules would apply to would have to be re-run every year creating continuing issues.

A decrease in risk-bearing capacity in markets is likely to increase overall pricing, unless additional capital is raised. This would have broad economic consequences given insurers' macro-economic role in providing savings products and risk transfer solutions.

Furthermore, focusing on a few supposedly systemically relevant institutions might distract regulators attention from those institutions that engage in risk activities or products which could trigger systemic risk. Designating perceived systemically relevant insurers and imposing on them an additional capital charge would create strong moral hazard. The perception of “too big to fail” across competitors, investors and clients would be that they have a de facto State guarantee. Similarly, applying new rules to the entire sector or to all risk activities will likely exert negative effects on the policy-holder.

In contrast, properly tackling the source of the issue and hence identifying systemically relevant activities is a fair, transparent and focused approach that should be implemented via a responsive regulatory framework.

Besides policy-makers reacting with mitigating measures the industry itself has a role to play as well.

5.2. Mitigating measures targeted to specific identified issues

In this section we put forward for further work two mitigating measures specifically targeted at the issues identified.

5.2.1. Measure 1: **Implement comprehensive, integrated and principle-based supervision of insurance groups**

Both in normal and stressed market conditions, supervision of cross-border entities should be made at a consolidated level. This allows the assessment of the consolidated risk exposure and the capital position of the group in line with its economic reality, rather than with its legal structure. Group-level supervision would cover both insurance and non-insurance balance sheets in the group, thus tackling the issue of derivative trading on non-insurance balance sheets that we identified as a potential source of systemic risk.

At a global level, group supervision should be achieved through multinational cooperation or recognition of foreign supervisory activities; it should capture all regulated and non-regulated entities of groups.

In order to avoid duplication or regulatory overlap supervisors should cooperate in order to establish one single group supervision (no sub-group supervision). Furthermore, where required, the group supervisor should coordinate and cooperate with regulators in other industries, such as banking; it should capture all relevant cross-border transactions from a group perspective—many

regulators to date have not followed the globalisation of insurance groups and have continued supervising global groups at a national level; finally, it should capture all risks on an aggregated basis and assess the risk exposure and capital position of the group at consolidated level in line with its economic reality.

The responsibility and power of supervisors should be clarified and a group supervisor established; it should be ensured that any group supervisor has adequate resources to carry out the required tasks to perform its role effectively. Supervisory colleges are essential platforms to supervise global groups, based on a clear allocation of responsibilities among the group supervisor and supervisors of subsidiaries or main branches in other countries. Thus, international collaboration, coordination and cooperation across supervisors and sectors should be strengthened. In this regard, the industry fully supports the work of the IAIS.

Principle-based supervision will reduce incentives for regulatory arbitrage. It will make regulation simpler, although subject to more flexibility and interpretation, potentially leading to a need for increased regulatory dialogue.

Regulation should allow for financial innovation, as such products enable insurers to manage their balance sheet and play a role that benefits the financial system (as net sellers of credit protection and lending securities to other market participants).

This proposed measure is fully consistent with the direction of the EU and Swiss regulatory framework. The EU is still at the stage of detailing the implementing measures for Solvency II, but we see no reason why this measure could not be covered adequately under EU regulation from 2012.

The measure is consistent with Recommendations 4,²⁶ 5²⁷ and 6²⁸ of the Joint Forum. As market participants, we support recommendation 16 of the joint forum, according to which supervisors promote current international and domestic efforts to strengthen the market infrastructure (such as supervised or regulated CCPs and/or exchanges)²⁹.

5.2.2. Measure 2: Strengthen liquidity risk management

As mentioned above, mis-management of short-term funding raised through securities lending and commercial paper could—under extreme circumstances, and if carried out on a massive scale—bring about potential systemic risk.

The current regulatory regimes focus on solvency and capital requirements. Thus, we suggest

26. "Review of the Differentiated Nature and Scope of Financial Regulation", *Key Issues and Recommendations*, Joint Forum, January 2010.
27. Recommendation 5 includes: The 1999 Joint Forum principles on the Supervision of Financial Conglomerates should be reviewed and updated
 - Ensure that the principles properly address developments in sector frameworks (e.g. Basel II) and in the markets since 1999
 - Facilitate more effective monitoring of activities and risks within a financial group (cross border and across regulated and unregulated areas)
 - Provide basis for intensified supervision and regulation of financial and particularly systemically important groups
 - Improve international cross-supervisor/-sector collaboration, coordination, & cooperation
 - Clarify responsibility and power of supervisors with respect to the risks in their jurisdictions stemming from an entity being part of a financial group
 - Ensure that financial groups' structures are transparent, consistent with their business plans, and do not hinder sound risk management
 - Provide credible and effective options for action during a crisis or to avoid a crisis.
28. BCBS, IOSCO, and IAIS to collaborate to enhance consistency of supervisory colleges across sectors and ensure that cross-sector issues are effectively reviewed within supervisory colleges.
29. This includes: greater standardisation of CDS contracts for more organised trading and CCP clearing, more clearing through central counterparties for clearing eligible contracts, evolution to more exchange trading, enhanced dialogue among supervisors of CCPs regarding applicable standards and oversight mechanisms for CCPs "Review of the Differentiated Nature and Scope of Financial Regulation", *Key Issues and Recommendations*, Joint Forum, January 2010.

strengthening liquidity risk management. Requiring capital to provide for liquidity risk would be ineffective. No amount of potentially illiquid capital can replace comprehensive liquidity risk management. Instead, liquidity risk management should focus on strong liquidity governance. Such governance should include a written liquidity risk policy and stress management plan that is approved by senior management in order to grow liquidity risk awareness and a corresponding culture.

Liquidity stress tests should be a standard part of best practice liquidity risk management. Global coordination would be warranted an consistent implementation by all regulators in their own framework.

These liquidity monitoring requirements should form part of the existing insurance-specific regulation, rather than represent a separate regulatory layer.

5.3. Additional measures promoting financial stability

We have also considered a set of measures aimed at helping policy-makers, regulators, and the industry identify any issues as they emerge. Although our analysis of the set of possible activities is scenario-based and comprehensive, we believe it is prudent to put in place measures which can act as an early-warning system and contribute to financial stability.

We propose three such measures for further work and deliberation:

5.3.1. Measure 3: Enhance regulation of financial guarantee insurance

Monoliners have a very different business model to traditional diversified insurers. Policy-makers should therefore ensure the appropriateness of regulation for monoliners by taking their specific business model into account.

This measure is consistent with Recommendation 15³⁰ and Recommendation 17³¹ of the Joint Forum.

5.3.2. Measure 4: Establish macro-prudential monitoring with adequate insurance representation

The crisis has shown the need for macro-prudential monitoring. Thus, the industry supports the establishment of macro-prudential monitoring bodies whose mission should be to monitor the overall macro-economic risks that could threaten the stability of the financial services sector.

The insurance sector should be appropriately represented in such bodies as the sector is potentially affected by activities carried out by multiple other financial institutions and by the potential decisions that might be taken by macro-prudential monitoring bodies. Furthermore, the insurance sector representatives can contribute their expertise on insurance issues. Therefore, the composition and the functioning of macro-prudential monitoring bodies should ensure a balanced representation of the various financial services sectors.

30. This includes:

- Setting appropriate regulatory capital requirements for CDS transactions;
- Establishing minimum capital, solvency, reserving, and liquidity requirements for FG insurers (including requirements for the use and actuarial approval of internal models) with appropriate levels of surplus to policyholders factored into these requirements;
- Monitoring the exposure and concentration of risk by financial guarantee insurers with reinsurers;
- Requiring firms to undertake aggregated risk analysis and risk management, including counterparty risk arising from exposures via CDS or FG insurance, as well as the potential effect of special-purpose entities and other external vehicles that could affect a FG insurer, so the insurer is not compromised by the failure of such vehicles;
- Applying robust counterparty risk management arrangements, including requirements for all important counterparties to post collateral to secure their obligations;
- Ensuring corporate governance process of an FG insurer is commensurate with its risks.

31. Policy-makers should clarify the position of FG insurance in insurance regulation, if this is not already the case, so it is clear that the provision of FG insurance is captured by regulation and is subject to supervision.

In order to ensure the proper contribution of the insurance industry to a broader discussion on regulation and financial stability, the industry should establish a forum of senior industry representatives and potentially independent experts, who would maintain dialogue with the regulators and in particular with the IAIS Financial Stability Committee. This forum would establish an open and pre-emptive dialogue on business practices, and work with the IAIS on the relevant areas of potential systemic concern. The insights could be fed into the discussions with macro-prudential monitoring bodies.

Direct interaction with insurance groups would be left to the group supervisor and to supervisory colleges and aggregate data would be passed on to this macro-prudential supervisor from national supervisors and colleges of supervisors.

The Basel Committee on Banking Supervision, International Organisation of Securities Commissions, and IAIS should work together to develop common cross-sector standards, where appropriate, and contribute to the discussion on systemic issues on a global level. These would cut across the various financial services industries, as well as across geographies. Recognition between macro-monitoring bodies is essential to avoid duplication and ensure consistency and efficiency.

Macro-prudential monitoring will help to reduce the possibility of financial institutions abusing regulatory arbitrage by opting for more advantageous regulations in certain geographies or in certain alternative forms.

This measure is consistent with Recommendation 3³² of the Joint Forum.

5.3.3. Measure 5: Strengthen risk management practices

The insurance industry has made significant progress on Enterprise Risk Management over recent years, as the performance of the sector through the crisis testifies. However, it is important that the industry continues to demonstrate its commitment to the highest standards of risk management practices across all risk types and activities.

The industry is already constantly reviewing its risk management processes and is currently extensively looking into the implications of the current crisis. The industry will incorporate the lessons learned from past crises, notably on stress testing on liquidity risk.

The industry is fully committed to further strengthen risk management in insurance companies.

Conclusion

This crisis was a crisis of the banking system, not of the insurance system, and this fact needs to be borne in mind by those developing the new regulatory architecture. Nevertheless, the insurance industry continues to carefully examine its activities and their impact on the system, and stands ready to take any action necessary to maintain stability within the insurance system itself, contribute to stability in the financial system and perform its enabling role in the real economy.

In this report we have developed two measures that address the activities we have identified and three measures that promote financial stability. These are all at an early stage of development, but we contribute them to the debate in the belief that, together, they not only resolve the potential systemic risk issues that this paper has identified, but also give policy-makers additional confidence that the insurance industry is committed to continue in its role as a financial system stabiliser.

32. Recommendation 3 suggests making core principles more consistent across sectors; it encourages the BCBS, IOSCO, and IAIS should work together to develop common cross sector standards where appropriate. If similar rules and standards applied to similar activities, this would reduce opportunities for regulatory differences.

Appendix A.

Timeline of the crisis

The following exhaustive credit crisis timeline was published in The Geneva Association Report No. 3, *Anatomy of the credit crisis*, in January 2010. The timeline has been kindly provided by Mark Cliffe, Chief Economist at ING Group and his team. Mark Cliffe was part of The Geneva Association's initial Working Group on the credit crisis.

Note: The central banks actions are indicated in italics.

Date	Events
2007	
<i>Up to Mid-August</i>	Phase 1 Onset of the crisis: U.S. sub-prime problems spill over
Feb.-March	Sub-prime industry collapse; more than 25 sub-prime lenders declare bankruptcy, announce significant losses or put themselves up for sale.
2 April	New Century Financial, the largest U.S. sub-prime lender, files for Chapter 11 bankruptcy.
26 April	Countrywide Financial, the largest U.S. mortgage lender, said its earnings in its first quarter tumbled.
3 May	UBS announces the closure of its internal Dillon Read hedge fund following some USD 125m in sub-prime-related losses.
15 June	Moody's downgrades the ratings of 131 asset-backed securities backed by sub-prime home loans and places about 250 bonds on review for downgrade.
22 June	Bear Stearns, one of the biggest banks in the mortgage securitisation, is forced to inject USD 3.2bn into one of two troubled hedge funds it manages after severe losses from a write-down in the value of mortgage debt obligations.
19 July	Dow Jones closes above 14,000 for the first time in its history.
30 July	The sub-prime mortgage crisis claims lender IKB as a first victim in Germany, triggering sharp falls in other German bank shares on fears that they too could face sudden problems.
August	Worldwide "credit crunch" as sub-prime MBS are discovered in portfolios of banks and hedge funds around the world. Many lenders stop offering home equity loans and "stated income" loans.
6 August	American Home Mortgage files for Chapter 11 bankruptcy.
9 August	BNP Paribas freezes redemptions for three investment funds, citing an inability to appropriately value them in the current market environment; <i>the ECB injects €95bn of liquidity of overnight funds into the interbank market, signalling the beginning of a set of extraordinary moves. Either on 9 August or soon afterwards, other central banks begin to take similar steps.¹</i>
10 August	<i>The Federal Reserve conducts three extraordinary auctions of overnight funds injecting a total of USD 38bn.</i>
16 August	Countrywide Financial Corporation, the biggest U.S. mortgage lender, narrowly avoids a bankruptcy by taking out an emergency loan of USD 11bn from a group of banks.
17 August	U.S. Federal Reserve lowers the discount rate by 50 basis points to 5.75 per cent from 6.25 per cent.

