

Annex 3

Sources of systemic risks

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Summary

1. Insurance, when properly functioning, contributes to financial stability. Insurers can be a valuable provider of stable long-term finance and services which benefit the real economy by allowing the transfer and efficient management of risk. However, under certain circumstances the insurance sector may also be a potential source of systemic risk.
2. The impact of disruptions in the insurance sector may take two main routes: first, where insurers cause a direct impact on the real economy, and second, where insurers cause an impact on the rest of the financial system. The more the distress of insurance and the distress of the rest of the financial markets happen simultaneously, the likelier it is that the damage to the real economy will be substantial. Both the risks arising in a “gone concern” situation (i.e. failure), and those in a “going concern” (i.e. impacts via the behaviour of insurers whilst in business) are considered.
3. Four key scenarios are identified as potential sources of systemic risk.
 - First, involvement in non-traditional, non-insurance (NTNI) activities, such as certain guaranteed returns and the writing of speculative derivatives, exposes insurers to financial risks. This involves maturity and liquidity transformation as well as leverage. Financial risks tend to be highly correlated in a crisis, so that (1) NTNI activities incur larger than expected losses across insurers and (2) NTNI activities incur losses at the same time as distress in financial markets. Furthermore, NTNI activities increase the probability of pro-cyclical behaviour by insurers as they increase insurers’ exposure both to financial market conditions and to liquidity risk. In addition, most NTNI activities also have a greater impact on the economy because of their interconnectedness with the rest of the financial system.
 - Second, the potential for pro-cyclical behaviour which can amplify financial market or real economy cycles, booms or stresses, taking the form of:
 - pro-cyclicality in asset allocation in up- and downturns, particularly in downturns, driven by various factors such as the use of benchmarks or the common reassessment of risk appetite (portfolio reallocation);
 - pro-cyclicality in some types of insurance provision, in particular where the risks being underwritten move with financial market conditions or the real economy. One example is trade credit insurance.
 - Third, as noted repeatedly by EIOPA, the ESRB and market analysts, scenarios involving multiple failures may be the result of common vulnerabilities to asset stresses and simultaneous prolonged low interest rates (i.e. the risk of a double hit). The EIOPA 2014 stress test shows that EU life insurers are vulnerable to this risk due to rigid guaranteed returns and maturity mismatches. Multiple failures of life insurers may impose losses on households and may result in asset fire sales by insurers, disruption to securities lending and derivatives markets, or even government bailouts. Preventive measures have been taken to mitigate the risks arising from prolonged low interest rates and the effects of these still need to be monitored.
 - Fourth, aggressive pricing and uncontrolled growth are factors that might endanger the continuity of insurance coverage provision by driving competitors out of business and diminishing the natural substitutability across the different providers of insurance coverage. Aggressive pricing might lead to under-reserving building up unnoticed over time. When a failure finally occurs, there are potentially no competitors to ensure the continuity of insurance coverage provision (as in the case of HIH Australia).



4. Whilst not currently identified as severe a risk as those discussed above, a material disruption to particular classes of commercial insurance could have a significant impact on real economic activity. Such classes include marine, aviation and transport (MAT) insurance, general and specific liability insurance and, in some cases, property insurance. Loss of cover in these areas is particularly critical where lenders require insurance e.g. commercial property, and for some economic activities, such as aviation or construction, insurance is mandatory – without it such activities might have to cease altogether. There are some specific markets where concentration is high, although the speed at which new capital can enter the market (contestability) may additionally mitigate the risks of a lack of substitutability.
5. In addition, there are several empirical cases where inappropriate management and/or ineffective micro-prudential supervision have led to the building up of risks on the asset side (asset concentrations) or the liability side (accumulation risks). However, such issues seem to have led at worst to idiosyncratic defaults (Executive Life, Chester Street, Western Pacific, Mannheimer Leben), without causing major concern from a macro-prudential perspective.
6. Recovery and resolution schemes help mitigate the impacts of failures, and insurance guarantee schemes provide compensation to policyholders, thus contributing to stability. However, due to limitations in coverage, nature and size, the current national schemes might be inadequate in the event of multiple failures or the failure of a large life insurer. This may undermine confidence in these schemes and impose costs on policyholders and society in general through bailouts.
7. Further, this paper does not assess the ability of existing and forthcoming micro-prudential supervisory instruments to tackle the risks identified here. This assessment will be undertaken as part of the Group's work on macro-prudential policies and instruments that deal with such risks.



The table 1 below summarises the scenarios discussed above.

Scenario	Cause of disruption	Vulnerabilities/factors increasing scale of disruption	Impacts on system and real economy
NTNI	Financial market downturn	Correlated and larger-than-expected losses during financial market crises Liquidity pressures	Liquidation of assets to cover losses ("fire sales") Losses potentially affecting policyholder claims Losses spread to the financial markets due to failure to service liabilities from credit, securities lending or derivatives
Pro-cyclicality: amplifying upturns	Price rises in assets Low volatility	Search for yield likely to be exacerbated by the pro-cyclical writing of some guarantees Common behaviour driven by common assets and liabilities Use of asset managers, benchmarks and mechanical allocation rules Potential regulatory and valuation features	Mispricing of risk Amplification of bubbles/stresses Amplification of credit cycle Others' balance sheets Collateral values and calls Uncertainty Wealth effects Firm funding costs
Pro-cyclicality: amplifying downturns	Asset price falls Safe asset price rises Volatility Liquidity pressures Policyholder Collateral Intragroup	Massive and lasting drop in asset prices: sovereign, stock and bond markets impacted Use of asset managers, benchmarks and mechanical allocation rules Common behaviour driven by common assets and liabilities Balance sheet impacts of price falls can materially jeopardise solvency and capital ratios Liquidity and asset pressure correlated	Amplification of flight to quality, potential for feedback
Pro-cyclicality insurance provision	Changes of prices and quantities of insurance provision	Correlation between risks being underwritten and financial and business cycle Level of competition in insurance segment	Amplification of financial and business cycles
Double hit	Material drop in asset prices and prolonged low interest rates	Asset allocation in risky investments Sensitivity to low interest rates Pace of failure/distress faster with liquidity pressure and NTNI Impacts may be mitigated by preventative measures	Delay or insufficient payout of claims Losses imposed on households Loss of confidence and possible bailouts Liquidation of risky assets, driving their prices down further Counterparty losses Disruption to securities lending and derivatives
Lack of sub-stitutability	Continuous underpricing unnoticed in micro-prudential supervision	Lack of transparency of reserving assumptions, making supervisory examination difficult	Peer insurers driven out of business Promised coverage cannot be provided Disruption to the real economy



1. Introduction

1.1. Introduction and context

8. This note sets out what features of insurance can be considered sources of systemic risks, what scenarios of material disruption could develop, and what impact these might have on the real economy and financial system. The ESRB regulation defines “systemic risk” as the risk of disruption in the financial system with the potential to have serious negative consequences for the internal market and the real economy. In this analysis the IEG interprets the definition of systemic risk broadly, considering how insurance failure or distress could prevent IUs from playing a beneficial role in the real economy and financial stability. Potential material, the negative impact of the behaviour or the failure of insurers on the real economy, including on non-financial sectors (such as households) is considered to be a systemic risk, even when other parts of the financial system are not affected.
9. The broad interpretation of systemic risk in this chapter is relevant for both life and non-life insurance. Even under a narrower definition of systemic risk, life insurers may pose systemic risks through their possible pro-cyclical investment behaviour or when they undertake non-traditional non-insurance activities which pose banking-like risks. Under a broader definition, systemic risk could arise via the potential for government bailouts of failing life insurers, losses in consumer confidence, and when material detriment is imposed on households (for example should substantial uncompensated loss of savings and payouts occur). Non-life insurers could also pose systemic risks under this broad definition, should there be potential for the material disruption of their provision of the insurance needed to support economic activity/activities which are significant to the functioning of the real economy.
10. It is also worth mentioning that the remit of our work is different to that of the IAIS. It is important to clarify that the analysis below does not overlap with that of the IAIS as the IEG aims to look at the insurance sector from a different angle.
 - First, the IAIS work deals with Global Systemically Important Insurers (G-SIIs) and the specific policies for those insurers. It has developed a methodology to assess and identify G-SIIs as well as a range of policy measures to be applied to them. We specifically look at systemic risks propagating from and affecting the EU insurance sector and do not focus on individual insurers or seek to identify G-SIIs.
 - Second, our analysis looks at both the impact of failures in the insurance sector (gone-concern impacts) and the impact of insurers’ behaviour whilst “alive” such as pro-cyclicality (going-concern impacts).
 - Third, the IAIS analysis is undertaken in a global context whereas we focus here on the EU insurance sector, although we draw on global evidence where it is relevant to our analysis.
11. As background, the note starts with a review of the literature, from academics, regulatory institutions and industry, on the systemic relevance of the insurance sector, as well as with a review of cases of failures of insurers in recent decades (Section 2). The next three sections attempt to answer the following three questions respectively:

Section 3 – What factors can lead to the material disruption of insurance activities?



Section 4 – What is the potential impact of such disruptions and behaviours on the financial system and the real economy?

Section 5 – What mitigating features can help reduce the size of such disruptions/behaviours on the financial system and the real economy?

1.2. Definition of systemic risk

12. The ESRB regulation defines “systemic risk” as a risk of disruption in the financial system with the potential to have serious negative consequences for the internal market and the real economy. The definitions proposed by the FSB and adopted by the IAIS are materially based on the same concept.
13. The ESRB regulation sees insurers as part of the financial system. Thus, there are two channels through which the above definition can apply for insurers: (a) insurance distress affecting the real economy directly (b) insurance distress affecting the rest of the financial system, in turn affecting the real economy.
14. The notion of “serious” negative consequences implies that the real economy is in a position to absorb shocks to some extent. This is consistent with the dynamic equilibrium view of the economic system.
15. The implication for financial stability is that (a) the more that shocks impact the real economy simultaneously and (b) the larger they are, the likelier it is for it to suffer serious damage. The second aspect reflects the issue of TBTF, which is not covered by the IEG. Thus, for the purpose of this analysis, the simultaneity of occurrence of shocks in insurance is regarded as one of the core contributors to systemic risk.

Notion of “*negative consequences*”

16. The notion of “negative consequences” is often understood as financial losses. For the insurance analysis the IEG interprets “negative consequences” more broadly than this, i.e. to include non-monetary damage such as the loss of utility. This can arise, for example, from an inability to obtain insurance coverage for certain risks. Generally, the IUs play a beneficial role for the real economy and financial stability. Thus, any impairment of this role has negative consequences for the real economy. Here too, we note that the loss of insurance coverage is, to some extent, a part of the regular functioning of the economy.

Notion of “*disruption*”

17. The notion of disruption is usually understood as the default or distress of one or more companies. It has been argued that even without being in default, insurers can – akin to most other economic entities – act in a pro-cyclical manner, thus contributing towards either economic downturn or exuberance. This can be either through pro-cyclical investment or via the provision of coverage for certain risks.

2. Literature review and cases of failure of insurers

18. Several studies have looked at systemic risk posed by, and faced by, the insurance sector. Most of the studies are rather new, and can be broadly classified as academic, policy, or industry-sponsored. A brief review of the literature may be found in Annex 2.



19. Some authors have identified non-core activities and size as the most likely causes of some insurers becoming systemically important to the rest of the financial sector. Eling and Pankoke (2012) provide an overview of the literature on systemic risk in insurance. They conclude that although insurance companies are less prone to, and less vulnerable to, systemic risk than banks, certain non-traditional activities may entail some risk, mostly due to the high leverage and implied guarantees associated with them. One example is the case of American International Group (AIG), one of the major insurers, which failed during the last financial crisis due to its non-insurance activities.
20. The question is how insurers get into trouble in the first place. Annex 3 provides case studies of failures. Some common causes of insurance failures can be identified. However, causes of failure can certainly not be ranked according to importance:
 - expansion into new areas and non-core activities;
 - high tolerance of investment risk;
 - liquidity issues due to problem assets and surrender outflows;
 - interest rate risks and a difficult macroeconomic environment;
 - under-reserving and underpricing;
 - unforeseen claims and catastrophes;
 - management and governance issues;
 - group support to a distressed group member;
 - rapid and unprofitable growth.
21. Leverage (predominantly for non-insurance activities) is often a significant factor contributing to the vulnerability of an insurer. Macroeconomic and industry-wide variables such as the level and volatility of long-term interest rates or the intensity of competition can also predict failures. In many cases a combination of these causes has played a role and they have mutually reinforced each other.
22. We also considered the literature on the “going-concern” impact of the insurance sector on financial stability and the real economy. A key set of this literature focuses on pro-cyclical behaviour by insurance, and how this can impact the financial system and real economy through asset market and lending channels.

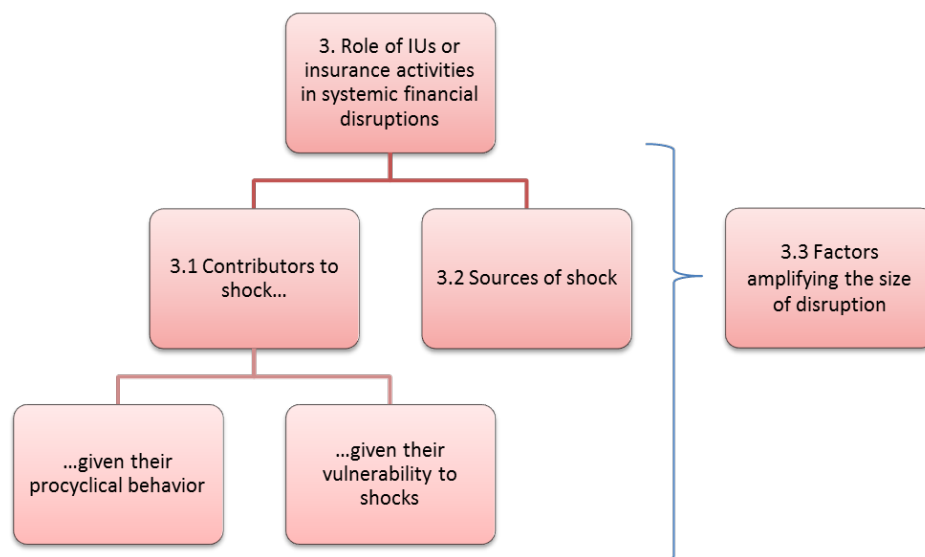
3. What circumstances lead insurers to contribute to or cause financial distress?

23. This section aims at taking stock of the main, most probable circumstances under which insurance activities or insurers could contribute to, or generate, financial distress. This implies that highly implausible scenarios which, if they occurred all at once, could cause the destruction of the entire financial system are not considered. At the other extreme, minor or moderate risks already captured by micro-prudential regulation are not examined either, since it seems improbable that their materialisation would have systemic consequences for financial stability. Last, risks not specific to insurance activities (such as management and governance issues) are left aside. Even though they have materialised in the insurance sector in the past, they do not help our understanding of the specificity of the ways in which insurers can contribute to, or cause, financial distress.



24. Thus, this section highlights the main scenarios under which insurance undertakings (IUs) or insurance activities could contribute to shocks generated elsewhere, or be themselves a source of systemic shocks for financial stability, as summarised in the table 2 below.

Table 2



25. Section 3.1 addresses the first aspect (contribution to shocks), while the second (sources of shocks) is described in Section 3.2. Last, Section 3.3 highlights the factors that could amplify the size of a disruption of insurance activities. For practical reasons, the subsections below differentiate between disruptions arising from, or hitting, the assets of an IU and disruptions located on the liabilities side of its balance sheet. However, it is important to keep in mind that shocks can arise from, or hit, both assets and liabilities simultaneously.

3.1. Insurance contributing to financial distress due to external shocks

26. First, IUs or insurance activities can contribute to financial distress:

- (i) if their pro-cyclical behaviour increases the probability of systemic risk materialisation or the size of an actual shock;
- (ii) because, given their interconnectedness with the rest of the financial sector, they are vulnerable to external shocks and may thus amplify such shocks by failing, or by withdrawing insurance cover.

27. The aim of micro-prudential regulation has been to reduce the risks faced by insurers to a prudent extent (see the chapter on “incentives in prudential regulation”). However, insurers could remain vulnerable to, or amplify, external shocks if the latter happened to have a systemic dimension not foreseen by regulation and if the whole insurance sector or individual systemic IUs were impacted.