Mid August to Phase 2

End October Temporary relief: policy-easing triggers rallies in stocks

- 31 August President Bush announces a limited bailout of U.S. homeowners unable to pay the rising costs of their debts. Ameriquest, once the largest sub-prime lender in the U.S., goes out of business.
- 1-3 September Fed Economic Symposium in Jackson Hole, WY, addresses the housing recession that jeopardizes U.S. growth. Several critics argue that the Fed should use regulation and interest rates to prevent asset-price bubbles, blame former Fed Chairman Alan Greenspan's low interest rate policies for stoking the U.S. housing boom and subsequent bust; Yale University economist Robert Shiller warns of possible home price declines of 50 per cent.
- 10 September. Washington Mutual, the largest U.S. savings and loan company, says it was increasing its reserves for loan losses to as much as USD 2.2 bn because of a "near-perfect storm" in the mortgage markets.
- 13 September *Northern Rock, the U.K.'s fifth largest mortgage lender, confirms that it had requested and received emergency funding from the Bank of England.*
- 17 September Former Fed Chairman Alan Greenspan says "we had a bubble in housing" and warns of "large double digit declines" in home values, "larger than most people expect".
- 18 September U.S. Federal Reserve lowers interest rates by 50bp to 4.75 per cent from 5.25 per cent.
- 19 September Morgan Stanley says profits dropped 17 per cent from last year's third quarter as the bank took USD 940m write-down in the value of fixed income holding.
- 20 September Bear Stearns profits plunge 61.1 per cent to USD 166.1m or USD 1.16 per share, compared with USD 432.2m or USD 3.02 per share a year ago.
- 28 September NetBank, an internet-based bank, is shut down by U.S. regulators. It is the largest U.S. bank to collapse since the crisis in the early 1990s.
- 2 October *The Bank of England extends greater flexibility it first offered to commercial banks a month ago.*
- 10 October Hope Now Alliance, a cooperative effort between the U.S. government, counsellors, investors and lenders to help homeowners who may not be able to pay their mortgages, is established.
- 15-17 Oct. Citigroup, Bank of America and JP Morgan announce plans for a super-fund of USD 80bn to buy mortgage-linked securities in an attempt to allay fears of a downwards price-spiral that would hit the balance sheets of big banks.
- 15 October Citigroup reports net income for 3Q2007 of USD 2.21bn, a 60 per cent decline from 3Q2006.
- 17 October S&P lowers ratings on USD 23.4bn of sub-prime and Alt-A mortgage securities that were created as recently as June;
- MGIC Investment Corp., the largest U.S. mortgage insurer posts its first quarterly loss in 16 years and says it will not be profitable in 2008 as foreclosures increase from record levels;
- Washington Mutual reports a 72 per cent drop in its quarterly profits caused by bad loans.
- 24 October Bank of America says it is cutting 3,000 jobs mainly from its investment bank. BoA's layoffs are so far the deepest on Wall Street raising fears there are more to come;
- Merrill Lynch reveals a "staggering" USD 7.9bn of write-downs on mortgage-backed securities—USD 3.5bn more than it had predicted less than three weeks earlier.
- 30 October UBS reports that massive write-downs on its sub-prime holdings has led to a CHF830m loss in 3Q2007;
- Investor worries are mounting that the next big casualties might be the specialist companies that act as guarantors for bond issuers.
- 31 October U.S. Federal Reserve lowers the Fed Funds rate by 25bp to 4.50 per cent from 4.75 per cent;
- Deutsche Bank reports a 19 per cent drop in 3Q2007 earnings to €1.4bn because of large write-downs.

November to Phase 3

22 January Central banks grapple with intensifying crisis: a wave of write-downs triggers liquidity worries and a series of policy easings as stocks take fright

- 1 November Renewed concerns about Citigroup appear to be the catalyst for a rout that spreads rapidly to many of the world's top financial stocks. Equity markets tumble and bond prices rise in the U.S. and Europe;
- U.S. Federal Reserve injects USD 41bn into money markets for banks to borrow at a low rate. This is the largest single expansion by the Fed since the USD 50.35bn it injected on 19 September 2001.*
- 7 November Stocks of consumer lending businesses plummet as some of the largest U.S. mortgage and credit card lenders set aside increased reserves for bad loans amid ongoing deterioration in the U.S. housing market;

	Morgan Stanley says it has suffered USD 3.7bn in losses over the last 2 months on its portfolio of mortgage-related investment and it expects 4Q2007 earnings to be reduced by about USD 2.5 bn from write-downs.
9 November	Mounting worries about credit risk reach the Eurozone government bond market, fuelling a flight to quality with the region.
13 November	Global credit turmoil spills over into the market for bonds backed by U.S. commercial mortgages threatening to push down property prices and scuttle deals.
20 November	Freddie Mac, the second largest buyers of U.S. home loans, posts a 3Q2007 loss of USD 2.0bn.
23 November	BNP Paribas, Société Générale, Calyon, Natixis and HSBC France are working on creating a fund to buy asset-backed securities held by banks, insurers and others, ensuring liquidity for asset management funds if holders seek to sell.
29 November	one-month euro and dollar Libor surges more than expected as evidence mounts that the banking credit squeeze is being exacerbated by the pressure of the closing of the fiscal year for many financial institutions;
	<i>The Bank of England announces a £20.6bn cash injection into the financial system to calm fears of an end-of-year liquidity crisis.</i>
4 December	U.K. bank lending rates hit nine-year highs as banks seek funds to cover their commitments for the start of next year amid a tightening credit squeeze.
6 December	<i>President Bush announces a plan to voluntarily and temporarily freeze the mortgages of a limited number of mortgage debtors holding adjustable rate mortgages (ARM). He also asks Members of Congress to: 1) pass legislation to modernise the FHA; 2) temporarily reform the tax code to help homeowners to refinance during this time of housing market stress; 3) pass funding to support mortgage counselling; 4) pass legislation to reform Government Sponsored Enterprises (GSEs) like Freddie Mac and Fannie Mae;</i>
	<i>Bank of England cuts interest rates by 25bp from 5.75 per cent to 5.50 per cent.</i>
11 December	Washington Mutual says it will write down the value of its home-lending unit by USD 1.6 bn;
	<i>U.S. Federal Reserve lowers interest rates by 25bp to 4.25 per cent from 4.50 per cent.</i>
12 December	<i>The world's central banks unleash a co-ordinated assault on the credit squeeze in global financial markets.</i>
	Freddie Mac says it expects to report a net loss in 4Q2007, incurring credit losses of USD 10-12bn on its mortgage portfolios.
19 December	<i>Short-term market interest rates in the Eurozone plunge at their fastest rate for more than a decade after the ECB stunned investors by pumping a record €348.6bn worth of funds into the markets.</i>
20 December	Morgan Stanley announces USD 9.4bn write-downs in 4Q2007.
21 December	Bear Stearns reports a quarterly loss—the first in 84 years as a public company—nearly four times larger than analysts' expectations. Bear surprised investors with a USD 1.9bn write-down on its holdings of mortgage assets.
24 December	<i>The U.S. Treasury backed superfund of USD 80bn is scrapped on the grounds it is no longer needed</i>
	Merrill Lynch announces a USD 6.2bn new issue of common stock in a private placement with Temasek Holdings and Davis Selected Advisors

2008

14–28 January	<i>The Federal Reserve, ECB and Swiss National Bank carry out additional long-term funding operations in U.S. dollars; the Bank of England conducts the second extended operation of three-month funds against wider high-quality collateral in domestic currency.</i>
15 January	Citigroup announces USD 8.1bn in write-downs in 4Q2007 and a net loss of USD 9.8bn.
16 January	JP Morgan announces USD 1.3bn write-downs on sub-prime mortgage related holdings.
18 January	Merrill Lynch reports the worst quarter in its history, saying it lost USD 9.8bn in 4Q2007 following more than USD 15bn in asset write-downs;
	Shares in Ambac Financial & MBIA, the world's largest bond insurers, plummet 52 per cent and 31 per cent respectively as Moody's raises the possibility that both might lose their triple-A credit rating.
21 January	Stock markets in London and Europe suffer their biggest one-day falls since the 9/11 terrorist attacks.
22 January	<i>U.S. Federal Reserve delivers a 75bp inter-meeting cut taking rates to 3.50 per cent from 4.25 per cent.</i>

22 January to 16 March	Phase 4 Bear market: credit spreads balloon, liquidity tightens afresh and systemic crisis beckons
23 January	Citigroup announces that it has strengthened its balance sheet and replenished depleted capital levels by raising about USD 30bn in the last two months.
25 January	A lone rogue trader is blamed for the biggest fraud in investment banking history after Société Générale revealed his actions had cost it €4.9bn and forced an emergency €5.5bn cash call on shareholders.
30 January	<i>U.S. Federal Reserve cuts rates by a further 50bp to 3 per cent from 3.50 per cent and signals possible further reductions;</i> Leading U.S. companies are shifting to recession mode and preparing to cut costs, freeze hiring and reduce capital spending as they brace for an economic slowdown, according to senior executives and industry experts; Shares in Countrywide Financial rally after Bank of America re-affirms plans to buy the lender, which earlier reported a 4Q2007 net loss of USD 422m.
31 January	S&P downgrades or threatens to downgrade more than 8,000 mortgage investments and projects that a widening array of financial institutions will ultimately face mortgage security losses of more than USD 265bn.
6 February	Global stocks suffer their worst one-day fall in nearly a year as new figures suggest that the U.S. may already be in a recession.
7 February	<i>Bank of England cuts rates by 25bp to 5.25 per cent from 5.50 per cent.</i>
13 February	<i>President Bush announces an economic stimulus package.</i>
14 February	<i>The German government is to lead a €1.5bn bail-out of IKB in a third attempt to save the small-business lender after the Finance Minister said the potential fallout from its insolvency would be "incalculable";</i> UBS announce a 4Q2007 loss of CHF12.5bn, and an annual loss of CHF4.4bn due to USD 14bn of investment write-downs in 2007.
17 February	<i>The British government nationalises Northern Rock as a temporary measure.</i>
20 February	Credit Suisse shocks investors by revealing USD 2.85bn of losses on structured credit positions caused partly by "pricing errors" by some of its traders.
28 Feb-11 March	AIG announces USD 11.1bn write-down on unrealised market valuation loss on credit defaults swaps. <i>G-10 central banks announce concerted action to boost market liquidity.</i>
14 March	<i>Bear Stearns gets Federal Reserve funding as shares plummet.</i>
16 March	Bear Stearns is acquired for USD 2 a share by JPMorgan Chase in a fire sale avoiding bankruptcy. The deal is backed by the Federal Reserve which provides up to USD 30bn to cover possible Bear Stearns losses; <i>U.S. Federal Reserve announces a 25bp cut in its discount rate and a new special lending facility for primary dealers. In addition, it extends the maturity of primary credit loans to 90 days from 30 days.</i>
17 March to 20 May	Phase 5 Systemic relief: Fed rescue of Bear Stearns and support to investment banks triggers a renewed rally in credit and stocks, but many markets, including the money and securitisation markets, remain dysfunctional
18 March	<i>U.S. Federal Reserve cuts interest rates by 75bp to 2.25 per cent from 3.00 per cent;</i> Goldman Sachs & Lehman Brothers announce better than expected 1Q2008 results.
24 March	JP Morgan confirms it will increase its offer for Bear Stearns from USD 2 to USD 10 a share, valuing the bank at USD 1.3bn from USD 240m previously.
31 March	U.S. Treasury announces a major package to reform regulation of U.S. financial markets and prevent future financial crises. The plans are criticised by consumer groups but generally praised on Wall Street.
1 April	UBS reveals a further USD 19bn of asset write-downs. Deutsche Bank warns of USD 3.9bn of credit losses in 1Q2008.
10 April	<i>Bank of England cuts rates by 25bp to 5.00 per cent from 5.25 per cent.</i>
17 April	Merrill Lynch reveals USD 4.5bn of write-downs in 1Q2008 and announces it will cut around 4,000 jobs worldwide.
18 April	Citigroup announces another USD 12bn in sub-prime losses, bringing its total to USD 40bn, the most of any bank as yet. In addition it announces that it will cut around 9,000 jobs.
21 April	<i>Bank of England announces Special Lending Scheme to provide liquidity to banks by</i>

	<i>exchanging an initial £50bn in Treasury bills for existing AAA rated “illiquid assets” including RMBS. However, the securities backed by U.S. mortgages are excluded.</i>
22 April	RBS, the U.K.'s second largest bank, reveals £5.9bn in write-downs. In addition it announces a £12bn rights issue in an attempt to shore up its finances.
29 April	HBOS announces £2.84bn of write-downs on its portfolio of complex debt securities and launches a £4bn rights issue.
30 April	<i>U.S. Federal Reserve cuts interest rates by 25bp to 2.00 per cent from 2.25 per cent and, as it did on 31 October, hints at a pause in its current spell of easing. Richard Fisher and Charles Plosser vote against the Fed's decision. Markets begin pricing in U.S. rate hikes by year-end.</i>
2 May	Lehman Brothers announces a USD 2bn rights issue.
6 May	Citigroup announces a USD 2bn rights issue.
7 May	Merrill Lynch announces a USD 7.5bn rights issue; JPMorgan announces a USD 1.8bn rights issue.
8 May	AIG announces its biggest-ever quarterly net loss of USD 7.8bn and says it will need to raise USD 12.5bn in new capital to strengthen its balance sheet.
12 May	HSBC, Europe's largest bank, announces USD 3.2bn of write-downs in 1Q2008.
14 May	<i>The Bank of England's inflation report suggests that there is only limited scope for interest rate cuts given the anticipated surge in inflation.</i> Bradford & Bingley becomes the latest British bank to bolster its balance sheet by launching a £300m rights issue.
15 May	Barclays announces £1bn in write-downs in 1Q2008.
20 May and after	Phase 6 Renewed market slide: general fall in asset markets as inflation fears prompt a change in central bank rhetoric and credit losses mount
20 May	<i>A Financial Times investigation finds that Moody's awarded incorrect triple-A ratings to billions of dollars worth of CPDOs (constant proportion debt obligations)—the result of an error in a mathematical code used to assign a rating to CPDOs.</i>
21 May	<i>The minutes of the Fed's 30 April policy setting meeting note that “(Dallas Fed President Richard) Fisher was concerned that an adverse feedback loop was developing by which lowering the funds rate had been pushing down the exchange value of the dollar, contributing to higher commodity and import prices, cutting real spending by businesses and households and therefore ultimately impairing economic activity”.</i>
31 May	Lehman Brothers announces a USD 2bn rights issue.
3 June	<i>Fed Chairman Bernanke takes the middle ground in a speech, the tone of which suggests that he is not expecting the monetary policy stance to be adjusted anytime soon. He remains wary about the inflation outlook and relatively upbeat about the outlook for growth. His speech moves markets to price in at least 75bp of rate hikes by year-end.</i>
5 June	<i>In the press statement following the June policy decision, ECB President Trichet gives a clear signal regarding the possibility of a rate hike at the next policy meeting in July, as a result of the high headline inflation rate.</i>
5 June	S & P downgrades MBIA and Ambac to AA.
9 June	Lehman Brothers announces a USD 4bn rights issue.
10 June	<i>Bank of Canada surprises markets with a no-change policy decision and joins other developed market central banks in voicing concerns about the outlook for inflation.</i>
13 June	UBS announces a CHF5.3bn rights issue
17 June	<i>U.K. May inflation hits 3.3 per cent, triggering the requirement for BoE Governor, Mervyn King, to write a letter of explanation to the Chancellor of the Exchequer, Alistair Darling.</i>
25 June	Barclays announces plans to sell £4.5bn of stock mostly to investors in the Middle East and Asia to boost capital depleted by credit-related write-downs
26 June	Fitch withdraws ratings on MBIA and Ambac
26 June	<i>Five of the BoE's Monetary Policy Committee testify before the U.K. Parliament's Treasury Select Committee. The suggestion by BoE Governor Mervyn King that the BoE has no preconceived ideas as to where interest rates are headed dampens market expectations of a series of interest rates rises;</i> Fortis announces a combination of measures to strengthen its capital base by €3.3bn.
13 July	IndyMac collapses. Moody's downgrades Freddie Mac and Fannie Mae.
15 July	Following the collapse of IndyMac and with problems swirling around U.S. mortgage lenders Fannie Mae and Freddie Mac, Treasury Secretary Paulson makes reference to his “bazooka” option.
17 July	Major banks and financial institutions had borrowed and invested heavily in mortgage backed securities and reported losses of approximately USD 435bn as of today.

30 July	Bush signs into law the Housing and Economic Recovery Act 2008, which authorizes the Federal Housing Administration to guarantee up to USD 300bn in new 30-year fixed rate mortgages for subprime borrowers if lenders write-down principal loan balances to 90 per cent of current appraisal value.
26 August	Commerzbank buys Dresdner Bank from Allianz in a €10bn deal.
7 September	The U.S. government announces it will seize control of federal mortgage insurers Fannie Mae and Freddie Mac.
10 September	The U.S. government seizes Fannie Mae and Freddie Mac putting the liability of more than USD 5tn of mortgages onto the backs of American taxpayers.
11 September	Lehman Brothers announces it is actively looking to be sold after reporting USD 4bn in losses.

September onwards **Phase 7**
Lehman Collapse, prompts markets to plunge, forcing aggressive policy action to salvage the financial system

15 September	Lehman Collapses and files for bankruptcy.
15 September	Bank of America announces a USD 50bn purchase of Merrill Lynch.
16 September	AIG is downgraded prompting speculation that it too might soon fail.
16 September	Barclays seals deal for Lehman's US assets.
17 September	U.S. Federal Reserve loans AIG USD 85bn to try to keep it afloat.
17 September	HBOS takeover is finalised by Lloyds TSB valued at £12.1bn.
18 September	<i>U.S. Fed cuts its main interest rate by 50bp to 4.75 per cent.</i>
19 September	<i>U.S. Treasury Secretary Paulson unveils a rescue plan—Troubled Assets Relief Program (TARP). The plan aims to use USD 700bn of U.S. taxpayer assets to stabilise markets.</i>
21 September	Goldman Sachs & Morgan Stanley announce that they will convert to bank holding companies. This move marks the end of independent investment banks.
22 September	Japan's Nomura buys Lehman Brothers' Asian operations.
23 September	Nomura buys Lehman Brothers' U.K. operations.
24 September	Warren Buffett invests USD 5bn in Goldman Sachs.
25 September	Washington Mutual is seized by the Federal Deposit Insurance Corporation and declares bankruptcy who the next day sells the bank's assets to JP Morgan Chase.
28 September	Governments of the Benelux pledge €11.2bn to keep Fortis afloat. Fortis is nationalised.
28 September	Spain's Santander buys Bradford & Bingley's 200 branches and £22bn savings book and the U.K. taxpayers are left with mortgage exposure.
29 September	Wachovia enters crisis takeover talks with Citigroup. Wachovia is purchased in early October by Wells Fargo.
29 September	U.S. House of Representatives reject USD 700bn bail out programme.
2 October	Ireland approves a guarantee of bank deposits, setting off criticism from EU partners of unfair competition and spurring moves by individual European countries to safeguard banks.
3 October	Wells Fargo scuppers Citigroup's takeover of Wachovia.
6 October	<i>With equity and credit markets both reeling, the U.S. Federal Reserve makes an additional USD 900bn of short-term lending available to banks.</i>
6 October	Iceland nationalises its banking system following the failure of three major banks.
7 October	<i>The Fed announces plans to lend approximately USD 1.3tn to companies outside the financial sector.</i>
7 October	The Icelandic internet bank Icesave blocks savers from withdrawing money.
8 October	<i>Coordinated rate cuts in leading economies. Fed also reduces its emergency lending rate to banks by half a percentage point to 1.75 per cent.</i>
8 October	Icesave accounts are declared in default. The U.K. Financial Services Compensation Scheme will return 100 per cent of savers' money.
8 October	£400bn rescue plan by U.K. government to recapitalise the banking system. Government ends up owning 58 per cent of RBS and 40 per cent of Lloyds TSB-HBOS banking group.
9 October	<i>The IMF announces emergency plans to bail out governments affected by the financial crisis, after warning that no country would be immune from the ripple effects of the credit crunch.</i>
10 October	Singapore officially slides into recession on the back of falling demand for manufacturing exports from U.S. and Europe.
10 October	Oil prices slump as energy watchdog drops demand forecast. Prices tumble by almost USD 5/barrel to a one-year low amid growing fears that the deepening financial crisis will depress demand for fuel.
10 October	Japanese life insurer Yamato Life files for bankruptcy.
11 October	<i>G-7 Finance ministers and the IMF meet in Washington. The G-7 announces with a five-point plan, which includes spending billions of taxpayers' money to rebuild the global banking system and reopen the flow of credit.</i>

13 October	<i>The U.K. government announces it will pump £37bn of emergency recapitalisation into RBS, Lloyds and HBOS.</i>
14 October	<i>U.S. inject USD 250 bn of capital in nine banks.</i>
16 October	<i>UBS receives USD 4bn from the Swiss National Bank (SNB).</i>
19 October	<i>Dutch government bails out ING (€10bn capital injection).</i>
21 October	<i>The Fed announces that it will spend USD 540bn to purchase short-term debt from money market mutual funds.</i>
24 October	<i>U.K. economy shrinking—with the biggest drop in GDP since 1990.</i>
24-26 October	<i>IMF deal with Iceland and Ukraine.</i>
29 October	<i>Fed delivers expected rate cut, lowering the key rate by 50bp to 1 per cent.</i>
29 October	<i>IMF, EU and World Bank announce a massive rescue package for Hungary.</i>
31 October	<i>The Bank of Japan cut interest rates for the first time in seven years from 0.5 per cent to 0.3 per cent.</i>
4 November	<i>Two of Brazil's largest banks, Banco Itau and Unibanco, agree to merge creating Latin America's largest bank.</i>
12 October	<i>U.S. announces that TARP funds will be extended to support other forms of credit.</i>
15 October	<i>G-20 meeting is held to coordinate effort to combat crisis.</i>
17 October	<i>The U.S. treasury gives out USD 33.6bn to 21 banks in the second round to disbursements from the USD 700bn bailout fund. This payout brings the total to USD 158.56bn so far.</i>
23 October	<i>The U.S. government agrees to rescue Citigroup after the stock price plummets 60 per cent over the previous week under a detailed plan that includes injecting another USD 20bn of capital bringing the total infusion to USD 45bn.</i>
25 October	<i>The U.S. Federal Reserve pledges USD 800bn more to help revive the financial system.</i>
25 October	<i>Asset guarantees for Fannie Mae and Freddie Mac.</i>
27 October	<i>Japanese agricultural bank, Norinchukin, plans to raise more than ¥1tn—Asia's biggest capital-raising in the crisis.</i>
4 December	<i>ECB cuts rates by 75bp to 2.5 per cent. Rates are at record lows: U.K.: 2 per cent, U.S.: 0.25 per cent, Japan: 0.1 per cent.</i>
9 December	<i>The Bank of Canada lowered its key interest rate by 75bp to 1.5 per cent and announces that Canada's economy was in recession.</i>
11 December	<i>The FBI announces the arrest of Bernard Maddoff in a Ponzi scheme which totalled USD 50bn and which was soon found to affect banks, individuals, and charities in the US and Europe.</i>
12 December	<i>EU stimulus plan worth 1.5 per cent EU GDP.</i>
16 December	<i>The U.S. Federal Reserve slashes its key interest rate from 1 per cent to a range to between zero and 0.25 per cent.</i>
19 December	<i>U.S. government gives USD 17.4bn lifeline to Detroit carmakers.</i>
19 December	<i>Japan's central bank follows suit and cuts rates from 0.3 per cent to 0.1 per cent.</i>
21 December	<i>Ireland injects €5.5bn into its three main banks.</i>
22 December	<i>Ireland's largest bank, Anglo Irish, is nationalised.</i>
30 December	<i>Fed announces plans to acquire up to USD 500bn government-sponsored enterprise (GSE) mortgage debt.</i>

2009

5 January	<i>The Federal Reserve Bank of New York begins purchasing fixed-rate mortgage-backed securities guarantee by Fannie Mae, Freddie Mac and Ginnie Mae under a programme first announced on 25 November 2008.</i>
8 January	<i>The Bank of England cuts interest rates to 1.5 per cent.</i>
9 January	<i>2.6 million Americans lose their jobs in 2008.</i>
13 January	<i>The U.S. Treasury says it has injected USD 271.7bn in 257 banks so far, but it will take time for the capital to make credit more available.</i>
15 January	<i>ECB cuts interest rates to 2 per cent.</i>
19 January	<i>U.K. government launches 2nd bank rescue plan under which the BoE will set up an asset purchase programme to buy private sector assets with an initial fund of £50bn.</i>
20 January	<i>Standard & Poor downgrades Spain's country rating from AAA to AA+, stating that the global economic crisis had heightened the 'structural weakness' of Spain's economy. A key factor in lowering the credit rating was Spain's growing deficit, which is predicted to range from 5.8 per cent to 6.6 per cent of GDP.</i>
20 January	<i>The Bank of Canada cut its key interest rate by 50bp to 1 per cent.</i>
21 January	<i>The BoE is to start buying billions of pounds in high-grade corporate bonds within weeks in fresh attempt to encourage lending and avert a deep and prolonged recession.</i>

23 January	<i>Following President Obama's inauguration on 20th January, the USD 825bn economic rescue plan is announced.</i>
10 January	<i>U.S. unveil a new bank rescue plan that would put USD 2tn to work mopping up bad assets and restoring credit.</i>
17 January	<i>Obama signs USD 787bn stimulus package.</i>
22 January	<i>The new Banking Act came into force in the U.K. over the weekend. This gives the BoE more power to provide assistance to struggling banks.</i>
24 January	<i>The Survey of purchasing managers indicates that the Eurozone is falling further into recession after a plunge in private sector economic activity.</i>
26 January	<i>The U.K. government agrees to inject up to £25.5bn of additional capital into RBS after the bank reported record annual losses.</i>
2 March	<i>The U.S. government rescues insurance giant AIG for the third time in five months. The latest revision of the AIG bailout includes a USD 30bn equity commitment from the U.S. government that AIG can draw on as needed.</i>
5 March	<i>Stock markets in the U.S. and Europe tumble after Chinese authorities fail to deliver a stimulus package expected by many investors.</i>
5 March	<i>The European Central Bank cuts its benchmark interest rate to a record low 1.5 per cent.</i>
5 March	<i>The BoE cuts rates to 0.5 per cent.</i>
6 March	<i>S&P 500 hits low of 667.</i>
6 March	<i>BoE will pump £150bn into U.K. economy via a scheme of quantitative easing</i>
9 March	<i>FTSE 100 hits low of 3461..</i>

March onwards Phase 8

The aftermath: financial markets recover strongly as policy action reassures investors that the financial system will not collapse and hopes for economic recovery build