3.1.1. Disruption hitting the assets side

28. The core business model of insurers consists of collecting premiums and investing these in assets which can be sold at a sufficient price in order to settle claims when an insured risk materialises. The interconnectedness of IUs with the rest of the financial system is thus intrinsically linked to their business model. This renders them vulnerable to external shocks and, to some extent, explains the pro-cyclicality of their investment behaviour.
29. Insurers are not highly sensitive to short-term asset price volatility or to temporary liquidity crises, given that their maturity profile allows them to hold assets – such as bonds – to maturity, as long as claims do not arise. Also, IUs generally tend to act counter-cyclically, i.e. as shock absorbers, given the long-term horizon of their investment profile. However, one can imagine several scenarios under which insurers may contribute to systemic risk because of their investment profile.

Scenario 1: Insurers acting pro-cyclically in market downturns and thereby amplifying actual shocks

30. As stated by Jan Monkiewicz and Marian Małecki, IUs can intensify the building up of asset price bubbles by increasing their exposure to certain asset classes during a boom if they are motivated, for example, by a search for yield¹.
31. Most importantly, the investment behaviour of IUs can appear pro-cyclical in market downturns, i.e. in the event of a significant drop in asset prices. Such behaviour would probably be motivated by a flight to quality. This scenario seems mainly relevant for assets in which insurers predominantly invest, such as government bonds, corporate bonds and equity. As a matter of fact, such assets happen to constitute a large part of insurers' balance sheets and represent large amounts in absolute value: euro area government bonds held by insurers and pension funds in the euro area represented EUR 1,600.4 billion as of 2014 Q2. Securities issued by non-financial corporations from the euro area represented EUR 227.8 billion and shares and other equity amounted to EUR 935.3 billion.
32. Apart from the impact of falling asset prices as a driver of asset sales, liquidity pressure on the liability side, where this is correlated with financial system conditions, may also prompt pro-cyclical asset sales. This might occur as a result of both NTNI and traditional activities and could arise from policyholder behaviour, intragroup liquidity demands and collateral demands associated with traditional hedging and NTNI activities.
33. In particular, a crash on the equity market could lead to massive fire sales by IUs as, contrary to bonds, stocks are not redeemed at maturity. Even though equity instruments do not constitute the largest proportion of IUs' investments, they still account for a substantial amount. As an example, in France equity represents around 10% of IUs' investments (excluding unit-linked)². A massive disposal of stocks by insurers at a discounted price could thus intensify a crash. Some examples highlight the pro-cyclicality of IUs to market downturns. As a matter of fact, the bursting of the internet bubble of 2002-03 was aggravated by fire sales of their equity portfolios by IUs and reinsurers, who feared harmful consequences to their balance-sheet and solvency levels if asset prices were to decrease further.

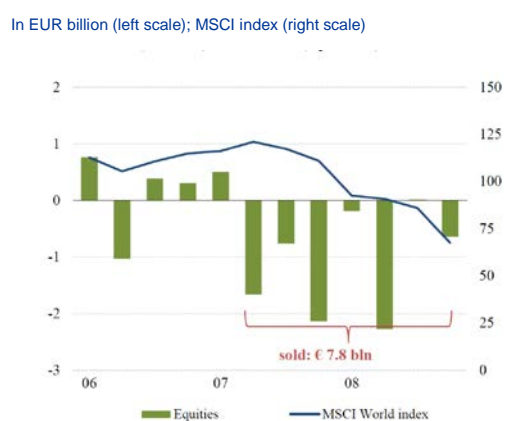
¹ Monkiewicz, Jan and Małecki, Marian, *Macroprudential Supervision in Insurance: Theoretical and Practical Aspects*.

² Source : ECB statistics, aggregated balance sheet of euro area insurance corporations and pension funds.



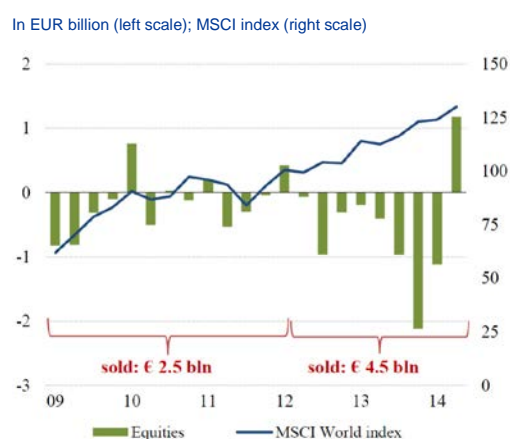
34. Some evidence suggests Dutch insurers invest pro-cyclically. The Dutch central bank has analysed whether insurance firms have invested in a pro- or anti-cyclical manner during recent crises. On the basis of transaction volumes, the study finds that immediately after the market crash (2007-09) Dutch life insurers sold EUR 7.8 billion of stocks (Figure 1A). They started to buy stocks again when stock markets were going up again (Figure 1B), although net purchases remain below zero.
35. In addition, Dutch insurers responded to the rating downgrades of bonds by selling them (Figure 2). During the euro crisis, for instance, they exchanged their exposures from peripheral countries for Dutch government debt. In 2008, 18% of government debt held by insurers was issued by the Dutch government and in 2012 this share had increased to 32% (Figure 3). In conclusion, the findings indicate that insurance companies engaged in pro-cyclical investment behaviour at the height of the European sovereign debt crisis through the sale of southern European assets.³

Figure 1A
Equities transaction data (excluding investments via investment funds).



Source: Thomson Datastream and DNB. Relates to equities traded on the stock market.

Figure 1B
Equities transaction data (including investments via investment funds)

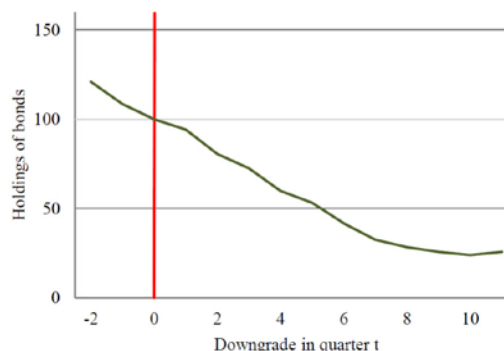


Source: Thomson Datastream and DNB. Relates to equities traded on the stock market.

³ Bijlsma, Melle and Vermeulen, Robert, "Insurance companies' trading behaviour during the European sovereign debt crisis: Flight home or flight to quality", *DNB Working paper*, No 468, March 2015.

Figure 2
Response to downgrade (bonds)

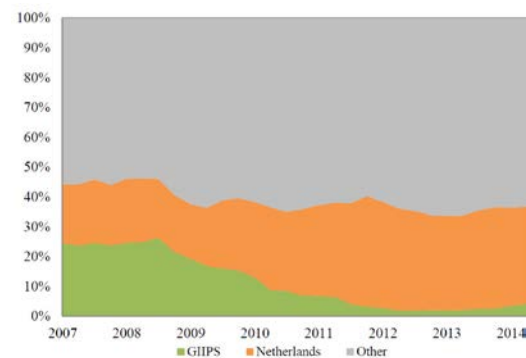
Holdings of bonds as response to a downgrade



Source: DNB, Moody's, Fitch, Moody's en S&P.

Figure 3
Holdings of sovereign bonds (excluding investments via investment funds)

2007Q1 * 2014Q2



Source: DNB.

36. The pro-cyclical investment behaviour of IUs not only undermines insurers' returns, it also accentuates swings in financial markets in a self-reinforcing manner.⁴ Furthermore, it may be reinforced by marked-to-market valuation, as this increases the risk sensitivity of IUs' balance sheets (on this point see the chapter on incentives in prudential regulation).

Scenario 2: Insurers failing following a shock, thereby amplifying it

37. One can imagine another scenario consisting of a massive and lasting drop in asset prices, that would lead to the failure of IUs, given that the value of their assets would no longer sufficiently cover their reserves. As a matter of fact, one of the shocks applied by EIOPA in its 2014 stress tests consists of a drop of equity prices by 41%. In particular, in the event of a sovereign default, insurers could suffer severe losses, either directly – given the size of their exposure to government bonds – or indirectly, because of their holdings in banks, which remain highly exposed to sovereign risk⁵.
38. Failures or distress of insurers resulting from a disruption of asset prices have occurred in the past. As an example, in 2002, Mannheimer Leben reported a EUR 50 million loss due to poor asset-liability management and very high investment in shares, which lost value following the fall of the DAX by more than 50% between 2000 and 2002. In addition, in 1991 Executive Life failed because investments in high-yield bonds lost value and became less liquid on the secondary market.
39. In a crisis situation, and as case studies show, many asset classes are often impacted simultaneously, due to the interconnectedness of financial actors and products. This increases the vulnerability of IUs to shocks on financial markets, given the diversification of their investments. As an example, in 2008, KBC revealed large losses owing to exposures to Lehman Brothers and Washington Mutual, impairments on shares, revaluation of CDOs and

⁴ Monkiewicz, Jan and Malecki, Marian *Macroprudential Supervision in Insurance: Theoretical and Practical Aspects*.

⁵ Cusack, Julian, "Eurozone exposure - the debt crisis impact on (re)insurers", 07 February 2012, available at <https://www.aspen.co/Articles1/2011/Q4-2011/Eurozone-Exposure---how-the-debt-crisis-impacts-reinsurers/>



exposures to Icelandic banks. Its recapitalisation was required to reassure financial markets. KBC revealed additional CDO losses in Q4 2008 and Q1 2009. Furthermore, the restructuring of a monoliner that had insured CDO exposures, as well as mark-to-market adjustments, led to both solvency ratios of the recapitalised conglomerate falling radically.

Secondary scenarios

40. Some disruptions in the financial markets would impact IUs less directly.

A crisis on the derivative markets

41. Life insurers are large users of interest rate swaps. This increases counterparty risk with banks and Central Counterparty Clearing Houses (CCPs). Such activity might also be a source of liquidity risk, for instance when a rating downgrade or a change in the value of the collateral triggers margin calls. Increased liquidity risk may subsequently prompt fire sales of assets by insurers^{6,7}. In addition, derivatives activity may contribute to pro-cyclicality in some cases. For example, when risk-free rates are falling, insurers may increase demand for interest rate swaps (as receivers of fixed rates) to insulate themselves against further falls, which might push rates down further.
42. However, given the low volume of derivatives held by insurers for traditional hedging purposes, the impact of a shock on the derivative market would have little impact on IUs' financial health. This would have more impact in some countries, given the volumes of derivatives that IUs own and write in order to hedge their positions.

A disruption of foreign financial markets

43. In some countries, a disruption of foreign financial markets would have a low impact on IUs, given their domestic bias. In others, however, such as Sweden and the UK, where the investment profile of insurers is more international, the risk could be greater. We note that more quantitative analysis is needed here.
44. In conclusion, in the event of a collapse of the equity, bond and sovereign markets, insurers could amplify the shock by reacting pro-cyclically. By de-risking and selling their assets in already distressed markets, they would become a vector of contagion of financial distress and contraction of the economy. Insurers could also incur severe losses and depreciated marked-to-market assets might prove insufficient to cover reserves. As a consequence, they could fail or withdraw insurance cover, thereby further amplifying the systemic shock.

3.1.2. Disruption hitting the liabilities side

45. IUs are less vulnerable to external shocks on their liabilities side than on their assets side. This is due to the fact that a large part of insurance liabilities consists of reserves. These result from actuarial calculation (and are therefore partly virtual); they are structurally long and illiquid and are little influenced by shocks in financial markets. However, since reserves are valued using a discount rate, and since life insurers sometimes offer products containing

⁶ However, the use of master trading agreements, such as those developed by ISDA, may act as a risk mitigant.

⁷ Monkiewicz, Jan and Małeck, Marian, *Macroprudential Supervision in Insurance: Theoretical and Practical Aspects*.



return guarantees, a disruption of IUs' balance sheets could result from an external shock such as a fall in interest rates.

The prolonged low interest rate environment

The impact of the low interest rate environment is mostly relevant for life insurers and varies significantly across the sector, depending on the business model chosen. High interest rate sensitivity follows from a business mix that has a combination of the following characteristics: (a) long-term investment return guarantees; (b) limited flexibility to reduce policyholder bonuses; (c) asset/liability duration gap; (d) a lack of policy diversification with high concentrated exposures to interest sensitive liabilities; (e) a lack of surrender penalties.

Because of the large share of with-profit business with relatively high and rigid guarantees in central and northern Europe, this vulnerability is more relevant there than in other parts of Europe

Embedded value sensitivities to a decline in rates by 100bp

	2009	2010	2011
Central and northern Europe	-10.7%	-12.7%	-56.1%
Southern Europe and France	-5.2%	-3.9%	-7.9%
UK	1.2%	1.1%	-1.7%

Source: Swiss Re, Sigma, 04/2012

The low interest rate environment could also lead insurers to take more risks in order to maintain returns, therefore contributing to the search-for-yield trend.

Last year, EIOPA assessed, in its so-called low-yield satellite exercise, the size and scope of vulnerability to low interest rates, including the question of how much time life insurers have in order to adapt to a low-yield environment. Insurers in some countries face a net cash outflow in 8-11 years' time in a "Japanese scenario".

Given the current difficult macro-economic circumstances (low interest rates, volatile markets) life insurers find it difficult to promise high guaranteed returns. One would expect life insurers to move from non-unit-linked policies to unit-linked policies, thereby shifting the market risk to households. However, insurers are bound by consumer preferences and competitive forces. EIOPA's data⁸ show that the share of premiums in unit-linked products has increased slightly from 37% in 2012 to 39% in 2013. Unit-linked sales are not, however, increasing in all European markets. Several national supervisory authorities report that the product mix still remains fairly stable despite efforts to promote unit-linked business. Shifting market risk to households would have several implications. First, it would reduce the number of financial services which insurers provide. Second, it could result in inefficient risk-taking, since risk-averse individual households are not as well placed as large insurers to manage and absorb market risk. Third, realised portfolio losses could have immediate wealth effects, which might reinforce a downturn.

⁸ EIOPA EU/EEA (re)insurance statistics.



Secondary scenarios

46. Apart from reserves, the liabilities of IUs also consist of external financing in the form of bank loans and bonds. Therefore, a crisis in the banking sector could potentially result in banks no longer financing IUs. However, one may expect that this would have little impact on IUs' financial health, given the low amounts that banks' funding represent on their balance sheets (see the figures in the interconnectedness paper). Similarly, a bond market crunch is unlikely to cause severe disruption to IUs since the volume of bond issuance is rather small in this sector (figures).

3.1.3. Double hit

47. Both the assets and the liabilities sides of an insurance company can potentially suffer at the same time. Such a double hit would typically result from adverse price developments in assets held by an insurance company, combined with an increase in liabilities due to lower interest rates. As stated above, this would be particularly relevant for life insurance companies. Another double hit for non-life insurance could result from a catastrophe hitting both the liabilities in the form of damage, and the assets side (e.g. through a fall in stock markets). The adverse financial market scenarios chosen by EIOPA for its 2014 stress-tests actually include stresses impacting both sides of insurers' balance sheets.

3.1.4. Disruption hitting NTNI activities

48. Work on refining the definition of NTNI is currently underway at the IAIS, and a public consultation is expected to be launched soon. In 2013, the IAIS established three principles aimed at defining NTNI activities.
- (i) Products that provide credit guarantees to financial products such as securities, mortgages and other traded or non-traded instruments – whether principal or interest – can be considered NTNI.
 - (ii) Policies or products that expose the insurer to significant market and liquidity risk and require a more complex risk management practice by the insurer in order to hedge those risks, and that may require the substantial, complex and dynamic use of derivatives, can be considered NTNI.
 - (iii) Investment and funding or other capital market activities that result in maturity or liquidity transformation, leverage or imperfect transfer of credit risk, such as repo and securities lending, beyond that justified by the scope and scale of conducting traditional insurance activities, can be considered NTNI.
49. The IAIS identified the following products as NTNI:
- annuity – variable annuity – GMIB (fixed accumulation returns);
 - guaranteed minimum annuitisation rate;
 - guaranteed minimum withdrawal benefit (GMWB);
 - contingent deferred annuities (some longevity risk, mostly market return risk);
 - unit-linked accounts with guaranteed account value or non-negative returns (some longevity risk, mostly a financial guarantee);



- guaranteed investment contracts (GICs);
 - synthetic GIC (insurer bears market value/return risk);
 - mortgage insurance (credit guarantee);
 - credit guarantees – municipal debt, structure credit products (pure credit guarantee);
 - financing or monetising ILS, e.g. embedded value/present value of future profit securitisations, ILS with financial risk as material trigger condition.
50. Some products in this list are rarely provided in Europe. This is the case, for example, for Guaranteed Investment Contracts, which are more widely used in the US. Conversely, certain guarantees in the life insurance products listed above are not considered NTNI in some European countries, e.g. Germany.
51. Given the fact that they are more similar to banking products than to traditional insurance services, NTNI activities are quite correlated with the financial cycle and highly interconnected with the rest of the financial system. IUs providing such products can therefore act pro-cyclically and, in this way, amplify bubbles and crashes. This is particularly relevant for the NTNI activities that follow.