10 March	<i>Stocks around the world staged the biggest rally of the year after Citigroup Inc. said it was having its best quarter since 2007. The S&P 500 Financials Index rebounded 16 per cent today.</i>
11 March	<i>Freddie Mac announces that it had a net loss of USD 23.9bn in Q42008 and a net loss of USD 50.1bn for 2008 as a whole.</i>
18 March	<i>Bank of Japan announces that it will offer USD 10.2bn in subordinated loans to help Japanese banks and prevent lending drying up.</i>
23 March	<i>The U.S. announces details of a plan to buy up to USD 1tn worth of toxic assets to help repair banks' balance sheets.</i>
24 March	<i>U.K. unemployment rises above 2 million and U.K. CPI moves to 3.2 per cent, well above the government target of 2 per cent.</i>
31 March	<i>Stocks in the U.S. and Europe rise, extending the biggest monthly rally for global equities since 2003, on speculation that banks have grown more eager to lend.</i>
1 April	<i>European stocks gain for a second day after better-than-estimated U.S. housing and manufacturing data.</i>
6 April	<i>HSBC announces that its £12.5bn rights issue attracted 96.6 per cent take-up.</i>
7 April	<i>Japan plans USD 100bn fiscal stimulus to fight its recession.</i>
8 April	<i>Irish government brings out its second budget in six months to try to turn around the Irish economy.</i>
9 April	<i>General Motors and Chrysler launch supplied support programmes, backed by USD 5bn in government loans.</i>
22 April	<i>Alistair Darling releases the U.K. budget and admits that Britain's public finances face their toughest times since World War II.</i>
23 April	<i>U.S. Treasury Secretary Geithner admits that America must take a 'substantial share' of the blame for the continuing financial crisis, as he warns that the rest of the world cannot be reliant on the U.S. for its recovery.</i>
27 April	<i>U.S. Treasury Secretary Geithner assured the World Bank and the IMF that the U.S. would take whatever policy steps were necessary to ensure economic recovery, on both a national and international level.</i>
30 April	<i>The Fed leaves interest rates unchanged and states that the U.S. economy is demonstrating signs of improvement.</i>
30 April	<i>The EU Commission's proposals for new hedge fund rules are released.</i>
1 May	<i>Chrysler filed for bankruptcy but will still receive up to USD 7.5bn in State aid to restructure and re-launch. The partnership with Fiat will still go ahead and they will receive a 20 per cent stake in Chrysler.</i>
5 May	<i>The IMF approves a USD 17bn standby loan for Romania to cushion the effects of the world financial crisis.</i>

7 May	<i>The BoE announces that it will keep interest rates at 0.5 per cent. They also announce that they will pump an additional £50bn into the U.K. economy via the existing quantitative easing programme.</i>
7 May	<i>The ECB announces that it will cut interest rates to 1 per cent.</i>
11 May	Darling, the U.K. Chancellor, announces that laws dealing with the failure of investment banks are to be tightened, after the collapse of Lehman Brothers revealed serious shortcomings in the U.K.'s insolvency regime.
15 May	The Treasury Select Committee releases a report on remuneration in the City which concludes that the banking crisis has exposed serious flaws.
19 May	World Bank president Robert Zoellick said the global economy may return to growth by late 2009 or in 2010. European banking officials also reported signs of tentative growth.
2 June	<i>General Motors files for bankruptcy protection, marking the biggest failure of an industrial company in U.S. history. The move is backed by the U.S. government which is now expected to take a 60 per cent share in the company</i>
3 June	Latvia becomes the first EU country to face a sovereign debt crisis after failing to sell a single bill at a treasury auction worth USD 100m (£61million), prompting fears of a fresh storm in Eastern Europe as capital flight tests currency pegs.
17 June	JP Morgan Chase & Co repaid USD 25bn in loans it received as part of TARP, while Morgan Stanley pay back USD 10 bn.
17 June	<i>The U.S. government announces a major reform of banking regulation, requiring big banks to put more money aside against future losses to curb excessive risk taking, the creation of a special agency to protect U.S. consumers, and the Federal Reserve, will also be given the authority to monitor major financial institutions.</i>
17 June	<i>The Bank of England governor, Mervyn King, and the U.K. Chancellor, Alistair Darling, clash over what needs to be done to control banks to prevent a repeat of the current financial crisis.</i>
18 June	<i>The Swiss National Bank (SNB) called for rules allowing drastic action on the nation's domestic banks if their problems threatened the entire economy and for renewed measures to fight recession and fend off deflation. The SNB also recommended splitting off parts of Switzerland's top two banks, UBS and Credit Suisse, or limiting their size if needed.</i>
25 June	U.S. government figures show that the U.S. economy shrank at an annualised rate of 5.5 per cent in the first three months of 2009, better than previously thought.
26 June	Russia is planning a bail-out of its banks that would go further than the emergency action taken by the U.S., amid fears that bad loans could paralyse the country's economy.
13 July	Stock markets begin surging. Financial shares propelled indexes after influential banking analyst Whitney raised her rating on Goldman Sachs Group Inc. Stocks in Europe advanced, rebounding as speculation takeovers will increase boosted automakers, insurers and energy companies.
22 July	Goldman Sachs pays the government USD 1.1bn to redeem the warrants it issued in conjunction with the TARP money that was injected into the company.
23 July	Improving company profits will spur the biggest year-end rally for European stocks. Of the 43 Stoxx 600 companies that reported second-quarter results since 8 July, 26 beat estimates whilst 15 trailed them.
6 Aug	<i>The Bank of England rate-setting committee voted to increase its quantitative easing programme by an additional £50bn to a total of £175bn.</i>
12 Aug	<i>In the U.K., the FSA published its new remuneration code.</i>
18 Aug	U.S. Stocks surge on the back of better-than-estimate earnings.
1 Sep	Britain pledged an additional £7bn to the International Monetary Fund (IMF) to aid poorer countries during the recession.
4 Sep	<i>Jean-Claude Trichet, the president of the European Central Bank (ECB), speaks out against calls to reduce fiscal stimulus plans. Trichet expects the economic recovery to be "uneven", both "inside and outside the Euro area". The ECB left rates at their record low of 1 per cent.</i>
10 Sep	<i>The Bank of England Monetary Policy Committee announced that the base rate would remain unchanged at 0.5 per cent and that the current quantitative easing programme would continue for a further two months, until £175bn had been injected into the economy.</i>
25 Sep	The G-20 leaders agreed to support new global standards on remuneration practices produced by the Financial Stability Board (the FSB).
29 Sep	BNP Paribas announce rights issue. They plan to raise €4.3bn for shareholders and repay €5.1bn of government bail-out money.
5 Oct	U.S. stocks rise ahead of third-quarter earnings reports.
6 Oct	<i>Australia's central bank hike rates by 25bp to 3.25 per cent signalling that the worst danger for the economy had passed.</i>

Sources: ING Group, BIS, Bloomberg, BNP Paribas, FT, Forbes, Reuters, Times Online, Council on Foreign Relations, *The Guardian*.

Appendix B.

Case studies of troubled insurers

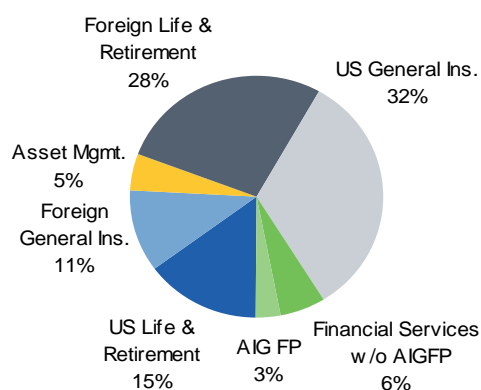
The following section presents three case studies of insurers that experienced significant difficulties during the current crisis.

B.1. AIG³³

B.1.1. Nature and regulation of AIG business

AIG operated four major lines of business: General Insurance,³⁴ Life Insurance, Asset Management and Financial Services. The individual contributions to total AIG revenues in 2007 are summarised below.

Exhibit 53: AIG revenues 2005 by business lines³⁵



Source: AIG annual report 2005

AIG Financial Services constituted a heterogeneous business line, accounting for 9 per cent of AIG's 2007 revenues. One of the business units grouped under AIG Financial Services was AIG Financial Products (AIG FP). AIG FP was founded in 1987 as AIG's capital markets division domiciled in London and contributed about 3 per cent to 2007 revenues.

[AIG Financial Products was] "a hedge fund, basically, that was attached to a large and stable insurance company".

Ben Bernanke, Federal Reserve Chairman,
Senate Budget Committee hearing on 3 March 2009

33. Sources are listed at the end of the case study.

34. The term general insurance refers to property, casualty and liability insurance.

35. 2005 revenues shown as they represent the peak of AIG FP's contribution to AIG revenues.

Official investigation after the first governmental credit had been extended to AIG found that AIG's liquidity problem centred around AIG FP transactions. Furthermore, AIG FP had not been a focus of regulatory action at any point before the onset of the crisis. Since the AIG holding company was registered with an "equivalent regulator", the U.S. Office of Thrift Supervision (OTS), AIG FP was able to evade regulation by the U.K. Financial Services Authority (FSA).

Consequently, the supervision of AIG FP as a non-insurance business line was the responsibility of the OTS. Even though the OTS as a thrift regulator focused on the integrity of the thrift within AIG, "*OTS maintained a contemporaneous understanding of all material parts of the AIG group, including their domestic and crossborder operations*". Furthermore, "*in 2005 OTS conducted several targeted, risk-focused reviews of various lines of business, including AIGFP*".³⁶ Despite these regulatory efforts, OTS failed to draw the correct conclusions and intervene in time.

"It's time for the OTS to raise their hand and say they have some responsibility and accountability here."

Scott M. Polakoff, Acting Director of OTS, to the U.S. Senate on 5 March 2009

The assignment of OTS as consolidated holding regulator for the AIG group goes back to a legal loophole around the regulation of financial holding company structures. While regulatory oversight over such holdings generally rests with the Federal Reserve Board (the Fed), financial holding companies owning a thrift have the freedom to subject themselves to regulation by either the federal Office of Thrift Supervision (OTS) or the Federal Reserve (Fed).

Accordingly, after purchasing a savings and loan bank in 1999, AIG was allowed to select its consolidated holding company regulator and subjected itself to regulation by the OTS, taking the opportunity for regulatory arbitrage.

... when you permit companies to pick their regulator, you create the opportunity for regulatory arbitrage ... because you create the opportunity for a financial institution to select its regulator based on who might be more lenient, who might have less strict rules, who might demand less capital."

Joel Ario, Pennsylvania Insurance Commissioner,
Testimony to the U.S. House of Representatives on 18 March 2009

B.1.2. AIG and the financial crisis

"It is hard for us, without being flippant, to even see a scenario with any kind of realm of reason that would see us losing one dollar in any of those transactions."

Joseph J. Cassano, Head of AIG Financial Products, August 2007

By 14 September 2008 AIG Financial Products had written credit default swaps (CDS), derivatives and futures with a total notional value of USD 2.7 trillion. About USD 440 billion of this related to CDS guaranteed by AIG holding. Most of these CDS referred to super senior tranches of CDOs with concentrated exposure to the U.S. housing market and to CDOs and CLOs backed by corporate exposures. However, a substantial fraction of AIG FP's CDS were on subprime housing loans, despite the fact that AIG FP had stopped selling these products in late 2005.

36. Scott M. Polakoff, Acting Director of OTS, to the U.S. Senate on 5 March 2009.

In summary, AIG FP had bet more than twice the market value of AIG in credit default swaps, and, according to AIG's 2007 annual report, failed to hedge or otherwise protect itself against collateral calls.

It was these collateral calls that put first stress on AIG. After ratings downgrades of U.S. subprime securities in the summer of 2007, AIG's counterparties requested additional cash collateral in Q4 2007. This led to a loss for AIG FP of USD 11 billion in Q4 2007. After further rating downgrades of U.S. subprime securities, credit rating agencies announced potential rating downgrades for AIG on 12 September 2008, creating a vicious circle of ever more calls for cash collateral. With the actual downgrade on 18 September 2009 AIG Financial Products and AIG holding company faced demands for tens of billions of cash collateral on the CDS written by AIG FP and guaranteed by the holding company.

To make matters worse, the counterparties to those credit default swaps included many of the world's largest financial institutions, all of which had hedged their own involvement in the risky CDS business through AIF FP. To quote Chairman Bernanke again, AIG FP *"took all these large bets where they were effectively insuring the credit positions of many, many banks and other financial institutions"*.³⁷ Overnight, the U.S. Government provided a USD 85 billion emergency credit facility to prevent the global systemic ramifications of a failure of AIG.

The same day, AIG posted USD 22 billion additional cash collateral to its credit derivatives counterparties and repaid USD 45 billion in cash to its securities lending counterparties which additionally called for repayment.

However, it should be emphasised that AIG's securities lending business played a subordinate role in causing AIG's liquidity crisis.

Even though the securities lending programme pursued an aggressive investment strategy with comparably low cash reserves, the insurance commissioners of New York and Pennsylvania claim that any losses would have been manageable without the crisis caused by AIG FP.

"It is important to understand that securities lending did not cause the crisis at AIG. AIG Financial Products did."

Eric Dinallo, New York Insurance Superintendent, Testimony to the U.S. Senate on 5 March 2009

When Edward Liddy, CEO of AIG, appeared before the U.S. congressional committee dedicated to the case of AIG in April 2009, AIG had received about USD 182 billion of governmental support. By that time, the market capitalisation of AIG had fallen to roughly USD 5 billion.

Sources:

1. American International Group: Examining what went wrong, government intervention, and implications for future regulation, Testimony of Eric Dinallo before the Committee on Banking, Housing, and Urban Affairs of the United States Senate, 5 March 2009
2. American International Group: Examining what went wrong, government intervention, and implications for future regulation, Statement of Scott M. Polakoff Acting Director, Office of Thrift Supervision before the Committee on Banking, Housing, and Urban Affairs of the United States Senate, 5 March 2009
3. American International Group's Impact on the Global Economy: Before, During and After Federal Intervention, Testimony of the National Association of Insurance Commissioners Before the Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises Committee on Financial Services of the United States House of Representatives, Joel Ario, Insurance Commissioner, Pennsylvania Insurance Department, 18 March 2009
4. The Financial Crisis and Information Gaps—Report to the G-20 Finance Ministers and Central Bank

37. Ben Bernanke, Federal Reserve Chairman, Senate Budget Committee hearing on 3 March 2009.

Governors, Prepared by the IMF Staff and the FSB Secretariat, 29 October 2009

5. AIG annual reports 2007 and 2008
6. Selected articles from *The New York Times*
7. Selected articles from *The Financial Times*
8. Selected articles from *The Wall Street Journal*

B.2. ING³⁸

AIG is the most prominent example of a financial conglomerate that experienced problems caused by financial operations outside its insurance arm. However, it is not unique.

With assets of €1.3 trillion in 2008—more than twice the size of the Dutch gross domestic product—ING is the country's biggest financial group. Much of its funding comes from retail depositors at its domestic Postbank operations and from its international ING Direct arm.

When expanding its online savings arm in the U.S. in recent years, ING set itself up as a thrift—a savings association—which meant it was required by law to allocate more than 55 per cent of its assets to mortgages. Finding that it could not itself write mortgages as quickly as it took deposits, ING acquired a large portfolio of mortgage-backed securities. These bonds were backed by Alt-A mortgages, a type of loan offered to homebuyers with circumstances that made their credit worthiness difficult to assess, such as the self-employed.

This portfolio—valued at €22 billion at the end of the second quarter of 2008—has been the central concern of investors during the crisis. However, ING's losses have also been derived from the more general effects of the crisis.

Net profit dropped 19 per cent to €1.54 billion in Q1 2008, reflecting lower investment income at its insurance arm due to the turmoil in financial markets. In Q2 2008, ING wrote down €44 million on the most problematic asset classes, including its investments linked to U.S. subprime and Alt-A mortgages. The steepest drop in profit came from the insurance business, reflecting the lower income on investments in real estate, equities and private equity in Q2 2008.

A €500 million loss in Q3 2008 was due to over €2 billion of impairments on equity and bond investments and the bank's real estate portfolio, as well as losses caused by the collapse of other banks and an increase in loan-loss provisions of €400 million. The value of its subprime and related investments was cut by €1.5 billion. In October 2008, the Dutch government injected €10 billion of capital into ING.

In early 2009, the government hired Dynamic Credit, a New York-based company specialising in structured credit, to analyse ING's securities portfolio. After extensive analysis and stress testing, the government and ING came up with a deal whereby the State took over 80 per cent of the portfolio at 90 per cent of its face value (€20 billion). Though ING retains nominal ownership of the bonds, international accounting standards classify the deal as a sale, freeing up capital and boosting its shareholders' equity.

ING is now financially stable, despite continued losses of €793 million in Q1 2009.

Sources:

1. ING annual reports and quarterly results 2008-2009.
2. Selected articles from *The Financial Times*.

38. Sources are listed at the end of the case study.

B.3. The Hartford³⁹

The Hartford sells both life insurance and property-casualty insurance. Its financial stress during the crisis has been primarily due to its reliance on the “variable annuity”, a tax-advantaged type of mutual fund typically sold with guarantees of minimum investment returns. Hartford’s “Principal First” product promised withdrawals of up to 7 per cent a year to recover the principal, with an opportunity on the fifth anniversary of the contract to add investment gains to the guaranteed amount.

The Hartford’s innovation proved so popular with boomers that it set off an annuity arms race. Insurers added versions that lock in investment gains annually, monthly or even daily. Some promise to boost the guaranteed amount by 5 per cent to 7 per cent a year. A version guaranteeing lifetime withdrawals is the most popular today.

Variable annuities bought by individuals accounted for more than 20 per cent of The Hartford’s USD 3 billion profit in 2007. But in 2008, with investment returns falling dramatically, these variable annuities proved a liability. Many big players had to build up reserves and boost capital levels to show regulators they could honour promises made to consumers. The Hartford posted a USD 2.6 billion third-quarter loss, including a USD 932 million charge tied to its annuity business. Having recently received USD 2.5 billion of equity capital from Allianz, investors feared The Hartford would require yet more capital. On 30 October its shares lost almost half of their value. Two weeks later The Hartford announced that it would buy a bank in order to become eligible for the Treasury’s rescue programme.

In February 2009 the company successfully sought relief from capital requirements totalling about \$1 billion from its State regulator. In April Moody’s lowered The Hartford’s long-term senior debt rating two notches to Baa3, one level above junk, and cut the financial strength ratings for Hartford’s life insurance operating units to A3 from A1.

Following a loss of USD 1.21 billion for Q1 2009, The Hartford’s CEO, Ramani Ayer, announced that he would step down from his post by the end of the year. In June The Hartford became the first U.S. life insurer to receive public funds, accepting USD 3.4 billion from the troubled asset relief programme.

Sources:

1. The Hartford annual and quarterly reports 2007-2009
2. Selected articles from *The Financial Times*
3. Selected articles from *The Wall Street Journal*

39. Sources are listed at the end of the case study.

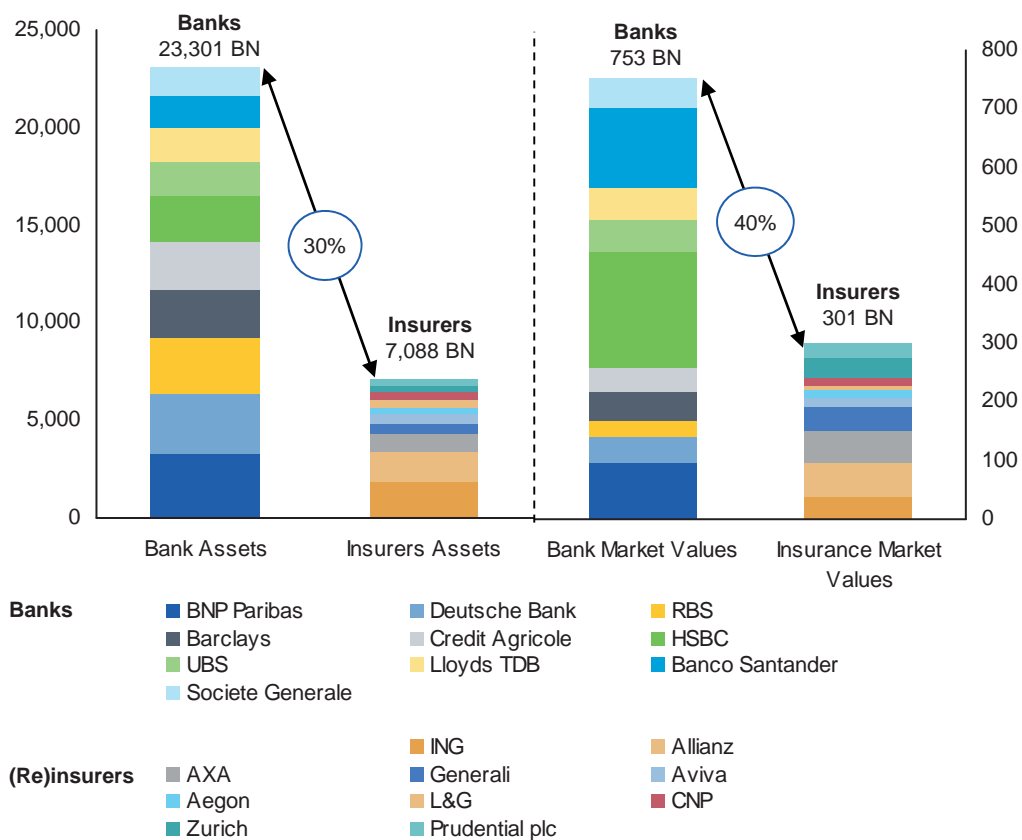
Size and diversification of insurers

C. 1. Size of top 10 European insurers and banks

*Exhibit 54: Size of top 10 European insurers compared to top 10 banks***Comparison of Top 10 European Insurers and Banks**

Total assets – Dec. 2008 (USD BN)

Total market value – Dec. 2009 (USD BN)



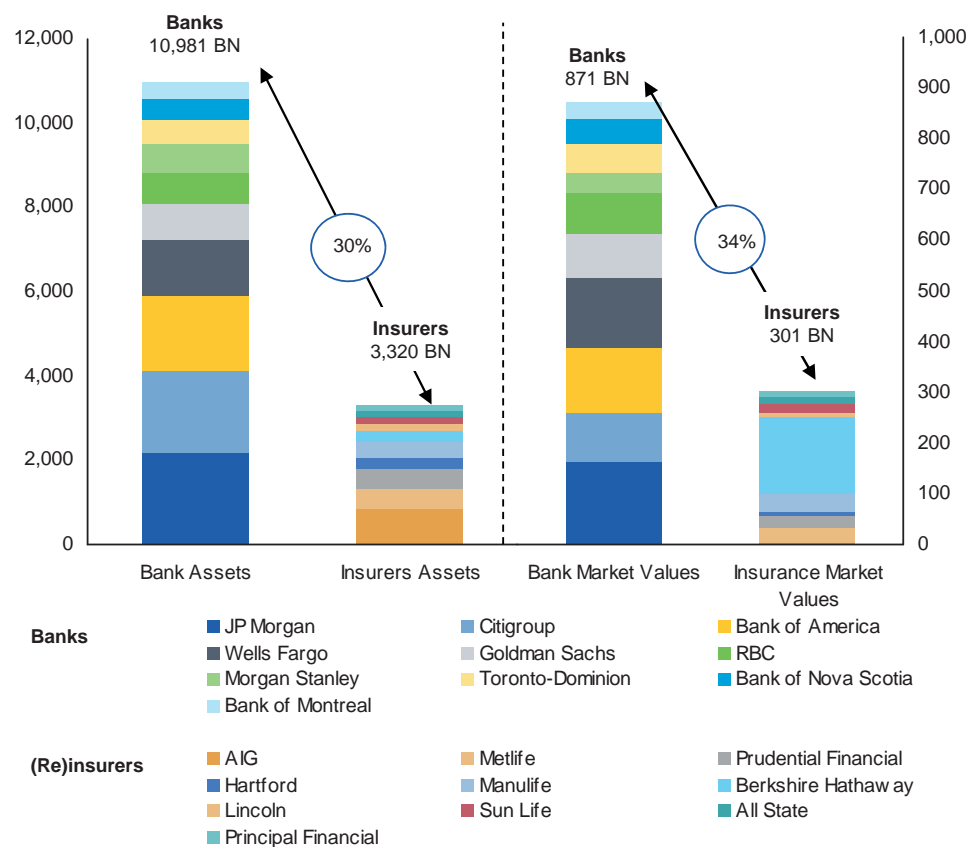
Source: Datastream, Oliver Wyman analysis
 Top 10 banks and insurers based on Total Assets at 31.12.2008

C. 2. Size of top 10 North American insurers and banks

Exhibit 55: Size of top 10 North American insurers compared to top 10 banks

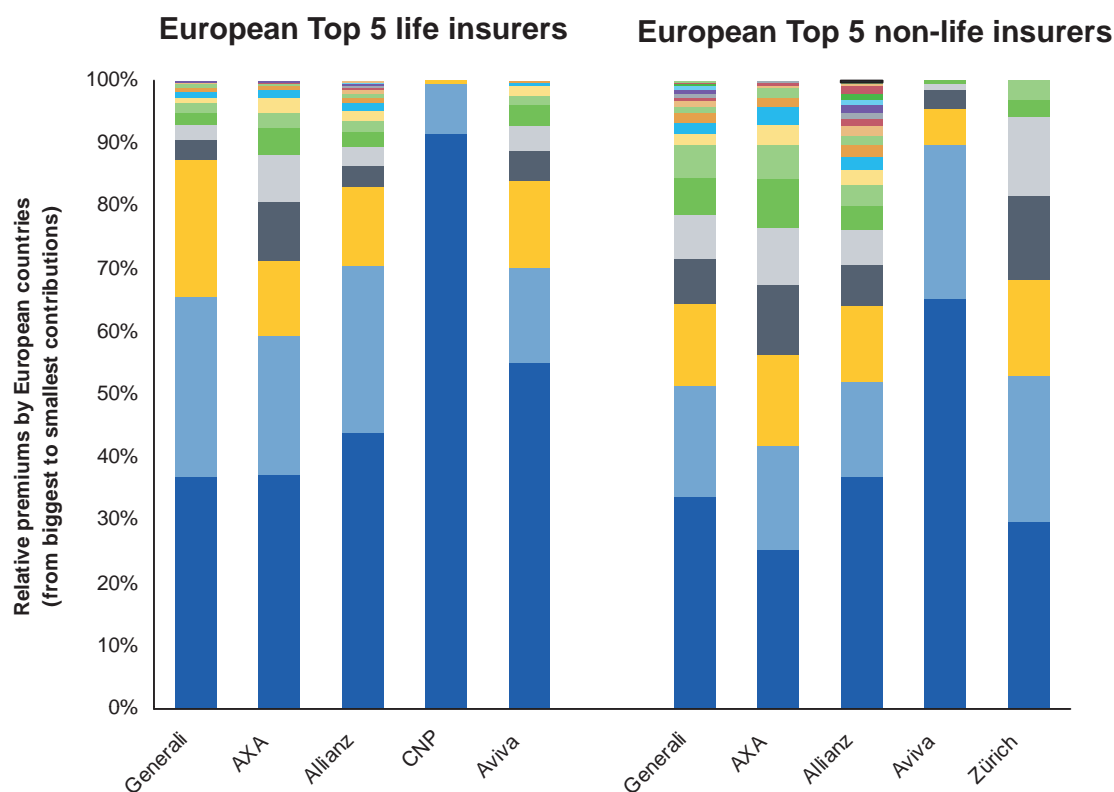
Comparison of Top 10 North American Insurers and Banks

Total Assets – Dec. 2008 (USD BN) Total Market Value – Dec. 2009 (USD BN)



Source: Datastream, Oliver Wyman analysis
Top 10 banks and insurers based on Total Assets at 31.12.2008

C.3. Diversification of European insurers

Exhibit 56: Relative premium contributions by European countries for European top insurers

Source: Oliver Wyman European Insurance Database 2008

Note: Colours represent countries, with the European countries of maximum contribution to European written premiums on the bottom and those with the least contribution on top

Insurer wind-ups: Equitable Life and HIH

As outlined in the main text, insurer and bank wind-ups are very distinct due to the differences in their business models and regulatory frameworks.