NTNI financial guarantees

52. These guarantees⁹ generally fall into one of the following categories of product:
- annuities with guarantees¹⁰ (if the guarantee is accompanied by policyholder options or a material liquidity risk¹¹);
 - variable annuities;
 - guaranteed minimum annuitisation rate;
 - guaranteed minimum withdrawal benefit;
 - contingent deferred annuity;
 - financial guarantees e.g. in unit-linked accounts;
 - guaranteed investment contracts.
53. The pro-cyclical behaviour of insurers faced with predominantly financial risks could be twofold. First, insurers might exacerbate a crisis if assets have to be sold during a downturn. Second, high guaranteed returns are usually not possible with securities of the highest credit quality and liquidity. Both of these could trigger fire sales or pro-cyclical behaviour in general. Last, illiquid investments make such policies vulnerable to higher than expected lapses or even runs. However, high cancellation fees may have to be paid by subscribers.
54. Insurers often employ so called “dynamic hedging” strategies to protect themselves from such financial risks. That, in turn, could lead to herding behaviour in the tight markets for certain

⁹ We note that in the IAIS definition, a guarantee on general accounts is not considered as systemically risky as it exposes the insurer to a general business risk of making positive investment profits, to which any insurer is exposed. This is due to the fact that insurers can choose how to invest their assets and thus the risk they face.

¹⁰ The option to withdraw a lump sum instead of the annuity alone does not render annuities NTNI.

¹¹ G-SII policy measures, IAIS, (17) P. 15.



derivatives, as seen in the financial crisis. In addition, the unwinding of hedging, or an increase in collateral demands, during periods of stress could also exacerbate pro-cyclicality. In both of these situations, the shock could be transmitted to other financial institutions.

55. There are a number of examples where variable annuity type and similar products have led to material liquidity pressures on insurers, in some cases to the point of run-type scenarios. In Europe, Ethias, a Belgian insurer, experienced run-type liquidity pressures in the recent crisis. In the European Commission's response on emergency aid for Ethias, Belgian authorities argued that the fall in asset values backing policyholder guarantees eroded customer confidence and reduced Ethias' access to liquidity. It was argued that the immediate liquidity issue arose from Ethias' provision of a product with guarantees which could be withdrawn at any time without an exit penalty. During October 2008, withdrawals increased in response to concerns, reaching a peak of EUR 50 million in a single day, and totalling between EUR 400 million and EUR 800 million. This led to emergency support measures (including an extension of the deposit guarantee scheme to the Ethias product in question and recapitalisation by the Belgian state).
56. Another example is the run on General American Life Insurance Company (GA Life) in 1999. GA Life had given customers the option of withdrawing their investments (liabilities) within seven days and, when rating downgrades prompted the withdrawal of funds, GA Life could not satisfy customer demands.
57. In the succession of Japanese life insurer failures between 1997 and 2001, changes to the savings component of policies generated an incentive for policyholders to exit in advance of the failure of a weak firm (at least for healthy individuals who could get cover elsewhere). As a result, Asahi Life and Mitsui Life experienced rapid declines in insurance premiums.
58. In 2000, Japanese life insurers such as Chiyoda Mutual Life Insurance Co., Kyoiei Life Insurance Co. and Toho Mutual Life Insurance Co. failed because guaranteed interest rates were no longer sustainable, given the low interest rate environment.
59. More generally, NTNI products involving maturity/liquidity mismatch and/or utilising complex hedging can pose particular financial stability risks, including those similar to those posed by banking where insurers face similar types of liquidity pressures (which can manifest themselves as run-type stresses).

Credit insurance/mortgage insurance

60. Insurers providing mortgage insurance or credit guarantees can contribute to the building up of a bubble by supporting the underpricing of credit risk when providing cover. In addition, by providing such products, IUs expose themselves to risks which are financial in nature and which are closely correlated with the economic cycles in general. As such, they would be likely to be triggered by financial market and/or macroeconomic turmoil.
61. In particular, insurers providing credit guarantees would suffer in the event of a massive default by policyholders due to a disruption in financial markets, both on the liabilities side (large amounts to be paid out to customers and potentially insufficient provisioning) and on the assets side (a drop in asset prices). They would thereby amplify such shock and contribute to financial distress.
62. As concerns mortgage insurance, an economic downturn, resulting in increased borrower defaults and nominal house price declines, could have a significant detrimental impact on mortgage insurers, resulting in substantial losses and even failure. Having suffered extensive



losses throughout the crisis, certain mortgage insurers have made considerable efforts to exit existing policies in order to avoid incurring further loss.

63. However, some authors argue that credit insurance and mortgage insurance have little direct liquidity impact since reserves must be held. They have a low level of interconnectedness and IUs engage in such activities for a limited volume only. Indeed, there has not been prolific use in Europe given the availability of alternative, more efficient credit risk transfer instruments for banks, such as securitisation. Borrower-paid mortgage insurance has historically tended not to be pro-cyclical in provision. Last, in some European countries, mortgage insurance is mandatory at origination for borrowers with a loan-to-value above a specified limit.
64. Arguably, short-term credit insurance, i.e. that which runs for less than a year, allows its provider to exit the contract in time, before a crisis hits. Moreover, the collateral received is aimed at preventing the IU from incurring a 100% loss. This reduces the vulnerability of that specific provider to systemic risk. However, that escape reaction – although beneficial for the company – could have a pro-cyclical impact and would not necessarily be beneficial for the market overall. It could therefore contribute to amplifying a systemic event. As an example, there may be particular incentives for the pro-cyclical provision of trade credit insurance since losses will be correlated to financial and economic conditions. In fact, there is evidence of a material reduction of provision during the recent financial crisis. Van der Veer (2011) argues that private trade credit insurers were able to reduce exposures substantially and quickly in response to the increase in uncertainty because of their ability to reduce or cancel credit limits at any given time. That said, it should be noted that the demand for credit insurance falls during a crisis as well. Thus, paradoxically, in some jurisdictions government programmes which were implemented in order to ensure the continuing supply of credit guarantees during the crisis were left mostly unused.

Securitisation of embedded value of life insurance contracts

65. Such activities eventually carry substantial interest rate risks for investors if securitised products contain guarantees and/or the discount factor is inadequate.

3.2. Disruptions in the financial system resulting from insurance activities

66. Due to their own behaviour, insurers can be more than vulnerable to external shocks: they may also themselves be the cause of systemic shocks. Even though there is no historical precedent for a failure of an IU to cause a global financial and macroeconomic crisis, the Jamaican example of 1996 gives an insight into the risk potential for financial stability generated by the insurance sector. After years of insufficiently regulated domestic financial growth, several large Jamaican insurance companies revealed severe liquidity and solvency problems. The crisis resulting from this situation quickly hit banks, given the level of interconnectedness between the two sectors. The major financial distress witnessed led to the creation of the Jamaican Financial Sector Adjustment Company.

3.2.1. Assets side

67. Unlike in the banking sector, there is typically neither leverage nor maturity transformation in the traditional insurance business. There is no transformation of credit risk into market or liquidity risk either, which renders the insurance market much safer. However, several other



issues on the assets side of their balance sheets might lead IUs to become a source of systemic risk.

Poor asset/liquidity management and high tolerance of investment risk

68. Poor asset and liquidity management and a high tolerance of investment risk could cause insurance companies to face severe losses leading to failure. As an example, in the 1990s several US insurers failed, including Executive Life Insurance Co., Mutual Benefits Life Insurance Co., First Capital Holdings Corp., Monarch Life Insurance Co., Kentucky Central Life Insurance Co. and Confederation Life Insurance Co., due to a combination of illiquid asset concentrations and a lack of liquidity to meet maturing liabilities. As for Superannuation Mutual, Tasman Mutual, Capital Life, ACL Life Insurance, funding and investing activities, including liquidity issues and a lack of diversification in investments, led to their failure in 1989.¹²
69. If similar poor asset management resulted in a systemic IU failing or suffering serious trouble, this would, in turn, possibly generate financial distress.

(Traditional) securities lending

70. Insurers may play an important role in providing liquidity in securities lending and funding via repo markets. Insurance companies engage in securities lending activity to boost returns and use repo markets, in particular reverse repo, primarily as liquid and secured investments.
71. There is evidence that margining practices in over-the-counter (OTC) derivatives have acted as a source of pro-cyclicality. Moreover, since loaned securities may commonly be returned at short notice, there is a liquidity risk in the reinvestment of cash typically received as collateral. As such, cash collateral tends to be reinvested in liquid assets such as reverse repo and other money market instruments. If, however, reinvestment of collateral constitutes liquidity and/or maturity transformation this may make the insurer vulnerable to runs during stresses, which can have financial stability impacts should, for example, it trigger forced sales of assets or the unwinding of other transactions by the insurer.
72. For example, in order to enhance yield, reinvested cash provided as collateral in securities lending in longer-dated and less-liquid investments. In particular, such investments were residential MBS that became very illiquid and lost value at a time where – given increasing concern over AIG's credit standing – securities lending counterparties moved to unwind positions, compounding the liquidity shock. These dynamics, combined with the extent and interconnectedness of AIG's businesses, in part drove the US Government support of the firm, including the creation of two emergency Federal Reserve facilities: the AIG Securities Borrowing Facility and Maiden Lane II LLC. Some non-traditional non-insurance activities may also use repo markets for leverage, exposing them to the risk of run-type withdrawals of funding.

Sudden and massive reassessment of risks and/or change of risk appetite

73. Last, a sudden and massive reassessment of risks and/or a change of risk appetite by insurers as investors could cause significant market disruptions as well, if IUs were to create market moves of a sufficient size. As an example, uncertainties on sovereign rating

¹² Taken from Vucetich, Perry, Dean, *The insurance sector and economic stability*.



downgrades could cause insurers to quickly dispose of these bonds. Given the large amount of sovereign bonds they hold¹³, this could drag prices downwards and impair market confidence in general. Similarly, IUs could massively sell off their participations in banks. More work is needed to establish the size of these participations to understand the impact of this.

3.2.2. NTNI

74. In addition, IUs with NTNI activities may be considered a source of risk just like any other financial institution carrying out the same activities, given the characteristics of the related products.
75. At least three different dimensions determine whether NTNI activities may have a systemic impact:
 - The time it takes for an adverse event to reach various parts of the economy. In this respect, for example, claims settlement in non-life insurance can take several years. On the other hand, the pace of disruption is higher for some NTNI activities. For example, it takes a very short time for an impairment caused by a CDS default to evolve. In terms of policy measures, this time dimension is important since preventive action could prove more necessary for risks with immediate impact than for slower ones.
 - The interconnectedness of the activities with the rest of the financial system, which is the case for most NTNI activities.
 - Policyholder behaviour. NTNI products often show options for the policyholders with respect to the investment or the timing of a payout. The impact of risk materialisation depends on whether policyholders exercise such options or not.

Sale of credit default swaps

76. The writing of CDSs can help firms to manage credit risk exposures. Some insurers are increasingly engaging in CDS selling, which poses risks for financial stability. The majority view judges that such activities are sources of systemic risk because the CDS buyer faces a counterparty risk if the CDS seller defaults. In the view of the minority, however, there is no contribution to systemic risk because if the CDS seller defaults, the CDS buyer does not face any direct liquidity impact.
77. During the last financial crisis, provision of CDSs by AIG resulted in material risks for financial stability as a result of the liquidity pressures that developed. In the late 1990s, via its AIG Financial Products (AIGFP) business unit, AIG started to insure by selling CDS protection on collateralised debt obligations (CDOs). AIGFP essentially benefited from regulatory arbitrage, and operated effectively unregulated (unlike traditional insurance, market sellers of CDSs were not required to maintain reserves to cover protection sold, and industry practice permitted firms with the highest ratings (AIG had an AAA rating) to enter swaps without depositing collateral with their trading counterparties). As a result, AIGFP built up a huge CDS exposure which was neither reserved for nor hedged against. A large portion of the CDOs that AIG had sold protection against were bundled mortgages. AIGFP was therefore

¹³ The euro area government bonds held by insurers and pension funds in the euro area amounted to EUR 1,600.4 billion in Q2 2014 (source: ECB).



required to pay out when foreclosure rates rose. Ratings downgrades on the underlying securities also led to AIG facing sudden collateral demands. The large write-downs AIGFP was forced to make and the collateral calls it faced led to a huge drain on its liquidity position. This resulted in the downgrade of AIG's credit rating, which triggered further collateral calls. These problems were in part responsible for US Government support to AIG.

Monoline insurance

78. Monoline insurance provides payment protection to bondholders, often in the form of “credit wraps”. A credit wrap is provided on a specific bond rather than on an entire issuance, whereby the provider promises to reimburse the investor for losses incurred on the underlying reference bond. This enhances the credit of the bond and often enables the bond to achieve a higher credit rating than would be achievable on a stand-alone basis. The bond rating is typically commensurate with that of the claims-paying ability of the monoline insurance provider, thus enabling certain investors with rating restrictions to purchase bonds, allowing risk transfer out of the banking system. The higher rating assigned to the bond typically permits lower capital charges in risk-sensitive capital regimes (where relevant), and improves the liquidity of the underlying bond. In the run up to the crisis, monoline wraps were commonly used in financial structures and products such as ABS and CDOs to protect either (i) the timely payment of principal and interest or (ii) the ultimate payment of principal and the timely payment of interest on specific bonds. They were also used where issuers were too small to be rated.
79. Traditionally, monoline insurers guaranteed municipal bonds which historically experienced low default rates. In the run up to the crisis, monolines increased profit growth by providing guarantees to financial structures and products such as ABS and CDOs. Historically low losses saw the price for monoline insurance reduce. During the crisis, certain ABS and CDOs were found to be significantly riskier than previously thought and more highly correlated. This resulted in some monoline insurers having to make significant payouts. Many investors also faced uncertainty as to both the timing of these payouts and the probability of any payout.
80. Many monoline insurance providers had insufficient capital to maintain their ratings and, in extreme cases, perform on their liabilities. Consequently, a significant proportion of them were downgraded.
81. It should be noted that CDOs and certain ABS suffered from a lack of transparency resulting from complex and opaque structures, which made it difficult for investors to appropriately model these transactions and assess the likely risk and return. Monoline insurance provided a “seal of approval” which often reduced the amount of due diligence needed to be performed by the investor, thereby exacerbating the lack of transparency.

Issuance of insurance-linked securities (e.g. catastrophe bonds)

82. In comparison with the market for financial derivatives, the market volume for alternative risk transfer products is growing but remains small overall. The insurer remains liable, and the insurer retains a certain amount of the risk on its balance sheet. In particular, cat bonds help the underwriting issuer to diversify and decrease its underwriting risk exposure to catastrophes.
83. The IAIS is still carrying out analysis on the final designation of these products as NTNI. Arguably, ILS exhibit some parallel features – like information asymmetries and model-based pricing – to the ABS, which contributed to the financial crisis.



84. However, there are also material differences, such as the pre-financed high quality collateral and the fact that the modelling of most insurance risks is based on much more realistic assumptions than the models for credit risks underlying the ABS structures.
85. The IAIS shows special concern over securitisations in which the securitised risk is financial in nature. In that case the performance of these securities will probably be correlated with the financial market cycles and eventual mispricing/underfunding can spread to wider parts of the economy due to the tradable nature of the ILS. It is not clear yet whether the prices of alternative risk transfer products are uncorrelated with the financial market in times of crisis.

3.2.3. Liabilities side

86. Insurers cannot transfer risk to the market as easily as banks can. Insurance products are less standardised and require significant exchange of information in the case of risk transfer between, for example, an IU and a potential reinsurer. As a consequence, there is no deep inter-insurance market such as there is in the banking sector, which leaves less room for risk contagion.
87. However, insurance companies are – like any financial company – not immune to failures, near-failures (distress) or withdrawal of cover. The coverage of losses or the provision of payments following random events are the very core of the insurance business. Micro-prudential supervision requires provisioning for expected losses and the holding of capital for unexpected losses, at least to a certain degree of confidence (99.5% in Solvency II) to which the protection of policyholders should be ensured. Only when actual losses exceed those expected and capital requirement proves insufficient do insurers fail. There could be essentially three reasons for this.

Under-reserving

88. Life as well as non-life companies may run into difficulties due to under-reserving. This could result from flawed risk management leading to insufficient provisions or capital that remains unnoticed by regulators. In addition, insurance companies can face losses that exceed otherwise prudent provisioning when the assumption of well behaved, diversifiable insurance risks turns out to be false or in the case of extreme events. More specifically, in life insurance, where longevity risk is not fully hedgeable, an abrupt modification of the life tables, e.g. for pandemic reasons, could reveal a lack of reserves, which could eventually lead to insurance distress.
89. Three case studies illustrate these situations particularly well. First, in 2001, Chester Street Insurance, a large British company, revealed that it had unforeseen exposure to asbestos and that it had insufficient reserves: it was declared insolvent. Second, Taisei Fire & Marine Insurance Co. Ltd was hit badly following the terrorist attack on the World Trade Center in 2001 and had to be merged with Sampo Japan Insurance. Third, the New Zealand company Western Pacific Insurance failed due to the 2011 earthquakes and inadequate reinsurance, to concentrated exposures and to under-reserving and underpricing.

Mispricing

90. IUs, and in particular life insurance companies, may also suffer from mispricing. As an example, long-term guaranteed return contracts can turn sour in an era of prolonged low interest rates. Leadbetter and Stodolak state that inadequate pricing and under-reserving was



the cause of 40% of insurer insolvencies in Canada from 1995-2005, and 63% of insurer insolvencies in the US from 2003-05.¹⁴

91. This typically happened to Japanese life insurers in the 1990s. Non-life insurers have shown cases of mispricing as well, such as some casualty insurers in the US (Mission Insurance Co. and Transit Casualty Insurance), which became insolvent in the 1980s due to insufficient loss reserves following a period of inadequate pricing.

Liquidity risk in life insurance due to consumer behaviour

92. As insurers have long-dated liabilities it is often claimed that they do not face liquidity risk. Liquidity risk is not usually an issue for insurers due to the fact that they receive premium payments in advance of claims, and the long-term nature of most obligations limits life insurer exposure to sudden demands for cash. Liabilities mature over many years, allowing for the recovery of the market values of held assets. In non-life insurance, the process of claims settlement can take several years. It could be argued that insurers do not typically need to liquidate their positions simultaneously in a falling market and as such would not create an adverse impact on other financial institutions. An exception to this claim could be life insurers who face mass surrenders/lapses of their outstanding life policies. Lapses are prevented by penalties, which the policyholder is contractually obliged to pay should a lapse occur.

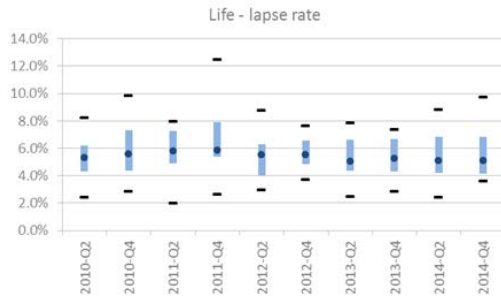
Historic lapses

93. An insurance run was occasionally witnessed during the financial crisis. One example was the American International Assurance Company (AIA) subsidiary of AIG, which provides life insurance in the Asia region. An unusual number of surrenders was observed in the Hong Kong and Singapore markets due to a general loss of confidence, until the Insurance Authority of Hong Kong and the Monetary Authority of Singapore imposed ring-fencing, and the latter issued press releases aiming at reassuring policyholders.
94. In Europe, aggregated lapses have been stable over the last four years at a rate of between approximately 5% and 6% (Figure 4). However, especially in the years after the start of the crisis, dispersion between insurers has been significant. This partly reflects the fragmentation of the EU life insurance market, in which life policies and consumer behaviour differs from country to country. In view of the ESRB data collection, in 2008, three insurers faced lapses higher than 10% of their GWP, although these rates have come down since then.

¹⁴ Vucetich, Perry, Dean, "The insurance sector and economic stability", September 2014.

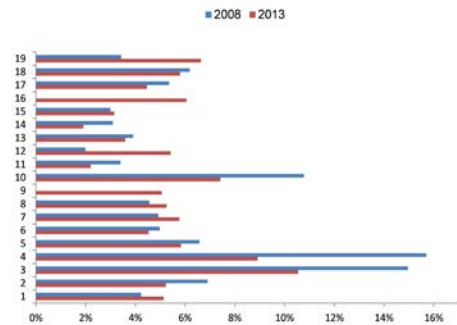


Figure 4
Aggregate lapse rates of life insurers



Note: Median, interquartile range and 10th and 90th percentile lapse rates of top 30 EU insurance groups. Source: EIOPA Financial Stability Report, May 2014

Figure 5
Historic lapses of individual EU insurers



Note: Lapses as collected by the ESRB data request

Penalties

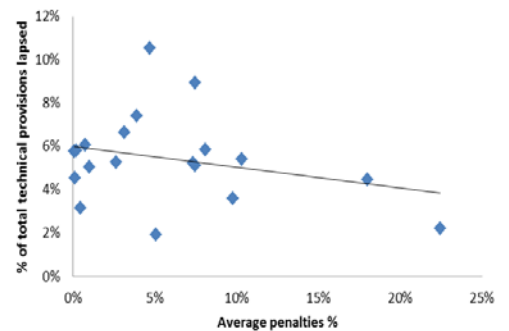
95. The main prevention against lapses is the contractual penalty that policyholders have to pay if they lapse. It transpires that more than 50% of the technical provisions of the largest EU life insurers do not contain these penalty clauses, whereas more than 90% have penalties of less than 15% (Figure 6).
96. There is a weak negative relationship between penalties applied and lapses at end 2013 (Figure 7). Note that there are other factors that impact lapses as well, such as unemployment, interest rates, stock market prices and tax treatment (although the latter was supposed to be included in the penalties as reported by the insurers).¹⁵

Figure 6
Penalties applicable to life insurance policies at end 2013



Note: penalties, applicable to technical provisions (total of EUR 2.5 trillion) of 19 life insurers (19 out of 29 life insurers were able to reply).

Figure 7
The relationship between penalties and lapses (2013)



Note: same as Figure 6. For average penalties, penalties < 15% are assumed to be 7.5%; penalties between 15% and 30% are assumed to be 22.5% and penalties > 30% are assumed to be 50%.

¹⁵ "Surrenders in the Life Insurance Industry and their Impact on Liquidity", *The Geneva Association*, August 2012.

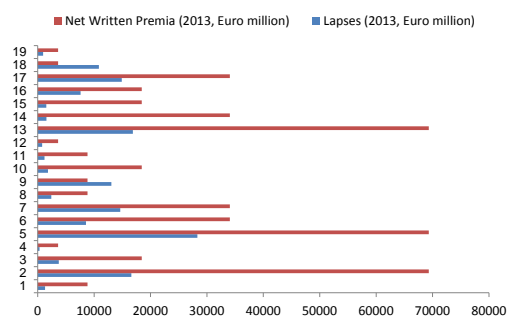


Cash inflows versus cash outflows

97. The vast majority of insurance groups are able to pay out lapsed policies from their net written premiums (i.e. premiums received minus premiums paid for reinsurance, Figure 8). Two insurers faced larger lapses in absolute terms than they received in premiums in 2013.
98. A particular case seems to be the Belgian life insurance market. Here insurers are faced with decreasing written premiums, sharply increasing lapse rates and consequently, since Q1 2012, with net cash outflows (Figure 9). Life insurers can mostly meet these negative cash flows by selling liquid assets such as bonds. This case shows that liquidity is a factor to take into account when assessing life insurance, and that lapses may lead to a sell-off of assets, with potential price effects.

Figure 8

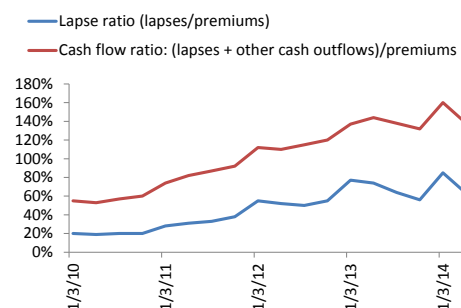
Net written premiums versus lapses (EUR million, 2013)



Note: 19 out of 29 life insurers were able to report their 2013 lapses. These have been complemented by their net written premiums (= gross written premiums / premiums for reinsurance contracts). Data on net written premiums have been anonymised. Sources: ESRB data request to EIOPA and Bloomberg.

Figure 9

Lapse rates and cash flow ratio of Belgian insurers (2010-2014)



Note: Aggregation of seven largest Belgian insurance undertakings/groups. The figures are not representative of the entire Belgian market. Source: NBB

Conclusions

99. In summary, average lapses are quite stable at 6% but there are large differences among countries and insurers. Penalties in life insurance policies offer only limited protection to the life insurer, as 90% of the policies have a penalty of less than 15% of the value of the policy. Moreover, there are many other factors, such as unemployment and tax treatment, which have a strong influence on lapses. On average, insurers receive sufficient premiums to pay out lapses, but in some cases, notably in Belgium, insurers face net cash outflows due to high lapse rates. This could cause a large sell-off of assets.

3.3. Double hit

100. In some cases, mispricing and under-reserving on the liabilities side is accompanied by imprudent investment behaviour, as risk management is not adequate and/or the IU tries to compensate for its losses on the liabilities side by increasing risks on the asset side.
101. As an example, Cosmic Insurance failed in 2002 following a strategy of competitive pricing in motor and fire insurance and aggressive investments. HIH, the second largest Australian insurer at that time, had exposures in the aggressively competitive Californian workers' compensating market. The company had grown through acquisitions, and organically under a



dominant management style, aggressively chasing new business and relying heavily on brokers. HIH collapsed in 2001 due to overexpansion and under-reserving.

102. In the same vein, a risk that was previously considered insurable could become so probable or severe that companies would need to cover it by buying more assets or derivatives (e.g. an interest rate swap or forward). The materialisation of such a risk could lead IUs to sell significant amounts of assets on the market, possibly dragging prices downward. In addition, the introduction of new legislation, and the accompanying costs of capital, could decrease the risk appetite of insurers. IUs could therefore have to rapidly reallocate assets, which could increase the volatility of asset prices.

3.3.1. Financial conglomerates

103. Financial conglomerates have been defined in the European Regulation as groups running both insurance and banking activities, where both of these are considered significant within the group. An overview of the list of financial conglomerates suggests that, in most cases, the head of financial conglomerates is the banking activity.¹⁶ In this case insurance activities have been developed thanks to the commercial network of retail activities and offer a certain diversification of revenues to the banking group. While less developed, the model of “insurers-bank” (as opposed to bancassurance) is nevertheless present in the EU through such groups as Axa, Allianz, Generali and Aegon.
104. The review of literature on the systemic risk emerging from financial conglomerates highlights different effects. Slijkerman, Schoenmaker and de Vries (2006)¹⁷ use a systemic risk measure showing diversification benefits for financial conglomerates (in comparison with large banks). This is a result of the fact that the downside risks differ for banks and insurers. Baluch, Mutenga and Parsons (2011)¹⁸, however, examined systemic risk in the insurance industry and the role of the insurance industry in the financial crisis. In particular, they found strong equity correlations, and thus a systemic link, between the banking and the insurance industries, mainly due to insurers’ growing participation in capital markets. Stringa and Monks (2007)¹⁹ investigated UK bank and insurer equity prices between 2001 and 2003 and found that the most significant channel for spillover to the banking sector is via UK banks’ ownership of life insurers, while indirect channels were not found to be materially significant. Other situations could also lead to risk contagion within a financial conglomerate. For example, losses faced by an insurance entity may require a bank forming part of the group to provide emergency financing. Similarly, a loss of reputation faced by an insurance entity because of governance issues could have an impact on the confidence of depositors at the bank. Last, operational risk may stem from integrated support functions.

¹⁶ Identification of Financial Conglomerates as per end 2013 figures published by the Joint Committee (11 September 2014), available at http://www.esma.europa.eu/system/files/jc_2014_071_list_of_identified_financial_conglomerates_2014.pdf

¹⁷ Slijkerman, Schoenmaker, de Vries (2006), *Risk diversification by European financial conglomerates*, Joint Forum, 2012, *Principles for the Supervision of Financial Conglomerates*, September.

¹⁸ Baluch, F., Mutenga, S., and Parsons, C. (2011) “Insurance, systemic risk and the financial crisis”, *Geneva Papers on Risk and Insurance — Issues and Practice*, 36(1): 126–163.

¹⁹ Stringa and Monks, “Inter-industry contagion between UK life insurers and UK banks: an event study”, *Bank of England, Working Paper No 325*, May 2007.



105. Recent examples of contagion within financial conglomerates can be found in the United Kingdom, Belgium and the Netherlands (IAIS, 2011; Stringa and Monks, 2007). In the case of UK bancassurance companies, Lloyd's and HBOS proved vulnerable to adverse events originating in the insurance sector during the 2001-03 stock market downturn. In the case of Belgium, the financial conglomerate Fortis did not survive the turbulence following the failure of Lehman Brothers as losses in both the bank and the insurance businesses mounted. In the Netherlands, various financial conglomerates faced capital and liquidity problems in 2008. There were also effects on confidence, both within financial conglomerates and in terms of other financial institutions.²⁰
106. The literature on organising activities under financial groups also points to specific risks that are related to group structure.²¹ Risk management, market discipline and supervisory control can be greatly challenged by the complexity and the opacity of the structure. The capacity of a group to absorb losses may be overstated by the possibility of multiple uses of regulatory capital in the regulated units in the group (double or multiple gearing) or the use of debt issued at holding level to acquire shares in subsidiaries (double leverage). Risk transfers may occur through intragroup transactions and contagion channels. Finally, the individual risk positions of the various units may lead to uncontrolled risk concentrations at group level. These group-specific risks have been globally acknowledged. In the EU they are addressed through the supplementary supervision mandated by the Financial Conglomerates Directive, provided that the financial groups meet the criteria to qualify as a financial conglomerate.
107. The ECB's Financial Stability Review in May 2013 (ECB 2013)²² discussed the financial stability of bancassurance groups on the basis of the lessons learnt from groups that received state aid during the recent financial crisis. The study flags (i) the prevalence of group-related cause (i.e. those having cross-border and/or cross-sectoral components, including multiple gearing, double leverage, intragroup contagion, and concentrated exposures across sectors); (ii) the fact that needs for state aid have emanated more from the banking than from the insurance units of the groups; and (iii) the presence of systemic causes (such as a general loss of confidence) in two-thirds of cases.
108. Contagion between banks and insurers within the same group has been analysed by the Dutch authorities.²³ This analysis considers three levels of contagion of risk (low/medium/high), depending on the level of integration within the group. The level of integration is defined through the governance and management of the group, the funding model of the group, the group structure and the level of intragroup transactions. In particular, the level of intragroup transactions is seen as a factor of risk of contagion. For this reason, the Dutch report considered two possible supervisory measures (beyond the measures taken

²⁰ Monkiewicz, Jan and Malecki Marian, *Macroprudential Supervision in Insurance: Theoretical and Practical Aspects*.

²¹ A concise summary can be found in Dierick, F. (2004), "The supervision of mixed financial services groups in Europe", ECB Occasional Paper Series, No 20, August.

²² "Financial stability and bancassurance groups – lessons from the euro area experience during the financial crisis", *Financial Stability Review*, ECB, May 2013, pp. 78-80.

²³ Study on financial conglomerates and legal firewalls, Oct. 2003 (Council of financial supervisors in the Netherlands, the Netherlands bankers' association and the Dutch association of insurers).



internally): (i) the “Arm’s length” requirements²⁴ and (ii) the limits on intragroup transactions. In this regard, the Directive on Financial Conglomerates has introduced supplementary supervision of intragroup transactions, in particular regular reporting to supervisors on intragroup transactions (when significant) within financial conglomerates and the possibility for Member States to impose limits on these transactions.

3.3.2. Rapid and uncontrolled unprofitable growth

109. Last, rapid and uncontrolled growth can cause IUs to fail or face distress. This can occur if IUs enter into new markets or activities without sufficiently understanding and controlling the associated financial risks. This can also result from aggressive pricing aimed at attracting new customers.
110. Several case studies illustrate that failed IUs had embarked on an unsustainable strategy of rapid growth. For example, Homestead ran into difficulties in the 1990s due to a combination of poor management, high dividend payments and rapid growth. As for Insurance Corporation of Ireland, it expanded at a time when premium rates were low and falling: the company became insolvent in 1985. As a final example, Scottish Re Group developed a leverage growth model and overpaid for acquisitions, which led the company into run-off in 2008.

3.4. Factors amplifying the size of the disruption

111. Some factors can amplify the size of a shock caused or transmitted by insurers on the financial system. This section therefore focuses on what, in practice, determines the size of the impact in the case of the failure of an insurer or group of insurers and the withdrawal of products, and also what could affect the size of pro-cyclicality. To determine how much the economy is affected and what determines the size of the impact in these circumstances, the following should be considered:
 - level and speed of substitutability;
 - multiple failures and accumulation of risk;
 - impact and scale of pro-cyclicality (aligned behaviour, regulation, capital conditions);
 - pace of failure;
112. Size (of an individual undertaking in the market and of insurance companies in the sector). These factors are discussed below.