The following case studies exemplify the orderly nature of such run-offs and the impact of insurance failures on the economy.

D.1. Case study: the failure of Equitable Life Assurance Society in the U.K.⁴⁰

Since it closed for new business on 8 December 2000, Equitable Life has been maintaining a core function that manages remaining policies until termination, or sells the policies to other market participants.

Equitable Life, the world's oldest mutual insurer and a pioneer of modern life assurance, sold with-profits policies to its members. These policies promised the payment of a fixed amount of money at maturity which could then be used by the policy-holders to purchase an annuity. Annuities were calculated on the basis of an annuity rate.

In general, this annuity rate was the current annuity rate (CAR) which represents the yield of medium-term interest securities expected by Equitable Life. This annuity rate was subject to interest rates and longevity.

However, between 1957 and 1988 Equitable Life added an option to its with-profits policies which could be exercised at maturity. According to this option, policy-holders could choose whether their annuities should be calculated using the CAR or a fixed guaranteed annuity rate (GAR).

Guaranteed products assumed an interest of 4 per cent until 1975 and 7 per cent onwards and were held by about 16 per cent of Equitable's 1.1 million policy-holders.

In 1993, CARs fell below the guarantee, prompting GAR policy-holders to exercise their rights. Policies sold between 1975 and 1988 were worth approx. 25 per cent more than CARs (totalling a potential cost of £1 billion-£1.5 billion).

Equitable has been aware of the possibility of such an adverse event but had neither hedged nor reinsured against it. However, Equitable had another strategy in place: after current annuity rates had fallen under guaranteed annuity rates, the board exercised its discretion to declare a lower terminal bonus for policy-holders that exercised their GAR option.

The terminal bonus is a payment made at maturity of with-profits policies in addition to the fixed amount. The total benefits paid at maturity under a with-profits policy are supposed to reflect the achieved investment return on the contributions paid over the life-time of the policy. These benefits are calculated based on actuarial techniques.

40. Sources are summarised at the end of the case study.

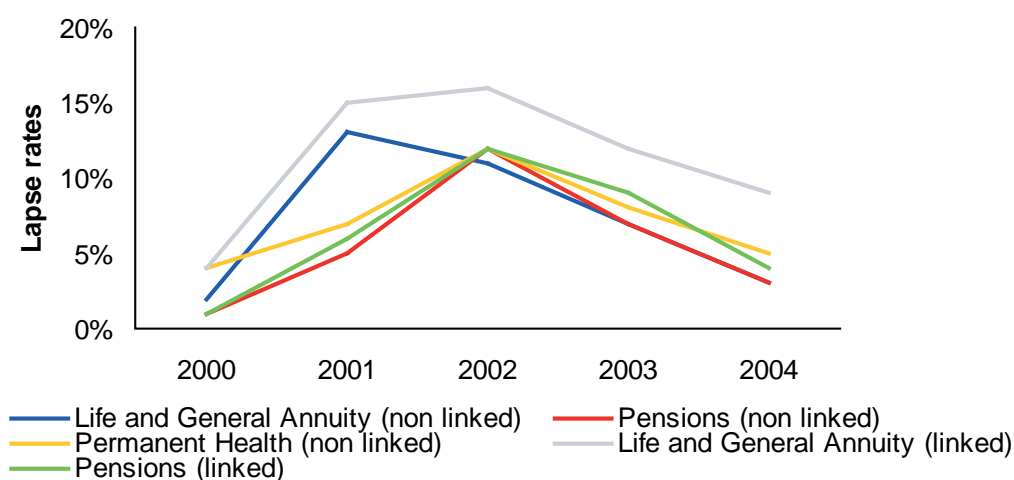
In January 2000, the Court of Appeal ruled in favour of policy-holders and was later confirmed by the House of Lords.

Equitable tried to sell its business in order to strengthen its with-profits funds but closed to new business on 8 December 2000 without any potential buyer. In February 2001, the Halifax Group acquired Equitable's operating assets, sales force and non-profit business for €1 billion.

At the beginning of 2002, the proposed Compromise Scheme was sanctioned by the High Court. The scheme offered policy-holders an increase in policy value of 2.5% for non-GAR policies and 17.5 per cent for GAR-policies in exchange for waiving their rights for further claims.

Between 2000 and 2004 Equitable Life saw an increase in lapse rates as illustrated below.

Exhibit 57: Equitable Life lapse rates 2000-2004



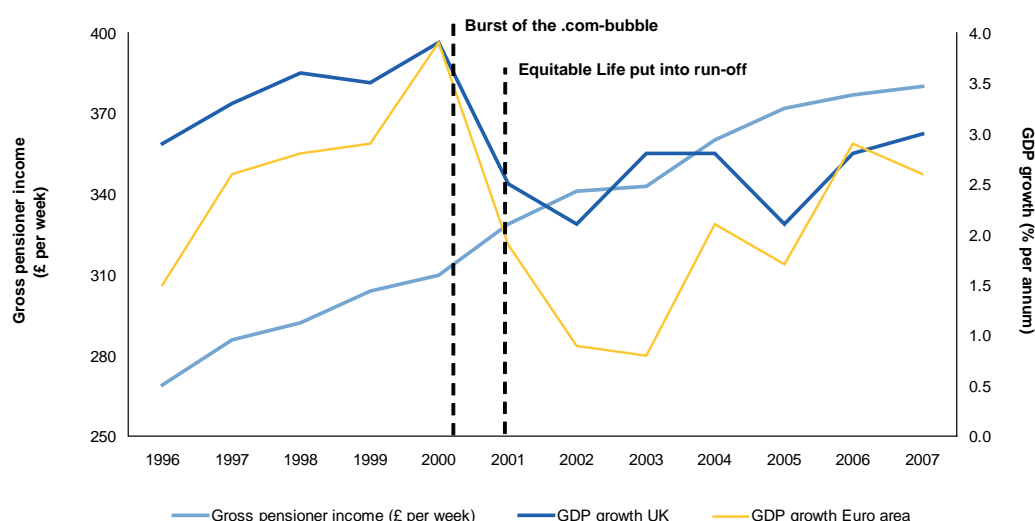
Source: Additional input to CEA comments on CEIOPS' CP49 on the Mass Lapse Risk Calibration, Position Paper ECO-SLV-09-504, CEA - Insurers of Europe, 14 October 2009

Lapse rates multiplied across all product lines between 2000 and 2004. However, with maximum lapse rates between 10 per cent and 15 per cent it would be inappropriate to talk about an "insurance run".

In 2007, £4.6 billion of non-profit pension annuities were transferred to Canada Life and £1.8 billion with-profits annuity policies were to Prudential. However, in late 2008, Equitable announced that the sales process had been put on hold, and that the run-off arrangement was being reviewed.

The amount of total losses for policy-holders is a wide area of debate. Charles Thomson, former CEO of Equitable, explained his view in a letter to the European Parliament. Mr. Thomson acknowledges losses of £4.5 billion that affect Equitable policy-holders. However, Mr. Thomson draws a more differentiated picture: £2.05 billion of losses could have been avoided if "certain actions had been taken earlier" and affect policy-holders in aggregate as owners of Equitable. The remaining £2.45 billion of losses affect policy-holders individually and represent an average decline in policy value of about 8.5 per cent.

Although these losses had negative impacts on Equitable Life's policy-holders, their effect on the real economy did not represent a systemic risk at any time.

Exhibit 58: U.K. and Euro area GDP growth rates and U.K. pensioner income

Source: U.K. National Office of Statistics, OECD

On national level, pensioner income shows continuous growth between 1996 and 2007. Even if the stagnation from 2002 to 2003 was due to the wind-up of Equitable Life, the effect would be neither significant nor prolonged. Accordingly, we would not expect to see a material effect of Equitable Life's wind-up on the national economy. However, using national GDP growth rate as an indicator, it is difficult to isolate the impact of Equitable's run-off in a period that was economically dominated by the burst of the dot-com bubble. A comparison with the GDP growth rate of the Euro area reveals that the U.K. performed considerably well. Consequently, we assume that the wind-up of Equitable Life had no to marginal impact on the national economy.

Equitable Life has been in run-off for over 9 years, an orderly run-off of its portfolio. There has been significant transfer of policies to other insurance companies and the impact on national pensioner income and GDP growth is marginal.

Sources:

1. *The Equitable Life Assurance Society*, Joint Opinion of Ian Glick QC and Richard Snowden for the Financial Services Authority, <http://www.fsa.gov.uk>
2. <http://www.equitable.co.uk>
3. Letter of Charles Thomson to Mairead McGuinness, Member of the European Parliament
4. Selected articles of *The Financial Times*

D.2. Case study: the failure of HIH Insurance in Australia

HIH was a more dramatic event, in that according to Justice Neville Owen, the failure could be attributed to mis-management, under-reserving, poor decision making and hiding, filtering or sanitising of unpleasant information.⁴¹ Two HIH executives received court sentences as a result of the failure.

In 2008, HIH was Australia's second largest general insurer, with AUD 8 billion of assets and AUD 7.1 billion of liabilities.⁴²

But a matter of a few years ago, it was a very different story. On 27 August 2001, HIH was placed into liquidation. At that time, the liquidator estimated its deficiency to be between AUD3.6 and AUD5.3 billion.⁴³

41. *The Failure of HIH Insurance*, Justice Neville Owen, National Library of Australia, ISBN 097506780X.

42. *HIH Annual Report 2000*.

43. <http://www.hih.com.au/>

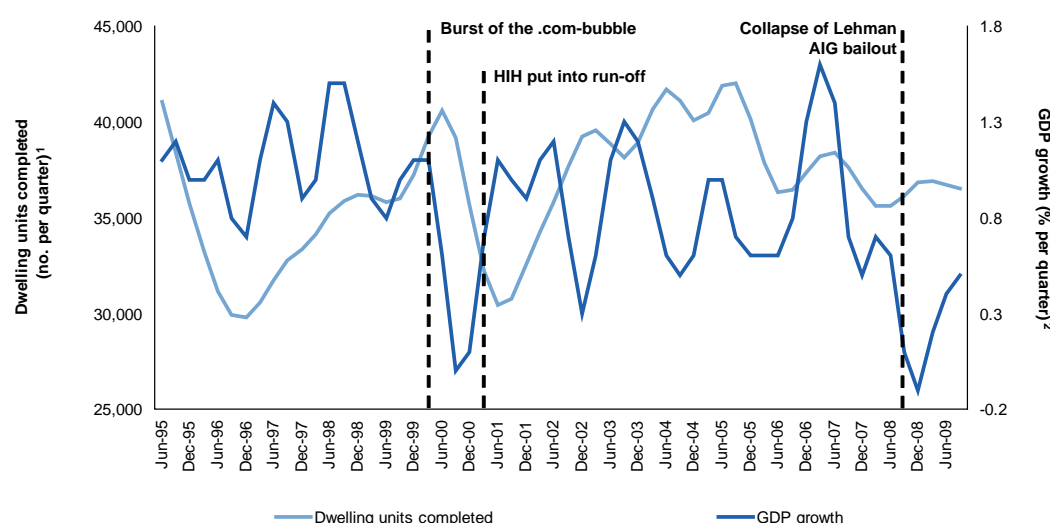
The table below shows estimated final scheme payments by HIH subsidiaries in liquidation as estimated by the scheme administrator.⁴⁴

Scheme company	Estimated final payment (in % of total liabilities) ⁵
HIH Casualty & General Insurance Ltd.	12%-35%
FAI General Insurance Company Ltd.	45%-55%
CIC Insurance Ltd.	55%-65%
FAI Traders Insurance Company Pty. Ltd.	<5%
FAI Reinsurances Pty. Ltd.	100%
FAI Insurances Ltd.	8%-30% ⁶
World Marine & General Insurance Pty. Ltd.	30%-95%
HIH Underwriting & Insurance (Australia) Pty. Ltd.	5%-25% ⁶

Even though creditors with insurance liabilities receive preferred treatment, the impact on policy-holders is significant. However, it must be noted that the case of HIH goes back to fraudulent management actions and under-reserving.⁴⁵ Accordingly, the final payments for policy-holders may not be seen as representative for insurer wind-ups but rather illustrate an outcome that must be interpreted as positive given the circumstances.

The demise of HIH was the largest corporate failure in Australia's history, with losses amounting to around 0.5 per cent of Australia's 2001 GDP.⁴⁶ However, while HIH's failure may eventually have a significant impact on individual policy-holders, it has not posed a threat to the national Australian economy and its impact was not systemic as depicted below.

Exhibit 59: National Australian economy and dwelling market



Source: Australian Bureau of Statistics

1. 7-term Henderson moving average of seasonally adjusted number of dwelling units completed during quarter

2. Chain volume measure

The above graph demonstrates that Australian GDP growth rates reached their trough in the middle of 2000 following the burst of the dot-com bubble, but then saw an upswing from mid 2000 to mid 2001. As of mid-2001 GDP growth slowed down for about one year, but this cannot

44. The figures are preliminary estimates only. Final outcomes may vary considerably from these estimates, depending on reinsurance collected, development of future claims patterns, bad debt levels, other asset recoveries, the success of litigation, nature of claims and costs incurred.

45. The upper bound applies to creditors with insurance liabilities only

46. Assuming total losses of AUD5.3 billion as given by the liquidator as the upper estimate and an Australian GDP of USD 552 billion (OECD) and a historic exchange rate as of 31 December 2001 of AU 1.995 per USD (Bloomberg).

be simply be ascribed to the HIH failure. GDP growth remained positive, and the decrease in GDP growth rate was neither more pronounced nor longer lasting than at other times.

Moreover, although HIH was one of Australia's biggest home-building market insurers, HIH's failure merely compounded the decline of an already falling market and cannot anyway be properly separated from other causes. The market recovered less than half a year after HIH failure.

Even if we assume that Australian GDP and house-building market indicators were exclusively driven by the failure of HIH at that time (for the sake of conservatism and due to the difficulty of extracting individual effects on GDP and house-building market), we can still say that HIH's failure, the largest corporate failure in Australian history, was far from systemic.

EU insurance regulation: Solvency II

European regulatory bodies have developed a framework for the prudent supervision of insurance companies⁴⁷ to upgrade the existing framework of Solvency I. Solvency II is planned to become effective national regulation at the end of 2012.

It is structured along three pillars, each pillar dedicated to particular regulatory aspects.

Pillar I defines quantitative requirements; Pillar II looks at supervisory activities and internal risk governance; and Pillar III addresses reporting and disclosure.

Exhibit 60: Pillar structure of Solvency II

Solvency II		
Pillar 1 Quantitative requirements	Pillar 2 Supervisory activities & internal risk governance	Pillar 3 Reporting and disclosure
<ul style="list-style-type: none"> Capital requirements reflect the company's risk profile based on <ul style="list-style-type: none"> an economic balance sheet view a comprehensive set of risks considered Minimum capital requirements (MCR) determined in formula-based approach Solvency capital requirements (SCR) cover a one-year value loss at 99.5% confidence level SCR can be determined using the standard approach or with internal models 	<ul style="list-style-type: none"> Identification of risks not captured under Pillar 1 Group supervision by College of Supervisors Additional capital charges can be imposed in individual cases Supervisory review process and ladder of intervention Harmonization across European supervisory authorities Own Risk and Solvency Assessment (ORSA) as key element – should cover risk identification, measurement, management and monitoring 	<ul style="list-style-type: none"> Improve risk disclosure to the public and the confidential disclosure to supervisory authorities Transparency by allowing market participants to assess key information on the risk profile and risk management of an insurance undertaking Objective of market-consistent and Europe-wide uniform disclosure currently in discussion

Sources: Directive 2009/138/EC of the European Parliament and the Council on the taking-up and pursuit of the business of insurance and reinsurance (Solvency II) (Recast); 25 November 2009

The requirements under these pillars are principle-based thereby reducing the threat of blind spots and ensuring that the framework is “fit for purpose”, enforce stronger internal risk culture and enable regulators to respond in a flexible manner to changing circumstances.

47. Directive 2009/138/EC of the European Parliament and of the Council of on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (recast), 25 November 2009.

Pillar I – Quantitative requirements

- Facilitates the reflection of the risk profile and specific business model of each insurance company, its nature and complexity by applying a principle-based approach to assess risks and quantitative requirements. This especially holds if an internal model is applied.
- Applies a total balance sheet view and thus allows an assessment of risks across all assets and liabilities.
- Diversification and concentration effects at a combined group level, in addition to an assessment at solo entity level, are taken into account.
- Application of one consistent risk metric: 99.5 per cent one-year VAR for the calculation of Solvency Capital Requirements.
- Applies an economic view of the balance sheet – therewith allowing a market-consistent valuation of all assets and liabilities.
- Implies capital requirements through the application of shocks to both, assets and liabilities. These capital requirements and shocks are adjusted for exceptional falls in financial markets in order to mitigate pro-cyclical effects.

Pillar II – Supervisory activities and internal risk governance

- Encourages companies to implement comprehensive and integrated risk governance rules that clearly articulate their risk tolerance.
- Establishes focus on undertaking specific risk governance processes and thus increasing risk awareness throughout the insurance companies. This focus is aided by establishing an internal model that is used for regulatory and business steering purposes (ORSA process).
- Aims to ensure insurers' ability to continue to operate after an extremely adverse event emanating from insurance or financial markets.
- Introduces a group supervision regime to reduce regulatory blind spots, to harmonise the supervision of insurance groups in the EU and to mitigate regulatory arbitrage at solo level.
- Group supervision will be led by a group supervisor in close cooperation with supervisory colleges.

Pillar III – Reporting and Disclosure

- Promotes market discipline through a broad range of disclosure requirements.
- Increases transparency and thus allows regulators to function more effectively.

The improvements that will be accomplished through Solvency II have been anticipated by the industry. Large international insurers have pro-actively upgraded their risk management framework to Solvency II before the crisis. How they emerged from the crisis may be seen as the first proof of concept for Solvency II.

U.S. insurance regulation with focus on RBC

The U.S. RBC standards are one aspect of the overall regulatory framework in the U.S.. In addition to these capital requirements, there are requirements for reserve analysis, detailed financial reporting, cash flow testing, liquidity testing, security lending and derivatives use.

The U.S. RBC standards and the overall capital regulatory framework are State-based. However, in practice, the solvency and capital standards, in addition to reserving standards, are generally administered and executed under one common framework, thus avoiding any fragmented approach. The common framework is developed by the National Association of Insurance Commissioners, the umbrella organisation for the State insurance regulators.

RBC covers the major risks (credit, market, operational and insurance) of an insurance company. RBC is based on a combination of factor-based and principle-based approaches, where a company's experience is accounted for. The RBC standards are comprehensive and robust. They are also dynamic, being regularly enhanced to address the ever-changing insurance environment.

The factor-based and principle-based approaches capture both asset and liability risks from a solvency perspective. Specific RBC models exist for life, health and non-life insurers. Risks within or between risk classes are aggregated into one capital number by assuming correlations between risks in a simple covariance approach. Covariance offsets do recognise that the combined effect of the risks is not equal to their sum. In addition, a minimum capital requirement exists for some products, as a floor for the capital requirement that has been calculated in the above way. This is derived from an applied standard scenario.

Total Adjusted Capital (TAC)—available capital in the RBC formula—includes an asset valuation reserve (AVR) adjustment that reduces the cyclicalities of surplus, with profits only increasing AVRs up to a maximum level determined by a factor-based formula, while losses decrease the reserve. The impact of gains and losses on the surplus of the company is thereby reduced.

RBC standards apply to regulated insurance entities, and not to holding companies. The capital assessment is on a legal entity level, and not a group level. This substantially reduces the potential of a 'masking' of a capital problem at a particular legal entity.

There are extensive requirements for regulatory and public disclosure set by the Securities and Exchange Commission (SEC) for public companies, and for companies that issue variable products. The National Association of Insurance Commissioners' (NAIC) Blanks and Annual Statement Instructions, which is applicable to all companies, also set out similar requirements.

In addition, each State has a guarantee fund that steps in to protect life and health policyholders when an insurance company becomes insolvent. Insurance companies licensed to sell life or health coverage in a State must be a member of that State's guarantee association. When an insurance company becomes insolvent, the guarantee association provides coverage up to the limits specified by State law. The necessary funding of such coverage is calculated by

retrospective assessments of the insurance companies writing business in the States of the policyholders affected by the insolvency. These assessments are made when excess money is required to fulfil the obligations of the Guarantee Association, when assets prove to be inadequate to cover those obligations.

Swiss insurance regulation: the Swiss Solvency Test (SST)

The SST project was initiated in 2003 with the objective of defining the principles for the determination of solvency requirements. These principles were defined in cooperation with the insurance industry, consulting companies and academia.

With the introduction of the new Insurance Supervision Act at the beginning of 2006, the SST became mandatory for “large” P&C companies and life companies. In 2008, the SST became mandatory for all insurance companies. However, insurance companies do not have to meet the solvency capital requirements according to the SST before 1 January 2011.

The SST introduces an economic, principle-based approach to Swiss insurance regulation with a scope on legal entity and group/conglomerate level and is thus a forerunner of the European Solvency II regime. As under Solvency II, the principle-based approach reduces the threat of blind spots and ensures that the framework is “fit for purpose”, enforces stronger internal risk culture and enables regulators to respond in a flexible manner to changing circumstances.

Another important aspect of the SST is its recognition of the economic principle of diversification, taking legal structures and internal contracts into account.

The SST is based on the following principles:

1. All assets and liabilities are valued market consistently.
2. Risks considered are market, credit and insurance risks.
3. Risk-bearing capital is defined as the difference of the market consistent value of assets less the market consistent value of liabilities, plus the market value margin.
4. Target capital is defined as the sum of the Expected Shortfall of change of risk-bearing capital within one year at the 99 per cent confidence level plus the market value margin.
5. The market value margin is approximated by the cost of the present value of future required regulatory capital for the run-off of the portfolio of assets and liabilities.
6. Under the SST, an insurer’s capital adequacy is defined if its target capital is less than its risk bearing capital.
7. The scope of the SST is legal entity and group/conglomerate level domiciled in Switzerland.
8. Scenarios defined by the regulator as well as company specific scenarios have to be evaluated and, if relevant, aggregated within the target capital calculation.
9. All relevant probabilistic States have to be modeled probabilistically.
10. Partial and full internal models can and should be used. If the SST standard model is not applicable, then a partial or full internal model has to be used.
11. The internal model has to be integrated into the core processes within the company.

12. SST Report to supervisor such that a knowledgeable third party can understand the results.
13. Public disclosure of methodology of internal model such that a knowledgeable third party can get a reasonably good impression on methodology and design decisions.
14. Senior Management is responsible for the adherence to principles.

Insurers have the right to apply for the use of a (partial) internal model, but internal models are required for reinsurers as well as groups and mandated for certain life insurance and other complex businesses.

Solvency II and Basel II: a comparison of critical aspects

Basel II and Solvency II are both structured along three pillars, each pillar dedicated to different regulatory aspects. Pillar I defines quantitative requirements; Pillar II looks at supervisory activities and internal risk governance; and Pillar III addresses reporting and disclosure.

While Solvency II follows a holistic principle-based approach, Basel II represents a rule-based framework strongly tailored to the market situation at the time when it was developed. Consequently, Basel II has a more focused risk perspective, essentially constituting a credit and operational risk framework. In particular, liquidity and ALM risks are not captured explicitly, even though it represents a significant risk for banks.

In contrast to Basel II, Solvency II allows for full and partial internal models to be applied by insurance companies for determining the Solvency Capital Requirement (SCR). Under Basel II, banks are constrained to determine input parameters with regards to credit risk as the capital requirement is determined by a formulaic approach. Solvency II as a principle-based framework is much more flexible here and allows reacting more quickly to changing market environments.

Under Solvency II, the affect of shocks is assessed on both assets and liabilities to account for their net effect. This total balance sheet view appropriately includes ALM risk, which is not captured in a comparable manner under Basel II.

The calibration of Basel II models has attracted further criticism during recent discussions. Basel II models are either calibrated to a short time series of historical data (as with trading-VaR calculation), or to a full economic cycle (as with PD and LGD models) where the definition of the economic cycle lies with the company and relies on its data. As a result, in crises, too little capital has been set aside for market risk; the models were calibrated to data from the previous bull market.

Moreover, this calibration approach makes capital requirements sensitive to the economic cycle, increasing capital requirements during a downturn. In combination with decreasing available financial resources due to market-consistent valuation of assets, this makes Basel II procyclical, a feature which has also provoked much recent criticism.

In comparison, Solvency II models are calibrated to long-term observations of historical events, such as the Spanish Flu or the World Economic Crisis. Additionally, equity shocks under Solvency II consider the current level of equity prices. Considering both long-term history and the present position in the economic cycle reduce the volatility of capital requirements and reduce cyclicity.

Insurers are required to hold technical reserves for all expected future losses (claims) arising from “best estimate liabilities”—the probability-weighted average of future cash-flows, discounted using the relevant risk-free interest rate term structure. By contrast, banks regard a large part of their expected losses as short-term costs that should be covered by margins and fees and provision for expected credit impairments only. Consequently, banks’ bad debt provisions are strongly

pro-cyclical, and likely to be too small to provide the required liquidity at the start of a crisis. This effect is less likely to arise for insurers following the Solvency II approach.