3.4.1. Substitutability

113. This factor determines the extent to which other insurers can provide the same or similar services in the event of a failure. It relates to the market shares of critical activities performed

²⁴ As a means of ensuring that the terms of intragroup transactions do not favor particular groups of creditors, to the detriment of policyholders, depositors or consumers, supervisors may consider rules requiring that intragroup transactions are effected on a fully arm’s length basis. This means that no relationship of dependency should exist between different parts of the group.



by a given insurance company and, hence, to the ease with which the performance of the critical activity by the insurance sector could be maintained if the insurer were to fail. Measuring substitutability thus requires the identification of the activities that are critical and the determination of the values of the market shares of these activities which should serve as the threshold for systemic importance.

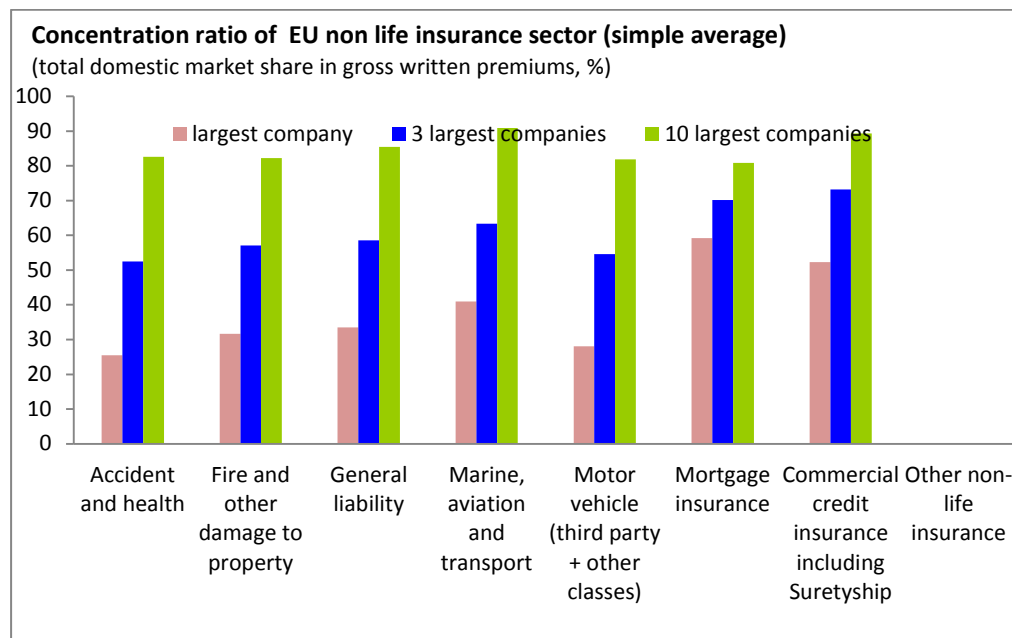
114. The dominance of some insurers creates the possibility that other firms might not be able to quickly provide a substitute for their services if they were to experience significant financial stress, making failure of those firms more likely to cause market disruption. It is important, therefore, to consider the concentration of the insurance sector and how easy it would be for another insurer to step in in the case of the failure of a major player if the market is highly concentrated.
115. The larger the holdings relative to the respective asset/funding market in question, and the lower the liquidity of that market, the greater the impact of changes in insurer asset allocation is likely to have on prices and liquidity, and so the greater the knock-on impact on others.
116. The data received in the ESRB data call suggest relatively large average concentration levels for mortgage insurance, commercial credit insurance, and marine, aviation and transport insurance, as shown in Figure 10 below. It should be noted that these are domestic levels. In the case of the failure of the largest player, another player from abroad could step in.
117. The mortgage insurance market in the United Kingdom seems highly concentrated, as the three largest British mortgage insurers own 100% of the domestic market share. In commercial credit insurance Malta, the Netherlands, Greece, Germany, France and Latvia appear highly concentrated. Last, in marine, aviation and transport insurance, Latvia, Lithuania, Italy, Belgium, Slovakia, Portugal, Croatia, France, Malta and the United Kingdom show above average concentration levels. Other lines of business are less concentrated on average, such as accident and health and motor vehicle insurance. However, country-level data show significant differences among member states – Annex 4 sets out these data. Besides, concentration levels in the non-life insurance sector appear higher than in the US.²⁵

²⁵ In comparison with Figure 12 of the IAIS report on Insurance and Financial Stability.



Figure 10
Concentration levels of non-life insurance in the EU in 2014

Data unavailable for some countries and/or for some business lines



Source: IEG ESRB data call (on sectoral exposures, products and activities)

118. In the life insurance sector, substitutability is not as essential as the presence of help from resolution schemes if the main risk identified is the simultaneous failure of multiple insurers as a result of, for example, a massive and lasting drop in asset prices. What determines the impact of the disruption in this case are the actual losses incurred by policyholders and whether there is continuity of cover. In the case of the failure of a life insurer for internal reasons such as mispricing or under-reserving, however, a dominant market position might make substitution by other actors more difficult and therefore increase the impact of the disruption on the real economy. In Europe, and according to the IAIS, Germany, France and the United Kingdom show the highest level of concentration in the life insurance sector.
119. Substitutability is not just related to market shares, however. It is also very important to consider contestability, i.e. even if the market is highly concentrated, if there are low barriers to entry (for example, availability of historical underwriting data) then new players can step in easily, either from abroad or they can be set up from scratch, within the market.
120. There is very little research on this topic, in contrast to the banking sector. However, at least two reasons might prevent new actors from entering the market. First, some lines of business are specialised services, requiring knowledge and a track record of losses. Small, new companies may not be able to quickly diversify risks in order to benefit from the law of large numbers. Second, low profitability in the sector, e.g. because of an economic downturn or due to very low interest rates, might constitute a disincentive for new entrants. Complex regulatory and institutional environments – for example a lengthy licensing process – might also make it harder for new players to enter the market. On the other hand, high demand for insurance products, e.g. because of mandatory cover, might appear attractive to new players and therefore increase the contestability of the market.



121. Nonetheless, even where substitutability is sufficient in the long term, there may still be costs and delays to securing new cover (and in receiving claims from failed firms) in the short term.
122. Also related to the contestability point, and of equal importance, are the speed of the impact of failure and the speed of substitutability, and how quickly new insurers can enter the market. A slow pace of failure provides time to rebuild capital or for others to step in to provide a substitute. A disruption which accelerates quickly allows no time for the market to recover, as was seen in the banking sector during the recent global financial crisis.
123. Lack of substitutability in the insurance sector may therefore lead to market disruptions, especially when insurance coverage is necessary to conduct business. For example, a market disruption may occur when compulsory or widely used insurance products become unavailable. This occurred in Australia following the failure of the country's second largest insurer, HIH, in 2001, and also, to some extent, after the World Trade Centre attacks in 2001. Also, insurance against catastrophe can become unavailable or extremely costly after a catastrophic event. There is also the possibility that a market failure will occur where insurance capacity disappears in a particular segment of the insurance market, so that parts of the real economy are disrupted and government intervention is required. Market disruptions or failures of this nature are typically relatively short term, as new insurers and/or reinsurers can usually move into the affected region to create capacity for the product(s) in question.

3.4.2. Multiple failures and accumulation of risk

124. Even if the market is substitutable, the scale and impact of a disruption is much larger if there are multiple failures.
125. The accumulation of risk within the sector can have a negative impact on many insurers simultaneously and, as a consequence, they may not be able to offer their full range of services (Eling and Pankoke, 2012), with far-reaching consequences. The speed at which these accumulation risks can occur is important for the scale of the impact. For example, demographic changes that gradually affect the viability of health insurers occur slowly. Accumulation risks may also occur more rapidly, such as when a major catastrophe exhausts the insurance capacity of property insurers.

3.4.3. Pace of failure

126. Another aspect of analysing the impact of systemic risk is the time needed for the potential impairment of the financial system to evolve, and the liquidity risks involved. Immediate liquidation of an insurer's investments does not occur when an insurer becomes insolvent. Hence, a fire sale of large blocks of investments which might depress asset prices does not typically occur when an insurer becomes the insolvent.
127. However, financial distress may still occur, although systemic problems tend to emerge over a longer time horizon. In addition, systemic risk may be amplified when insurers collectively hold significant common positions, for example in equities, bonds or hedging instruments, and need to liquidate their positions simultaneously in a falling market. A loss of insurance capacity might emerge within weeks if insurers cease to offer cover after a serious disruption. The severity of the impact also depends on how an insurance failure is dealt with. Regulators usually have the time to intervene to reduce potential losses to policyholders from insolvency and take action to contain the damage and prevent contagion effects within the system.



128. An analysis of the interlinkages between institutions and the concentration of common exposures and investments and liabilities would be needed to assess the spillover effects from potential liquidity problems. The concentration of common exposures can be measured using the security-by-security databases. Specifically, the Security Holding Statistics Database (SHSB) contains information on holdings of securities with an ISIN code, on a security-by-security basis for the following types of instruments: short-term debt securities, long-term debt securities, listed shares, and investment fund shares or units. The Centralised Securities Database (SCDB) contains information on all individual securities relevant for the statistical purpose of the ESCB.

3.4.4. Impact and scale of pro-cyclicality

129. There are a number of factors which could increase the impact and scale of pro-cyclicality by insurers. These factors essentially increase the probability of insurers acting pro-cyclically in the same manner, at the same time and in the same markets and could include:

- Similarity in liability structure and design, including maturities, guarantees and policyholder surrenders/lapses: if liabilities are matched with assets with similar risk, maturity and cash flow profiles, this similarity between their liabilities may lead to similar investment strategies.
- Aligned/collective behaviour of participants could amplify the cyclicality in a financial cycle and affect the size of a financial stress. An example of aligned behaviour is herding into similar asset classes, i.e. changing investment or asset allocation strategies at the same time. This could happen because of common regulatory incentives leading to similar investment strategies or similar responses to market-wide events; the use of common benchmarks or allocation rules; and the use of asset managers with similar mandates and common/similar investment consultants or experts. This tendency to herd may mean that, should this behaviour coincide with market trends, the potential impact of the correlated distress and the size of a disruption may be larger.
- If insurers are all selling the same assets in a downturn, this could amplify the negative impact on the price of those assets (Bank of England and the Pro-cyclicality Working Group, 2014). This may cause some insurers to be unwilling to provide certain services, such as more risky products, or to invest in certain assets.
- The tendency for insurance undertakings to be pro-cyclical in aggregate will depend on the speed with which they make changes to their asset allocation decisions and the extent to which those changes are coordinated and correlated.
- Greater reliance on “pure” market consistency and risk-sensitive capital requirements (i.e. without the flexibility to change requirements through the cycle).
- Greater reliance on benchmarks, mechanical reallocation rules (particularly where based on short-run returns or volatility measures) or credit ratings.
- Shorter-term horizons of investors or policyholders.
- Increased likelihood of pressure on the liability side where correlated with financial system conditions – e.g. greater policyholder ability to access guarantees, liquidity demands from traditional and NTNI collateral and derivative activities (including securities lending), liquidity demands from rest of group/holding – could all mean that insurers are more likely to need to sell assets in market downturns.



3.4.5. Size

130. An individual failure may be of such a size that it has a material impact on the economy as a whole. All things being equal, the failure (and/or withdrawal of products) of an individual insurer with a large market share will typically have a large absolute impact on the market. Although size generally reduces the risk from underwriting activity by fostering effective pooling and diversification of risk (IAIS, 2013), the failure of a dominant insurer in a particular market could amplify the disruption, leading to wider adverse effects. The size of individual firms in the sector and the size of the insurance sector in the market could also affect the size of pro-cyclicality.

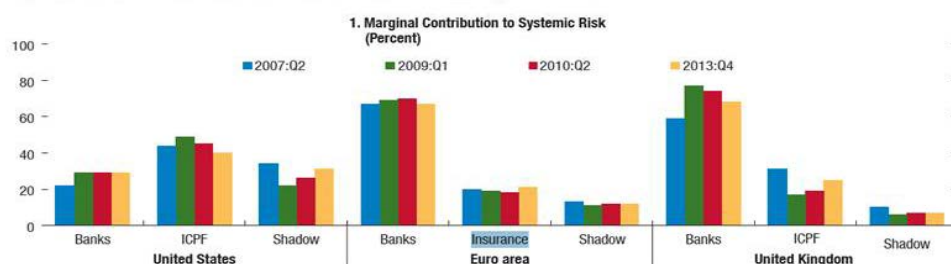
Box

Contribution to systemic risk

A useful way of measuring the contribution of systemic risk by subsectors of the financial system is analysed in the latest IMF Global Financial Stability Report. The report computes the “marginal contribution to systemic risk” (MCSR) by each sector, defined as the percentage contribution to the “expected systemic shortfall” (Tarashev, Borio, and Tsatsaronis, 2010). In other words, the MCSR from a particular sector represents the percentage of total systemic risk attributed to the sector. It indicates the losses that a given financial institution can cause in the system, and incorporates two important factors that should be taken into account in systemic risk measurement: the size of the sector (bank and non-bank) in the system, and sector interconnectedness.

According to the analysis, and as shown in Figure below, in the US the largest MCSR arises from pension funds and insurance companies and shadow banks, rather than the banking sector. Not surprisingly, in the euro area the banking sector contributes more because of its size and direct and indirect interlinkages, and also due to a more bank-based financial system, with insurance accounting for only about 20% of the total MCSR.

Figure 11
Marginal Contribution to Systemic Risk



3.5. Conclusions

131. In summary, the role of insurers in financial distress can be twofold. Insurers may amplify an external shock by reacting pro-cyclically or by failing, which would worsen the consequences of the shock. Insurers can themselves be a source of systemic risk because of some of their activities. They could contribute to, or create, disruption under the following, most likely scenarios.
132. First, IUs could amplify an external shock due to their involvement in **NTNI activities** such as the provision of certain types of financial guarantees in life insurance²⁶. In fact, NTNI activities embody a combination of material liquidity/maturity mismatch and financial system interconnectedness. Such activities may render insurers particularly pro-cyclical and vulnerable to financial risks. As a consequence, IUs could face correlated and larger-than-expected losses during financial market crisis, and be confronted with liquidity pressures, which might increase the scale of disruption.
133. Second, **insurers could undertake pro-cyclical asset allocation, which might amplify market downturns**, i.e. in the case of a massive and lasting drop in asset prices, or in the case of a rise in safe asset prices or of high volatility. In fact, insurers could react pro-cyclically and carry out a fire sale of assets. The pro-cyclical behaviour of insurers could be motivated by a flight to quality or by liquidity pressure emanating from policyholders, from collateral needs or from intragroup needs. This seems particularly relevant for a crash of sovereign bonds, corporate bonds and equity markets. The pro-cyclical role of insurers would be of a greater size if they developed herding behaviour or if they were used to having recourse to asset managers, benchmarks and mechanical allocation rules. Their role would also be enhanced if their balance sheets were impacted by asset price falls in terms of regulatory ratios. Insurers reacting pro-cyclically may also contribute to the build-up of risk in booms or periods of exuberance where risk (such as credit and liquidity) might be underpriced.
134. Third, **insurers could act pro-cyclically in providing services** regarding the pricing and writing of cover. This seems particularly relevant for trade credit insurance (TCI). Such disruption could be increased by the fact that the European TCI market is rather concentrated, and because the probability of multiple simultaneous failures is higher, given the correlation of TCI with the financial cycle.
135. Fourth, life insurers could create significant disruption by failing, under a **“double hit” scenario**. Such a shock could consist of a market crash (following, for example, sovereign defaults) combined with a prolonged low interest rate environment which would damage the ability of IUs to match their liabilities. Even though asset allocation in risky investments by IUs, sensitivity to low interest rates, liquidity pressure and NTNI activities might increase the scale of the disruption, the impact of the shock could be mitigated by preventive measures. However, more analysis is needed as to their actual efficiency.
136. Last, continuous underpricing by an IU remaining unnoticed in micro-prudential supervision could lead to **concentration** of the market. In this respect, a lack of transparency of reserving assumptions would make supervisory examination difficult. As a consequence, the failure of

²⁶ For an exact definition of the relevant types of guarantees see G-SII Policy Measures, IAIS; (17), p. 15.



the dominant IU could leave policyholders temporarily without cover, as the HIH example showed in Australia.

137. Under each scenario, the scale of disruption could be amplified by multiple simultaneous failures, or if the failure of a dominant player were not easily substitutable. The pace of failure would speed up if insurers were to face liquidity pressures, and if they were engaged in NTNI activities.
138. Insurers could also create disruption under other scenarios, although the probability of this is lower. For example, non-life insurers and general insurers could fail for the same reasons as life-insurers. However, the probability of such a disruption is lower because non-life insurers appear to be fairly substitutable in Europe and because failures do not seem correlated.

4. How can disruption and the behaviour of insurers affect the real economy or the financial system?

139. “The Role of Insurance in the Economy” note identifies the insurance sector’s main functions²⁷, discusses how these are performed and the broader welfare and efficiency benefits they generate. In this section, however, we focus on how different types of “disruption” might negatively affect the real economy and/or financial system, including where functions are withdrawn or stopped as a result of multiple failure, but also behaviour in functions which can impact financial stability or the real economy, such as pro-cyclicality.²⁸

4.1. Economic activity by firms

4.1.1. Provider of liability and property insurance

140. The importance of insurance to economic activity will vary by insurance and activity type. At one end of the scale the absence or loss of insurance cover may render the activity unviable/impossible or expose firms undertaking it to material risk of financial ruin. At the other end of the scale, it may simply mean that the activity is undertaken at a higher and more variable cost (so reducing overall efficiency).²⁹ Broadly, we may think of insurance services provided to firms as supporting economic activity in three main ways.
141. *Transfer of risk*: Liability and property (and related) insurance enables firms to transfer risks that would otherwise impose costs or losses on them should these risks materialise. These include those directly faced by the firm, such as those arising from physical damage, e.g. fire, but also those third-party losses and costs for which the firm is liable. The importance of insurance depends on the relative size of losses and costs, and their unpredictability, which

²⁷ Identified as: protection from risks through their transfer or pooling, collection, analysis, and distribution of related information, provision of savings vehicles and other non-insurance products, and asset accumulation and management.

²⁸ Note that we do not look at how and whether material disruption might occur, we just consider the potential impact should it occur. Section 4 looks at how such different types of disruption might arise, and Section 5 looks at what determines the size of impact of a disruption on the provision of insurance services.

²⁹ As firms are forced to bear risks themselves (in aggregate inefficiency arises from an absence of risk pooling and management).



would be borne by the firm itself in the absence of insurance. If these are high, then activity may be unviable (or only at a very high/variable cost). An example is where firms rely on a single asset for production, or a set of assets exposed to similar/correlated risks, and these cannot be easily/cheaply substituted. Larger and more diversified firms may be less reliant but may, instead, be vulnerable to correlated risks on different assets (for example catastrophe risk such as flooding could affect a number of sites), and may be more vulnerable to liability risks. However, where losses and costs are more predictable in size and timing, a firm can take steps to self-insure by saving or undertaking mitigating actions. Other substitutes might include provision of short-term credit by banks – although this is unlikely to be a feasible substitute for protection against material losses (since credit must be repaid).

142. *Facilitating credit provision:* Insurance may be necessary to obtain credit at a rate that enables financially viable activity. For the reasons listed above, insurance may help to substantially reduce the risk of losses and costs that could trigger insolvency in a firm (or materially damage future cash flows) and so jeopardise banks' loan assets. It is common practice to require insurance when granting real estate loans and we consider that this can play a key role in securing credit more generally for firms, and insurance, or at least weather insurance, is often needed before a farmer can obtain financing.
143. *Mandatory insurance:* Examples include employers' liability; third-party motor; marine, aviation and transport, public and passenger liability; nuclear; and professional liability for some activities (such as in some health and legal industries).
144. If, because of the reasons outlined above, the provision of insurance cover is necessary for economic activity to be viable or possible (and substitutes are not feasible), the withdrawal or loss of cover could result in economic activity ceasing. Sectors that could, in principle, be more vulnerable to such impacts may include:
 - shipping, air and road transport (including export business);
 - construction;
 - medical professions;
 - legal professions;
 - smaller firms and those more dependent on a limited set of assets or credit (for example firms manufacturing a single specialised product).
145. Many of these sectors in aggregate are materially important to economic functioning, either in terms of the direct contributions they make to output (for example manufacturers who may be forced to cease production in the absence of insurance of property and contents cover, or other firms who may have to stop operating in the absence of liability cover), and/or because of the role they play in the supply chain (for example shipping, air and road transport are vital in transferring inputs and outputs of production). There may also be knock-on impacts on the real economy and financial system from losses from outstanding claims or other insurance liabilities held by firms and financial institutions, to the extent that such losses are not covered by compensation schemes or, in the case of credit exposures, collateralised.
146. If the activity is ongoing (or viable), but cost/supply is vulnerable to losses (in the absence of insurance cover), the aggregate impact of absence of cover will be higher where losses from (otherwise) insurable events are more correlated. For example, losses arising from natural disasters or terrorism may have a greater impact than events that tend to be distributed more evenly over time and area, such as fire or theft. It was reported that insurance claims for



Hurricane Katrina, the costliest insurance event in US history, totalled USD 40.6 billion and 1.7 million claims across six states, plus a further USD 15.5 billion in flood damage claims from the National Flood Insurance Program.³⁰

147. There are only a few examples of total withdrawal or loss of cover for a particular type of insurance, since following failure(s) there are typically firms remaining which can replace cover. However, there are some examples where the threat of total withdrawal of cover and the resultant economic costs prompted the government to step in and make provision. Key here is Pool Re: after a series of terrorism incidents in the early 1990s in England, both insurers and reinsurers decided they could no longer provide terrorism cover. Many businesses would find it difficult to operate without terrorism insurance, as their balance sheets do not allow them to bear this tail risk. Before the early 1990s, terrorism cover was part of commercial property insurance policies. It is often combined with a business interruption policy, which covers the loss of income that a business suffers after a disaster while its facility is being rebuilt. The government responded to the withdrawal of cover by forming Pool Re in 1993, a mutual reinsurer comprising all significant UK providers of commercial property insurance.³¹
148. There are also only a few examples of failures which resulted in a material loss of (but not all) cover for some period, which gives an indication of the types of costs that could arise in the event of full loss of cover. Two examples are the failures of HIH in 2001 and UMP in 2002 in Australia. By 2000 HIH was the second-biggest general insurer in Australia, mainly underwriting workers' compensation, public and private liability and commercial/industry property insurance. Its failure in 2001 resulted in "significant costs for the building and construction industry" due to the loss of warranty policy cover, and it was reported that construction was, at one point, suspended in several states and that a number of legal firms had to turn clients away because of lack of cover.
149. In April 2002, United Medical Protection Limited (UMP) went into liquidation. As UMP provided indemnities to around 60% of Australian doctors, its failure threatened major disruption to medical services provision. This prompted government intervention to ensure that surgical activity could continue.
150. In **conclusion**, the main way in which the disruption of the provision of liability and property insurance can affect the financial system and real economy is through material reduction in provision, either as a result of failure(s) or withdrawal of cover. The disruption will be greater where the insured risks, when borne by firms, make activity either unviable or prohibitively expensive, for example where insurance is compulsory for the activity (or is needed to secure necessary credit), or where losses cannot be feasibly self-insured against because of their potential size and/or unpredictability. Such areas of insurance are likely to include, in particular: marine, aviation and transport, general and specific liability and, in some cases (depending on the policyholder), property. The impact of disruption is likely to fall mainly on

³⁰ Economic and Statistics Administration, U.S. Department of Commerce (2006), "The Gulf Coast: Economic Impact & Recovery One Year after the Hurricanes".

³¹ Pool Re is a mutual insurance company with government backing. Each insurer must pay losses up to a threshold, which is determined individually for that insurer. When losses exceed that threshold, the claims are reimbursed by Pool Re. Insurers pay premiums to Pool Re for this cover. If losses exhausted Pool Re's reserves, the UK government would step in to make up the shortfall. Pool Re, in turn, pays a premium to the government for this cover and would be required to repay any funds drawn down in this way from its future income.



the real economy rather than the financial system per se. However, it is worth noting that when disruption takes the form of failure there may also be losses to firms and households regarding outstanding claims, and/or being unable to replace cover on the same terms. Such losses in some cases could transmit to creditors and/or damage confidence.

4.1.2. Provider of credit and suretyship cover

151. The focus here is on trade credit insurance (TCI) – other types of credit insurance such as mortgage insurance are covered in the section on NTNI. TCI allows firms to insure against credit risk to amounts receivable from trading partners. As such, it can protect firms against the material losses that could arise from any failure to receive payment for goods and services, and which could, in principle, cause a supplying firm's failure should a major purchaser (or group of purchasers) fail. Whilst TCI is typically associated with the export industry, a sizeable proportion of it relates to protection associated with domestic trading. The International Credit Insurance & Surety Association stated in 2013 that around 15% of global trade is credit insured. TCI is also often a requirement of bank lenders to firms, or can improve terms of credit provided.³² It may therefore be key in facilitating ongoing activity by firms via the availability of credit.
152. Without some form of cover, transactions would need to be prepaid or paid in cash (i.e. self-insured by the firm), which would materially increase the financial burden of undertaking such transactions. However, there are two key external alternatives to credit insurance: bank-issued letters of credit guaranteeing payment, and sale of receivables (factoring). It is, however, argued by van der Veer (2011) in a recent World Bank book on trade credit that these are typically more expensive than trade credit insurance (and more commonly used for international trade).^{33,34} The loss of TCI cover could, in principle, increase the cost of trading, and potentially reduce activity, with knock-on consequences for other sectors (particularly those involved in the supply chain). Where loss of cover occurs because of failure(s) of TCI provider(s), losses on outstanding claims or policies (in the absence of compensation schemes) could transmit to other firms and result in material credit losses for banks and counterparties' both in terms of exposure to firms who have lost cover, and through exposure to the insurers directly.
153. Taken at face value, the impact on the real economy activity of loss of cover would appear likely to be limited by coverage: the evidence suggests that most trade is not covered by TCI (although insurance may be concentrated in particular sectors, which could sharpen the impact in those sectors). However, van der Veer (2011) argues that despite the limited coverage of world and European exports by private credit insurance, the impact of changes on its supply is economically relevant (because of its effect on trade, see below).³⁵ Reflecting its

³² Jones "Trade credit insurance", *World Bank, Primer Series on Insurance*, Issue 15, 2010 and broader discussion in "Credit Insurance for European SMEs: A Guide to Assessing the Need to Manage Liquidity Risk", European Commission (2003).

³³ K van de Veer, "Private Trade Credit Insurers during the Crisis: The Invisible Banks" in Chauffour, J-P and Malouche, M (eds.), *Trade Finance during the Great Trade Collapse*, World Bank, 2011.

³⁴ Jones "Trade credit insurance", *World Bank, Primer Series on Insurance*, Issue 15, 2010 also notes the expense bank of letters of credit.

³⁵ He argues: "Thus, even though private credit insurers cover only 6 percent and 12 percent, respectively, of world and European exports, the impact of changes in the supply of private credit insurance is economically relevant."



importance, in some countries the government provides trade credit insurance, e.g. stepping in when private markets do not provide cover sought by firms (e.g. as “top-up” provision).

154. There may be particular incentives for the pro-cyclical provision of TCI since losses will be correlated to financial and economic conditions. Indeed, there is evidence of the material reduction of provision during the recent financial crisis. Van der Veer (2011) argues that private trade credit insurers were able to reduce exposures substantially and quickly in response to the increase in uncertainty, because of their ability to reduce or cancel credit limits at any given time. The author (2010) extrapolates estimates of the insurance supply elasticity of world and European exports to the 2008-09 crisis to conclude that the decline in the supply of private credit insurance in the last quarter of 2008 and the first half of 2009 “can explain 5–9% of the collapse of world trade and 10–20% of the drop in European exports.”
155. Such concerns about the reduction in provision and its economic impact were reflected in government action. For example, van der Veer reports that “14 EU governments implemented state aid schemes to support their markets for short-term export credit insurance” over 2009-10, in particular by providing credit insurance for exports to EU/OECD countries.
156. In conclusion, the evidence, including the reaction of governments to the perceived contraction of TCI supply in the recent crisis, suggests that material disruption to TCI could have a significant economic effect, by damaging trade flows. This evidence points to both disruption from withdrawal of products/disruption of service, and to damage arising from the pro-cyclical provision of TCI. Again, the impact is more likely to be on the real economy, although loss of TCI cover (and any losses on outstanding claims) could expose their lenders (simultaneously) to increased risk of loss, which is likely to be correlated with the financial cycle. Depending on the nature of exposures, this might amplify the impact of financial system stress via banks/lenders.

4.2. Welfare of households and economic functions

4.2.1. Property, health-life

157. The provision of insurance for property and medical expenses (and cover for loss of income) allows households to transfer risk that could otherwise impose material losses on them. In the absence of such insurance households would probably have to self-insure. In some cases such losses could impose serious financial distress. For example, the ABI reports that in 2011, the payout for an average household claim in the UK was GBP 10,200 for a household fire, GBP 1,500 for theft and GBP 30,000 following a major flood. This compares with an average net worth of GBP 110,000 (of which 63% or GBP 69,000 was accounted for by dwellings) for the same year.³⁶ Perhaps consistent with the potential for financial detriment, the majority of UK households are insured against such risks – the ABI reports that in 2012, 74% of households held motor insurance, 64% held buildings insurance and 76% contents insurance. Health insurance and other forms of insurance such as income protection can also insulate households from the impact of events that may impose very significant upfront or ongoing costs, and/or result in a material loss of income.

³⁶ “UK worth £6.8 trillion”, UK Office of National Statistics News Release, 16 August 2012.



158. Loss of cover would mean households having to take the insured risks back onto their balance sheets which, as implied above, could, in some cases, result in material financial distress. This could have a significant impact on confidence and spending. If the loss of cover resulted in exposure to risks that were likely to be correlated with economic conditions (such as income protection) this might increase pro-cyclical behaviour by households.
159. There are few case studies of material loss of cover across the economy, as in practice there is substitutability by continuing firms, the use of run-off which can allow existing cover to continue, widespread use of compensation schemes and, in some cases, government intervention to ensure continuity. However, the existence of such (mandatory) compensation schemes is, in itself, a reflection of the importance of the insurance sector in terms of the potential impact of failure both in terms of losses on outstanding claims but also, potentially (with other measures), enabling continuity of cover. Nonetheless, there are some examples which indicate the types of impact of material disruption of cover. Following the failure of HIH in 2001 in Australia, it was reported that 1 million policyholders were affected, with 50,000 of these left facing severe financial difficulties (including those reliant on income protection and as a result of outstanding claims). When, in 2001, Independent Insurance, a provider of motor and household policies, failed in the UK, 200,000 policies were cancelled (the firm had 500,000 private and 40,000 corporate policyholders). Individual policyholders were relatively safe: they claimed almost (90%) of their claims under Policy Protection Schemes.³⁷ To July 2012, the Financial Services Compensation Scheme had paid out approximately GBP 404 million, including GBP 12 million by the Policyholder Protection Board pre-December 2001.
160. In addition to protecting households from the financial impacts of such events, insurance may also be necessary to secure credit. In particular, lenders can often require buildings insurance as a condition of residential mortgage lending, thus underpinning a key financial services market and access by households to a key source of credit. Wholesale loss of cover could materially weaken banks' credit positions to the extent that they rely on this cover to protect assets against which loans are secured or are reliant on for repayment. This could not only have knock-on impacts in terms of banks' overall lending activity, and others' exposures to banks, but could potentially increase the cost of lending to households, which could have material implications for household spending and savings activities. Should cover be lost abruptly, these impacts could result in a disorderly adjustment, which could have further ramifications for banks and others in the system, including more generally via confidence effects.
161. As regards insurance provided to firms, some types of household insurance may also be mandatory, a key example here being third-party motor cover. Wholesale loss of such cover would, therefore, have a very material impact on policyholders by preventing private vehicle use. Furthermore, the provision of such insurance cover may have an indirect asset allocation impact. By removing the need for precautionary savings this could allow households to undertake both more long-term/illiquid saving and spending in the real economy: loss of cover would prevent this.
162. In conclusion, whilst loss of cover results in households taking on risks that could result in material financial distress should these risks crystallise, it is not clear that the direct channel to

³⁷ Commercial policyholders were legally entitled only to claims made on compulsory insurance policies.



the real economy and financial system is as strong as it is for insurance provided to firms supporting real economic activity. However, if loss of cover is associated with losses on outstanding claims and/or inability to replace cover on the same terms (i.e. absence of compensation) there will be further financial impacts on households. Whilst it is not clear that such losses will be systematically coordinated with the financial cycle, the losses (including that of cover), if made abruptly might, however, damage confidence in the system more generally. Whilst the imposition of material financial distress on households would qualify in its own right under our broad interpretation of systemic risk, such distress will be imposed only on those households with claims that are outstanding or imminent.