References

- Anatomy of the Credit Crisis—An insurance reader from The Geneva Association*, edited by Patrick M. Liedtke, Geneva Report No. 3, The Geneva Association (2010)
- Ausführungsverordnung zum Versicherungsaufsichtsgesetz* (Implementing Measure for the Law of Insurance Regulation), Swiss Law
- Directive 2009/138/EC of the European Parliament and of the Council of the taking up and pursuit of the business of Insurance and Reinsurance (Solvency II) (2009)
- Enhancing Group Supervision under Solvency II, HM Treasury (2008)
- Exports and Financial Shocks*, Mary Amity and David E Weinstein (2009)
- Financial Stability Review, Fourth Quarter 2009*, European Central Bank (2009)
- Global Reinsurance Market Report*, International Association of Insurance Supervisors (2009)
- Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instrument: Initial Considerations – Background Paper*, Financial Stability Board (2009)
- Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instrument: Initial Considerations*, Financial Stability Board (2009)
- Insurance Risk Management Response to the Financial Crisis*, CRO Forum (2009)
- Insurance View – Regulatory Consequences of Financial Crisis*, Pan European Insurance Forum (2009)
- Lessons learned from the crisis (Solvency II and beyond)*, European Commission (2009)
- Liquidity Risk Management – Best Risk Management Practices*, CRO Forum (2008)
- Memo on European Systemic Risk Board*, Europa (2009)
- PEIF position paper on the European Commission's proposals to reform EU supervision*, Pan European Insurance Forum
- Perspectives on Systemic Risk*, J David Cummins (2009)
- Principle-based solvency: A comparison between Solvency II and the Swiss Solvency Test*, Michael Dacorogna and Philipp Keller (SCOR)
- “Reinsurance – a systemic risk?”, Swiss Re *sigma* (2003)
- Reinsurance and International Financial Markets*, Group of Thirty (2006)
- Report on Special Purpose Entities*, The Joint Forum (2009)
- Review of the Differentiated Nature and Scope of Financial Regulation*, Joint Forum (2010)
- Solvency II – Key Aspects and Thoughts*, Patrick M. Liedtke, The Geneva Association (2009)

- Solvency II Directive*, European Commission (2009)
- Statement to the United States Senate Committee on Banking, Housing, and Urban Affairs*, Scott Polakoff (Office of Thrift Supervision) (2009)
- Systemic Risk and the Insurance Sector*, International Association of Insurance Supervisors (2009)
- Testimony to the Subcommittee on Capital Markets, Insurance and Government Sponsored Enterprises Committee on Financial Services of the United States House of Representatives*, Joel Ario (Pennsylvania State Department) (2009)
- Testimony to the United States Senate Committee on Banking, Housing and Urban Affairs*, Eirc Dinallo (New York State Insurance Department) (2009)
- The Economic Crisis and Lessons from (and for) US Insurance Regulation*, National Association of Insurance Companies (2009)
- The Economic Value of Insurance*, Association of British Insurers (2005)
- The Equitable Life Assurance Society, Joint Opinion of Ian Glick QC and Richard Snowden of the Financial Services Authority*, Ian Glick and Richard Snowden
- The Expectation Game*, Joachim Oechslin *et al.* (2005)
- The Failure of HIH Insurance*, Justice Neville Owen, National Library of Australia
- The Financial Crisis and Information Gaps – Report to the G-20 Finance Ministers and Central Bank Governors*, Prepared by the IMF Staff and the FSB Secretariat (2009)
- The Financial Crisis, Systemic Risk, and the Future of Insurance Regulation*, Scott E. Harrington (NAMIC) (2009)
- The Social Value of Insurance*, Association of British Insurers (2005)
- What I learned at the AIG meltdown: state insurance regulation was not the problem*, Eric Dinallo (2010)
- What's Insurance to a Modern Economy?*, Patrick M. Liedtke, in *The Geneva Papers on Risk and Insurance—Issues and Practice*, Vol. 32 No. 2 (April 2007)
- World Insurance*, sigma Series, Swiss Re, (2005/6/7/8/9)
- Written comments on issues on the agenda of the hearing at the Technical Committee meeting* (Rio De Janeiro), IAIS Technical Committee (2009)

Glossary

ABCP	Asset-Backed Commercial Paper
ABS	Asset-Backed Security
ALM	Asset Liability Management
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CAR	Current Annuity Rate
CDS	Credit-Default Swap
CDO	Collateralised Debt Obligation
CEIOPS	Committee of European Insurance and Occupational Pensions Supervisors
CLO	Collateralised Loan Obligation
CMBS	Commercial Mortgage-Backed Securities
DTCC	Depository Trust & Clearing Corporation
FG	Financial Guarantee
FI	Financial Institution
FSA	Financial Services Authority
FSB	Financial Stability Board (Switzerland)
FX	Foreign Exchange
GAR	Guaranteed Annuity Rate
IAIS	International Association of Insurance Supervisors
IFRS	International Financial Reporting Standard(s)
ILS	Insurance Linked Securities
ILW	Industry Loss Warranty
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
MBS	Mortgage-Backed Security
NAIC	National Association of Insurance Commissioners
OECD	Organisation for Economic Co-operation and Development
ORSA	Own Risk and Solvency Assessment
OTS	Office of Thrift Supervision
RBC	Risk-Based Capital
SEC	Securities and Exchange Commission
SME	Small and Medium Enterprises
SST	Swiss Solvency Test
TAC	Total Adjusted Capital
TARP	Troubled Assets Relief Program
VA	Variable Annuities

The Geneva Association

The Geneva Association:

- ***provides a platform for insurance CEOs:***

The Geneva Association acts as a forum for its members, providing a worldwide unique platform for the top insurance CEOs. It organises the framework for its members to exchange ideas and discuss key strategic issues, especially at the General Assembly where once per year over 50 of the top insurance CEOs gather.

- ***conducts research:***

The Geneva Association investigates the growing importance of worldwide insurance activities in all sectors of the economy. It tries to identify fundamental trends and strategic issues where insurance plays a substantial role or which influence the insurance sector. In parallel, The Geneva Association develops and encourages various initiatives concerning the evolution- in economic and cultural terms-of risk management and the notion of uncertainty in the modern economy.

- ***organises expert networks:***

The Geneva Association organises global networks for experts in various fields linked to insurance: finance, regulation, risk management, pension provision, health, etc. It also manages several extra-company networks of specialists from its members' companies: chief financial officers, chief risk officers, chief investment officers, chief communication officers, the Amsterdam Circle of Chief Economists (ACCE), as well as the Liability Regimes Planning Board with leading underwriters and claims-handlers and the *PROGRES*. *Net* initiative for chief regulation officers and top regulatory experts in insurance.

- ***maintains dialogue with international institutions:***

The Geneva Association uses its special risk and insurance expertise and in-depth knowledge to raise subjects of relevance to the insurance sector in global forums. The Geneva Association is the leading interface of the insurance industry with relevant international institutions and advocates the role of insurance and its relevance to the modern economy.

- ***publishes leading insurance journals, newsletters, books and monographs:***

- **journals:** *The Geneva Papers on Risk and Insurance Issues and Practice* (4 issues per year) and *The Geneva Risk and Insurance Review* (2 issues per year);
- **special reports:** Geneva Association reports tackles issues of strategic importance to the insurance industry that warrant special attention and particular analysis;
- **The Geneva Association newsletters**, published usually twice a year, on Insurance and Finance, Risk Management, PROGRES (regulation and supervision), Insurance Economics, Four Pillars (life insurance, pension and retirement), Health and Ageing, General Information and World Fire Statistics;
- **working paper series (Etudes & Dossiers):** conference proceedings, special reports, etc;
- **books and monographs.**

- ***organises conferences and seminars:***

Throughout the year, The Geneva Association organises or supports about 20 conferences and seminars on topics which are of high relevance to the insurance industry, gathering experts from all sectors and backgrounds to combine their knowledge. The events are topics- and issues-oriented and aim at developing new knowledge and insights as well as providing platforms for expert opinion interchange.

■ *stimulates and sponsors research in insurance and risk management:*

The Geneva Association has several ways of stimulating and sponsoring research work in risk management and insurance-related fields through the availability of research grants, scholarships, prizes and support for publishing.

The Geneva Association membership is limited to a maximum of 80 people, the CEOs of the most prominent insurance companies in the world. It is a non-profit organisation based in Geneva, Switzerland.

Publications of The Geneva Association

*For a complete list of our publications and how to get them,
consult our website at www.genevaassociation.org*

The Geneva Reports—Risk and Insurance Research

- No. 3: [*Anatomy of the credit crisis—An insurance reader from The Geneva Association*](#), edited by Patrick M. Liedtke
- No. 2: [*The insurance industry and climate change—Contribution to the global debate*](#), by The Geneva Association, July 2009
- No. 1: [*Regulation and intervention in the insurance industry—fundamental issues*](#), by E. Baltensperger, P. Buomberger, A.A. Iuppa, B. Keller and A. Wicki, February 2008

Newsletters (also available as e-newsletters)

- **Insurance and Finance** deals with research activities in the fields of finance where they are relevant to the insurance and risk management sector.
 - [*Special Issue on G-20 London Summit*](#), April 2009
- **Insurance and Finance special contributions:**
 - **SC8** [*Parallax: Striving for a More Resilient International Financial Architecture*](#), by Patrick M. Liedtke
 - **SC7** [*The Geneva Association Letter to the Finance Ministers and Central Bank Governors of the G-20*](#), 5 November 2009
 - **SC6** [*Everything you wanted to know about the crisis ...but were afraid to ask*](#), by Denis Kessler
 - **SC5** [*G20 Falls Short on Insurance*](#), by Patrick M. Liedtke, published in the *Financial Times*, 7 April 2009
 - **SC4** [*Insurance Comments to the G-20 London Summit Leaders' Statement of 2 April 2009*](#), by Patrick M. Liedtke, 6 April 2009
 - **SC3** [*Lessons from the Credit Crisis: An Investment Practitioner's Point of View*](#), by Guido Fürer and Jérôme Haegeli, 20 February 2009
 - **SC2** [*The Credit Crisis and the Insurance Industry—10 Frequently Asked Questions*](#), November 2008
 - **SC1** [*Credit Crisis and Insurance—A Comment on the Role of the Industry*](#), by Patrick M. Liedtke, November 2008
- **PROGRES** contributes to the exchange of information on studies and initiatives aimed at better understanding the challenges in the fields of insurance regulation, supervision as well as other legal aspects.
- **Risk Management** summarises The Geneva Association's initiatives in the field of risk management and is open to contributions from any institution or company wishing to exchange information.
- **Insurance Economics** which serves as an information and liaison bulletin to promote contacts between economists at universities and in insurance and financial services companies with an interest in risk and insurance economics.
- **Four Pillars** provides information on research and publications in the field of social security, insurance, savings and employment.
- **Health and Ageing** brings together facts and figures linked to health issues for people aged 50-80 and productive ageing, to try to find solutions for the future financing of health.
- **World Fire Statistics.**
- **General Information.**

Journals

(published by Palgrave Macmillan for The Geneva Association)

- **[*The Geneva Papers on Risk and Insurance—Issues and Practice*](#)**
This prestigious journal, published quarterly, leads its field, publishing papers which both improve the scientific knowledge of the insurance industry and stimulate constructive dialogue between the industry and its economic and social partners.
- **[*The Geneva Risk and Insurance Review*](#)** is an international journal published in annual volumes of two issues. Its purpose is to support and encourage research in the economics of risk, uncertainty, insurance and related institutions by providing a forum for the scholarly exchange of findings and opinions.

Working Papers “Etudes et Dossiers”

These working documents present intermediary or final results of conference proceedings, special reports and research done by The Geneva Association and its partners. Among the last issues:

- [*6th Geneva Association Health and Ageing Conference*](#), No. 357, January 2010
- [*M.O.R.E. 23/+st CC+I—Seminar of The Geneva Association and XXXII Hemispheric Insurance Conference FIDES 2009 \(Selection\)*](#), No. 356, January 2010
- [*9th CEO Insurance Summit in Asia*](#), No. 355, November 2009
- *7th ART of CROs, 2009*, No. 354, October 2009
- [*4th Chief Risk Officer Assembly, “Risk Management as Business Enabler”*](#), No. 353, October 2009
- [*The 25th PROGRES International Seminar “Towards Efficient Regulatory Regimes: Balancing Regulations and Market Forces”*](#), No. 352, August 2009
- [*The AXA MPS Annual Forum 2008 – 11th Meeting of The Geneva Association’s Amsterdam Circle of Chief Economists – Special Geneva Association Documents on the Credit Crisis*](#), No. 351, March 2009
- [*Istanbul International Insurance Conference & 5th International Liability Regimes Conference*](#), No. 349, January 2009
- [*The 24th PROGRES International Seminar “Towards a Global Architecture for Insurance Regulations and Supervision”*](#), No. 344, April 2008
- [*8th CEO Insurance Summit in Asia “Achieving Regional Synergies & Partnerships to Boost Competitiveness”*](#), No. 343, April 2008
- [*KIDI International Conference 2007 “New Risk Management Environment and Strategy” & Montepaschi Vita Annual Forum 2007 “Insurance and Banks: Complementarity and Competition”*](#), No. 342, March 2008
- [*Barriers to Global Insurance Business Operations: The Situation in Brazil, China, India, Mexico and Russia*](#), No. 339, January 2008

The financial crisis has exposed flaws in the supervisory system and engendered calls to re-regulate the financial sector. Among the many proposals under consideration or implementation is the idea of applying more stringent supervision and, perhaps, more onerous regulations to “systemically relevant institutions”. This proposal is usually conceived as applying to banks. However, international institutions, such as the Financial Stability Board (FSB), have recently suggested that a similar approach be applied to insurers. The consequence of getting these systemic risk reforms wrong would not only be severely damaging to the insurance industry, but to the economy as well.

This report examines the performance of the insurance industry during the crisis, assesses the application of FSB’s proposal on systemic risk to insurance and develops first recommendations to address current regulatory gaps and strengthen industry risk management practices.

This report does not intend to dispute the proposed criteria for systemic risk. On the contrary, these criteria are used to explain why insurance activities present far less systemic risk than banking activities. And, more important for the regulatory purposes, they show that systemic risk accrues not to firms as such but to the activities of those firms.