4.2.2. Accumulation (savings) and decumulation (pensions)

163. Savings and accumulation products allow households to build up savings and earn investment returns whilst decumulation products enable households to draw these savings down to provide retirement income. Except when cover for longevity risk (often part of decumulation products) and other protection is also provided, these products are not economically different from other savings and investment products offered by banks, asset managers and other funds. Likewise, insurance products vary in the degree of sharing of investment risk and liquidity (accessibility of balances by policyholders). However, some life insurance products may be characterised by longer maturity and lower liquidity/accessibility for policyholders than products offered by non-insurers, potentially because of bundling with longevity risk cover (or other insurance cover). For example, fixed annuities which provide a fixed and certain guaranteed regular payment, but which have no surrender value (and so are perfectly “illiquid”) do not appear to have close non-insurance provided substitutes.
164. A number of these products may look very similar to banking deposits, acting as close substitutes. Some of the main differences from banking products may reside only in the absence of deposit guarantees or different tax treatments. In some jurisdictions these products represent a significant proportion of total life premiums, being a major revenue stream for life insurance companies. It is also important to note that consumers may perceive insurance products as close substitutes for bank deposits, since they are often sold via banking retail networks.
165. Unlike the provision of longevity cover, the availability of relatively close non-insurance substitutes will limit the impact of loss of these types of saving products, and households may be able to re-transfer out investment risk with other financial products. However, some insurance products, such as fixed annuities, may not have close non-insurance provided substitutes in terms of such fixed and inaccessible (locked-in) returns. Separately, abrupt loss of cover might result in disorderly adjustments in terms of asset reallocation, which could impact market prices.
166. If cover is lost during a period of financial stress, however, there is a strong risk that policyholders may not be able to re-transfer this risk on the same terms as before (for example where guarantees offered have fallen), which would result in losses for policyholders. In the absence of compensation schemes (particularly where there is a disorderly resolution) there would most likely be a material impact on individual policyholders from such losses.
167. Furthermore, policyholders may be exposed more simply to losses of accumulated sums and benefits. This could be material given the often substantial size of sums invested in terms of lifetime income and wealth. The Interconnectedness note suggests that insurance policies as a whole constitute around one-third of households’ wealth. Such a loss could have potential



knock-on consequences for saving, spending, and confidence. However, examples of impacts arising from material failure(s) are for this reason limited in practice by widespread use of compensation schemes and, in some cases, government intervention. Some indication of the losses that can be incurred and that impact is provided by the failure of seven Japanese life insurers between 1997 and 2001. As a result, five of the companies had to cut their insurance obligations, resulting in policyholders losing 8-10% of the savings components of their contracts. Guaranteed returns were cut from around 4% to 1-2%. Surrender values were cut considerably.

168. Where insurance cover such as longevity is provided, loss of cover would transfer these risks back onto policyholders, and reduce their ability to smooth income and provide for retirement in the absence of substitutes. As such, it may increase precautionary saving in liquid shorter-dated assets, and reduce the channelling of savings into longer-term and less-liquid real economy assets.
169. As regards banking products with similar features, certain products provided by insurers which combine material guaranteed sums or returns with ease of policyholder access (e.g. where surrender penalties are relatively low), may pose liquidity risks similar to those seen for banks in failure/distress or under stresses. As for banks, these can pose particular risks to financial stability. These include vulnerability to reputational risks, confidence crises, run-type withdrawals by policyholders³⁸ and potential implications such as fire sales, disorderly unwind or sale of derivatives and contagion of losses to other financial institutions. IAIS Principle 2 in the identification of G-SIIs says “policies or products that expose the insurer to substantial market and liquidity risk and require a more complex risk management practice by the insurer in order to hedge those risks and may require substantial, complex, and dynamic use of derivatives, can be considered NTNI”. Impacts of these products are discussed in more detail in the section below covering this.
170. More generous guarantees, i.e. higher guaranteed rates of return on amounts invested, (rates of return) provided in upturns may encourage pro-cyclical behaviour by households. However, this may be offset by the increase in savings attracted by better returns. Longevity risk cover is unlikely to be driven by pro-cyclical factors.
171. In **conclusion**, more so than for property/health-life, failure(s) resulting in losses on claims/savings (in the absence of sufficient compensation schemes) and the inability to replace the policy on the same terms, could pose substantial financial distress on households. This could have a broader impact on confidence, particularly if failure is disorderly. Unlike property or health-life cover, such losses would most likely be imposed on all policyholders at the same time. Also, losses imposed on a material proportion of households in their own right (e.g. through the failure of a major insurer or multiple insurers) could qualify as a systemic risk, taking a broad interpretation. The possibility of a government bailout prompted by the political and welfare impact of such losses would mean these also qualify under a broad definition of systemic risk.
172. Any disorderly sale of backing assets could impact markets. However, going forward, the substitutability of the provision of many accumulation products by non-insurance sectors means that material disruption to, or loss of provision, will limit the impact on households

³⁸ In conjunction with significant guarantees and in the absence of disincentives to redeem.



(although it may increase the price or change product types). However, some insurance products, such as fixed annuities, may not have close non-insurance substitutes, and longevity cover may be more difficult to substitute for.

4.3. Investment

173. The Role of Insurance note sets out the general characteristics of insurers' investment behaviour and how these are determined. The focus here is instead on the potential impact of disruption to this function. Insurers play a critical role in investment in financial market assets and (in part through this and in part through direct investment) the funding of firms, households and financial institutions and investment in property (lending and ownership). The type of funding provided can vary according to insurance product type, e.g. with-profits typically invests more in equity (which allows more risk to be transferred from firms), whereas investments backing annuities are more focused on long-dated and less liquid fixed-rate investments. Insurers are material investors in a number of key financing and asset markets. Disruption to such holdings could therefore potentially result in material impacts on the financial system and the real economy.
174. Throughout this section we have used, where possible, initial estimates of insurers' holdings of different asset classes deriving from the ESRB IEG data call (both the firm-specific and sectoral-level templates). We note that there are a number of potential issues with these data, particularly the sectoral-level data which we use much more. Data are missing for some countries and in some cases where countries have submitted data, firm data is missing for some asset classes. There are also a number of questions around consistency and quality of data provided. Generally therefore, such data should be treated as very preliminary, and likely as a minimum holding. However, more work is needed (and is ongoing) on this data source, both to increase its coverage where possible but also to investigate the quality of the existing submissions. It is also worth flagging that work is needed, and is ongoing, to establish the size of the relevant total asset markets, in order to allow assessment of the importance of insurers' participation in these markets. Ensuring that the bases of these data are consistent with the insurers' holdings is one key task. The total market sizes used in this section should therefore also be interpreted with caution.
175. In terms of government bonds, for firms responding to the sectoral-level element of the ESRB IEG data call on EEA exposures (note caveats, as previously, for these data) total government securities holdings are EUR 988 billion.³⁹ This represents around 10% of EU government debt in issue. This should be taken as a very rough guide to the proportion of government debt held by insurers: a number of companies and countries are missing from the IEG data call, and what was collected covered EEA exposures, whereas the total government debt to which this total is compared is EU government debt.
176. Figure 11a shows that in 2013, euro area insurers' (as collected within ECB data) holdings were around 17% of total government securities. The Interconnectedness note suggests that insurers' holdings of their home sovereigns were around 13% of the total.

³⁹ Excludes a number of countries.



177. In terms of bank funding, the Interconnectedness note analysis of ECB data suggests that insurers hold 13% of bank bonds and 36% of long-term covered bonds. For firms responding to the sectoral-level element of the ESRB IEG data call on EEA exposures (note caveats, as previously, for these data), the numbers are lower: insurers held EUR 440 billion of bank debt (over 6% of total EU MFI bonds outstanding),⁴⁰ and EUR 6 billion of bank equity (around 1% of EU MFI equity). However, that may of course be due (at least in part) to the incomplete data we have received/analysed in this dataset. Figure 11 shows that in 2013, euro area insurers' (as collected within ECB data) holdings were around 13% of total MFI securities with maturity of over one year. However, there is great variety between countries. Within the euro area, the Interconnectedness note shows that insurers' weight in total MFI funding could even be over 30% for some countries, with insurers holding nearly 40% of total MFI debt in France, and nearly 30% in Belgium, Slovakia and Greece. The proportion of covered bonds held by insurers could be even higher: the Interconnectedness note shows this to be as high as 80% in Estonia, and over, or close to, 60% in Greece, France and Belgium (note previous caveats for these data).
178. For firms responding to the sectoral-level element of the ESRB IEG data call (note caveats, as previously, for these data), securitisation holdings were EUR 106 billion. This represents over 7% of the total European securitisations outstanding of around EUR 1.5 trillion as estimated by AFME/SIFMA. However, we understand that the total holdings taken from the data call are not EEA-specific and so may include non-EEA holdings, whereas the total market size is based on European securitisations. This estimate should therefore be treated with caution (in addition to the other caveats applying more generally to the use of the IEG data call data).
179. Fitch estimated in 2012 that 20% of European securitisations are placed with insurers, but provides no further breakdown for different collaterals.⁴¹ According to AFME insurers purchased, pre-crisis, approximately 10-15% of new issues and secondary placements (approximately EUR 45-70 billion). Post-crisis roughly 5-10% of secondary placements went directly to insurers, or indirectly through asset managers.⁴²
180. In terms of corporate sector funding, for firms responding to the sectoral-level element of the ESRB IEG data call on EEA exposures (note caveats, as previously, for these data), insurers held EUR 508 billion of corporate bond and loan holdings and EUR 108 billion of corporate equity). This is over 4% of total EU NFC bonds outstanding, and holdings of over one year represent over 5% of total EU NFC bonds (of over 1 year) outstanding. Figure 11 shows that in 2013, euro area insurers' (as collected within ECB data) holdings were around 15% for NFCs.
181. Insurers may also be key players in property lending markets, although this varies by country. It is suggested that lending by insurers made up around 10% of borrowing by UK CRE companies in 2011,⁴³ and in some countries insurers are key residential mortgage lenders (such as in the Netherlands). Across Europe, for firms responding to the sectoral-level

⁴⁰ Of secured, unsecured, subordinated, contingent convertible bonds and other hybrid instruments. Note that "other exposures towards banks and governments" not included here total EUR 56 billion.

⁴¹ Fitch: Solvency II and Securitisation: Significant Negative Impact on European Market. Special Report, 2012, p.1.

⁴² AFME (2012): Investment in European Securitisation by European Insurers. Pre vs Post Crisis, and Prospects for the Future. P. 5.

⁴³ <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb130105.pdf>



element of the ESRB IEG datacall (note caveats, as previously, for these data), insurers made EUR 33 billion of loans secured against property to the non-financial corporate sector (commercial/business). In January 2014, CBRE⁴⁴ estimated the total amount of European CRE debt outstanding to be EUR 930 billion. Insurers' IEG datacall reported holdings of EUR 33 billion represent 4% of this total (note, however, that these are not likely to cover the same markets – the data reported in the datacall cover all exposures of reporting insurers, not just European exposures).

182. In terms of property investments, for firms responding to the sectoral-level element of the ESRB IEG datacall on EEA exposures (note caveats, as previously, for these data), insurers held EUR 37 billion of commercial real estate and around EUR 40 billion of residential real estate. However, these data are subject to quality concerns and we know them to be missing a number of countries (and there is patchy coverage within the submissions we have received). More work is needed to verify these data, and to understand their size relative to the total real estate market size in Europe.

Figure 12a
Securities of banks, corporates and governments held by insurers in euro area (source: ECB)

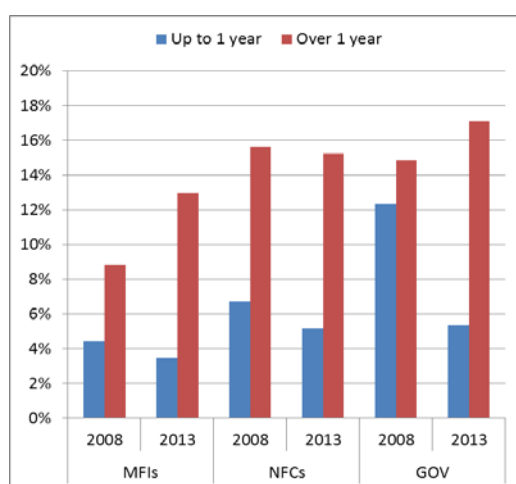
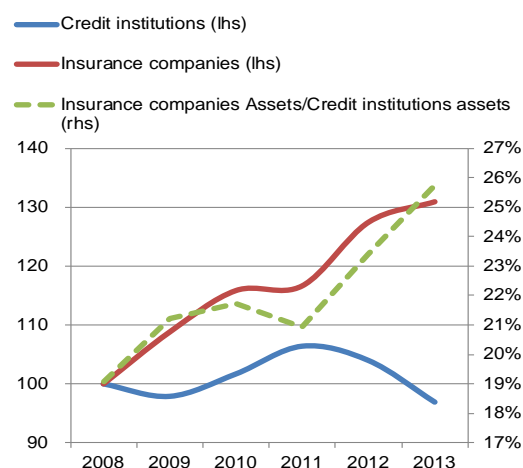


Figure 12b
Total assets of insurers and banks in the euro area (source: ECB and European Commission)



The positive role of insurers' investments in the financial system and real economy and how disruption could undermine this

183. Life insurers (offering certain product types) may play a key role as they can invest for much longer terms and bear more liquidity risk, reduce maturity/liquidity mismatch in the system (and so reduce system wide fragility) and, in principle, invest in less liquid firm's securities, making these a valuable source of stable long-term investment. Such investment characteristics could include the very important extra benefit of enabling insurers to act as

⁴⁴ http://www.propertyweek.com/Journals/2014/01/24/b/r/f/Viewpoint_European-Commercial-Debt.pdf



stable long-term investors, to lean against the financial and economic cycle, and to absorb liquidity shocks.

184. In addition to reducing liquidity mismatch by being able to lend for longer (with less policyholder access), other benefits of funding by insurers could include a simple increase in system-wide diversification. In effect, this means that risks are spread out amongst a broader set of financial institutions both in terms of numbers and diversity – if risk exposures are diversified to institutions facing different sources of shocks at different times, this could reduce the probability of herding, correlated and amplified reactions to materialisation of those risks of other shocks (such as liability shocks), or changes in risk perception.
185. These benefits are greater the more, on the liability side, insurers are exposed to risks not correlated with the economic or financial system.⁴⁵ In this context, it is worth flagging the increasing importance of insurers as asset holders/investors – Figure 11b above shows that insurance company assets relative to those held by banks have increased materially since 2008.
186. Given the importance of insurers in these asset and funding markets, loss or withdrawal of the provision of this function could have a material impact. If the loss of insurer provision of investment occurred abruptly and was accompanied by a sell-off of assets, there could be a severe impact on markets and on others in the financial system as assets were divested, particularly if during stress. Withdrawal of direct lending to households and firms could also have material consequences as replacement borrowing was sought, and withdrawal of funding from the banking sector could have material knock-on consequences through their lending and interconnections with others in the system.
187. Whilst there would be limited impact in terms of exposure of borrowers, from longer-term loss of provision of cover there may be impacts on funding costs. Other sectors such as fund management could substitute, however, to the extent that these have shorter horizons and less ability to bear liquidity risk (for example where the products offered are not as long-term or as locked-in as those typically offered by insurers), there could be material changes in funding costs for longer-term borrowing for firms, increasing their susceptibility to financial and economic cycles, and increasing pro-cyclicality. Similarly, such a change in liquidity and maturity appetites could increase banks' reliance on short-term funding, increasing fragility and susceptibility to financial market conditions.

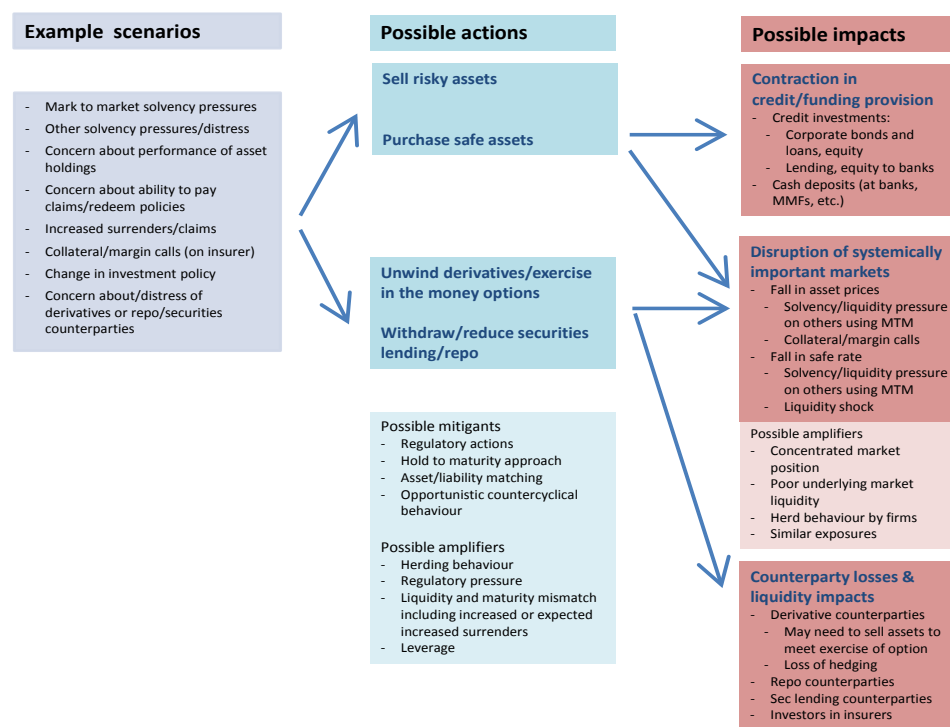
Pro-cyclicality in insurers' investment

188. Pro-cyclicality is potentially a key way in which insurers can influence financial stability (other sections outline how pro-cyclicality could arise). The diagram below shows possible channels for how insurer behaviour on the asset side might impact the real economy and the financial system. The diagram shows the potential impacts of de-risking/asset sale type behaviour by insurers – we note that there may be channels operating in the other direction too via the impact of risking-up or asset purchase type behaviour by insurers, but we do not show this here (and further work to identify such channels may be needed).

⁴⁵ Similar effects in terms of reduction in maturity and liquidity mismatch in the system may be attained by insurers lending to banks rather than directly to firms and households. However, this increases interconnectedness between banks and insurers. It may have the benefit of allowing insurers to rely on banks' loan underwriting expertise.



Figure 13
Diagram of insurers' impact in asset markets



189. Various papers, such as the recent discussion paper published by the Bank of England and the Pro-cyclicality Working Group, have highlighted a number of ways that pro-cyclicality can affect the real economy and financial system.
190. First, through uncertainty, as higher asset price volatility may affect firms' willingness to invest.
191. Second, through wealth effects on consumption as changes in asset prices affect household wealth and therefore saving/spending decisions.
192. Third, effects of firms' market values on investment, via changes in the cost of equity.
193. Fourth, through balance sheet effects on banks and other financial institutions. Price changes can feed through automatically where assets and/or liabilities are valued using market prices. Examples include banks (via trading books), insurers and pension funds. Changes in price will also impact counterparties in repo and securities lending transactions (via collateral values), and counterparties of derivative contracts. This could prompt further pro-cyclical behaviour by affected market participants. Some of the literature has focused more specifically on the impact of fire sales (fire sale-type sales can be a manifestation of pro-cyclicality in stresses). For example, Shleifer and Vishny (2011) detail how fire sales can damage the financial system and economy.⁴⁶

⁴⁶ Shleifer and Vishny (2011), "Fire sales in Finance and Macroeconomics", *Journal of Economic Perspectives*.



194. Balance sheet effects on banks and other financial institutions could, in turn, affect willingness to lend to the real economy and other financial systems. Pro-cyclicality of lending (whether directly to firms and households by insurers or indirectly via banks and financial markets) could amplify the credit cycle, exacerbating system-wide cyclical behaviour. The “financial accelerator” theory suggests that real or monetary shocks can be amplified by worsening credit market conditions (Bernanke et al. (1996), where access to credit by firms and households tightens at the point where demand is increasing. Flights to quality may also result in different impacts on borrowers of different credit quality. Such feedbacks may exacerbate pro-cyclicality.
195. More broadly, pro-cyclical investment might contribute to asset price bubbles (positive and negative) to the extent that asset price booms or stresses are associated with the underpricing or overpricing of risk respectively. Apart from automatic balance sheet channels, such underpricing or overpricing of risk can take the form of further feedback loops, potentially triggering further pro-cyclical behaviour from others in the system.
196. There are a number of factors which can increase the impact of pro-cyclicality by insurers on the system/real economy (drivers of the scale of pro-cyclicality within the insurance sector are discussed in Section 3).
197. First, the larger the holdings relative to the respective asset/funding market in question, and the lower the liquidity of that market, the greater the impact of changes in insurer asset allocation is likely to be on prices and liquidity, and so the greater the knock-on impact on others. Second, the greater the reliance on market prices in the system (e.g. greater use of mark-to-market on balance sheets, greater use of collateral), the more price changes and volatility will be transmitted within the system. Third, the shorter-term funding markets are, the more quickly changes in price can transmit to the cost of finance for firms. Various papers look at the evidence as to whether insurers have behaved pro-cyclically (as outlined in Section 3) and the potential impact. The Bank of England and Pro-cyclicality Working Group found some evidence of pro-cyclical investment behaviour by insurance companies both internationally and in the UK. In the UK, it found evidence of pro-cyclical shifts in asset allocation following the dotcom crash of the early 2000s, and to a lesser extent during the recent financial crisis.⁴⁷
198. Recent work by the DNB has found that immediately after the market crash (2007-09) Dutch life insurers sold EUR 7.8 billion of stocks (excluding holdings in investment funds), and started to buy stocks again when markets started increasing (although net purchases remained below zero).
199. A recent paper by Schwarcz and Schwarcz⁴⁸ cites a number of US studies as suggesting evidence of pro-cyclical behaviour in stressed situations. First, it cites a paper by Ellul, Jotikasthira and Lundblad, (Regulatory Pressure and Fire Sales in the Corporate Bond Market). This paper finds, for the US market, that actual or potential downgrades of corporate bonds prompted insurance companies to immediately sell (at least part of) their holdings of

⁴⁷ The report noted, however, that there also appeared to be important structural shifts in asset allocation occurring during this period which make identifying pro-cyclical behaviour more difficult. In addition, a lack of data regarding certain aspects of insurer investment behaviour, for example their use of derivatives, means it is difficult to confirm anecdotal evidence of pro-cyclical behaviour.

⁴⁸ Schwarcz and Schwarcz (2014) “Regulating Systemic Risk in Insurance”, *The University of Chicago Law Review*.



these bonds, in order to avoid adverse regulatory or rating agency consequences. The forced selling caused prices of these bonds to fall significantly below fundamental values.

200. Schwarcz and Schwarcz also cite a paper⁴⁹ which suggests that insurers contributed to distortions in RMBS in 2008, when many – facing similar regulatory and rating agency pressures – attempted to sell these securities at the same time. It argues that regulatory-constrained insurers sold these securities at lower prices at that time than those that were not constrained.
201. However, other US studies have found less evidence of such behaviour. In light of the crisis of 2007-08 a study by Manconi et al. (2012) investigates how shocks spread across financial market segments, distinguishing between the diverse liquidity needs of different types of institutional investors. In particular, as a consequence of the drying up of the securitised bond market, the portfolio dynamics of mutual funds and insurance companies in the US are examined with regard to changes in their structured product and corporate bond holdings.
202. The study shows that mutual funds did not sell the illiquid securitised bonds on a huge scale. However, funds substantially reduced their holdings of corporate bonds instead. In contrast, most insurance companies sold neither class of asset on a broad scale. Only a small subset of insurance companies, characterised by a below-threshold level of risk-based capital, reduced holdings of securitised bonds. One key overall finding of the study is that funds with high liquidity needs played a significant role in spreading the crisis from the securitised bond market to the seemingly unrelated corporate bond market. During the period of investigation, insurance companies traded relatively little and did not face redemption claims comparable to those of mutual funds. Yet, the study also suggests that trades of insurance companies were able to mitigate fluctuations to only a very limited degree.
203. The Bank of England and Pro-cyclicality Working Group noted that in particularly stressed markets, regulators in many countries have employed a variety of forms of regulatory flexibility, which may also have tempered pro-cyclical responses.
204. In **conclusion**, a key impact imposed by insurers on asset and funding markets is likely to be pro-cyclicality. This can have material real economy and financial system impacts, the latter particularly in the case of fire-sale type sales by insurers in stresses. Withdrawal of investment (or material loss/disruption) could have material price impacts on markets, with significant financial stability impacts, particularly if disorderly. Going forward, non-insurance suppliers of funding/finance to markets in which insurers are significant participants may be able to step in and substitute. But to the extent that the total supply of funding is reduced, and that substitutes have different preferences, the cost of funding may increase. A particular issue is likely to be the loss of (insurer) demand for illiquid and long-dated assets (although pension funds may be able to pick up some of the slack). A material increase in prices could increase the shorter-run sensitivity of funding markets to interest rate changes and liquidity issues (including mismatch).
205. More quantitative work is needed to confirm the size, importance and nature of insurers' participation in different asset markets, and further analysis of relevant literature would be beneficial.

⁴⁹ Merrill, Nadauld, Stulz, and Sherlund (2012), "Did Capital Requirements and Fair Value Accounting Spark Fire Sales in Distressed Mortgage-Backed Securities?" *NBER Working Paper No 18270*, Aug.



4.4. Insurers as providers of liquidity and as counterparties of derivatives

4.4.1. Securities lending, liquidity swaps and repo

206. Insurers may play an important role in providing liquidity in securities lending and funding via repo markets. Insurance companies engage in securities lending activity to boost returns and use repo markets, in particular reverse repo, primarily as liquid and secured investments. Markit estimate that insurers make up 8% of the US securities lending market, excluding their mutual fund investments. For firms responding on the firm-level element of the ESRB IEG data call, gross market value of securities lending totals around EUR 54 billion. The gross cash amount exchanged in (reverse) repos totals around EUR 36 billion. More analysis is needed to understand how these figures relate to total market size, and how insurers participate in these markets, in order to further assess the importance of insurers in these markets.
207. The withdrawal of a significant insurer or group of insurance companies from these activities could have systemic consequences, both because the function is no longer carried out and because of possible frictions in markets as activities cease. Losses to counterparties may arise to the extent that exposures to insurers were not fully collateralised (for example because full collateral was not pledged, or changes in market value (i.e. replacement costs) were not captured by margining arrangements).
208. Since loaned securities may commonly be returned at short notice, there is liquidity risk in the reinvestment of cash typically received as collateral. As such, cash collateral tends to be reinvested in liquid assets such as reverse repo and other money market instruments. However, if reinvestment of collateral constitutes liquidity and/or maturity transformation this may make the insurer vulnerable to runs in stresses, which can have financial stability impacts should, for example, it trigger forced sales of assets or the unwinding of other transactions by the insurer.
209. An example is AIG, who in order to enhance yield, reinvested cash provided as collateral in securities lending in longer-dated and less-liquid investments, in particular residential MBS that became very illiquid and lost value at a time where – given increasing concerns over AIG’s credit standing – securities lending counterparties moved to unwind positions, compounding the liquidity shock. These dynamics, combined with the extent and interconnectedness of AIG’s businesses, in part drove US Government support of the firm, including the creation of two emergency Federal Reserve facilities: the AIG Securities Borrowing Facility and Maiden Lane II LLC. Some non-traditional non-insurance activities may also use repo markets for leverage, exposing them to the risk of run-type withdrawals of funding.
210. As outlined in a 2010 paper, the Committee on the Global Financial System (CGFS)⁵⁰ identified haircut-setting in securities financing transactions as one of a number of pro-cyclical behaviours in securities financing markets that amplified financial system stress during the recent crisis. It notes that the terms and conditions governing secured lending transactions could have a material impact on leveraged access to credit and risk taking, and argued that

⁵⁰ CGFS (2010) “The role of margin requirements and haircuts in pro-cyclicality”.



the erosion of haircuts contributed to the growth in leverage in the system in the run-up to the crisis, whilst their significant and rapid tightening exacerbated deleveraging following it.⁵¹

211. In conclusion, further quantitative work is needed to confirm the size, importance and nature of insurers' participation in securities lending, liquidity swaps and repo markets. Analysis suggests that withdrawal or major disruption of securities lending, liquidity swaps and repo (such as might occur through material firm failure(s), in particular that of life insurers) may have systemic consequences as a result of loss of function, disorderly unwind and losses to counterparties (where exposures have not been fully collateralised or market risk not adequately margined for). Pro-cyclical provision of liquidity to the market, or pro-cyclical margining by insurers, may amplify financial cycles and, particularly in stresses, liquidity crunches.

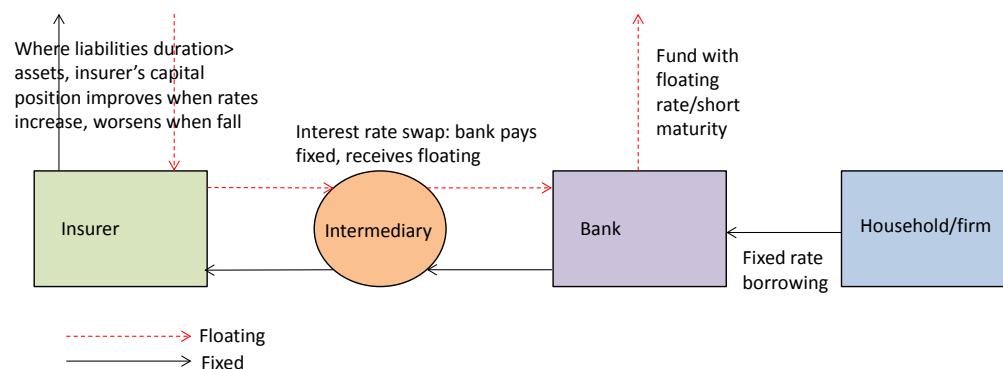
4.4.2. Counterparty to derivatives (including interest rate swaps)

212. Insurers are understood to be an important counterparty in a number of derivative markets; further quantitative work is needed to confirm the size, importance and nature of insurers' participation in these markets. Insurers are typically understood to take the role of payers of floating rates and receivers of fixed rates that benefit households and firms (who are typically among "end-users": e.g. a corporate looking to hedge exposure to currency movements or a household fixing rates on mortgages) by (indirectly) allowing them to hedge risks at prices, which would be higher without the demand by insurers. For example, the ability to fix interest rates on borrowing may enable households and firms to manage financial risk more effectively and indeed may provide financial stability benefits by reducing sensitivity to unexpected changes in interest rates (and potentially reducing feedback effects to lenders).
213. The diagram below sets out a very stylised example of how insurers might take one side of an interest swap at the other end of which is ultimately a household or firm looking to fix their borrowing costs. Under market-consistent valuation, an insurer whose liabilities are of longer duration than their assets will be in a better capital position when interest rates increase (all things being equal, ignoring any spread effects) and a worse position when interest rates fall. Paying floating rates in return for receiving fixed rates could mitigate this impact. At the other end, banks may borrow at floating rates and lend to households/firms at fixed rates (and/or borrowing with shorter maturities and rolling over funding more rapidly than lending). As such, all things being equal, they may be exposed to increases in interest rates when funding costs increase relative to income, and may benefit when rates fall. Paying fixed rates and receiving floating rates may allow them to hedge this risk. In reality, transactions between major insurers and banks are unlikely to need an intermediary, as shown in the diagram. More work is needed to verify the prevalence of this type of transaction by insurers.

⁵¹ More generally it notes that "It appears that even sophisticated leveraged investors, such as broker-dealers, hedge funds and insurers, underprovisioned for liquidity risk during the period of declining market volatility".



Figure 14



214. In a normal environment insurers' activities in derivative markets may therefore have a positive effect on the liquidity of financial markets and, in some cases, may provide a useful offset to other end-users who wish to take on financial contracts to offset risks to which the insurer plays a natural counterpart role. In particular, it may be the case that due to a lack of substitutability the role insurers play in taking long-duration risk in derivative markets is crucial in offsetting other end-user sectors' desire for long-term borrowing, such as corporates, households or some banks. This fits with "natural habitat" theories explaining different investor preferences for parts of the yield curve.
215. The failure of providers may have the potential to cause contagion across the financial system in a stressed scenario. The failure of an insurance firm may lead to derivative (and repo) contracts being unwound or exposures offset. If large values of contracts are involved (because the failure is of a large insurance player or a large proportion of insurance providers) the market, via the direct counterparties of the insurer, may be unable to process or absorb the necessary risk transfer, or there may be a delay. This could expose counterparties to undesired risks and lead to a loss of liquidity and/or confidence in derivative markets. There may also be counterparty losses (when exposures have not been fully collateralised or market risk not adequately margined for) which could cause contagion. Withdrawal of activities may lead to disruption in markets by significantly reducing supply and liquidity. To the extent that insurers act to allow households, firms and other financial institutions to offset risks (such as interest rate risk), the absence of insurer activity (or material disruption to it) in the swap market could result in borrowers bearing more risk – in this example interest rate risk – which could increase uncertainty, or increase the risk premiums they pay to fix. This could deter lending activity with knock-on real economy and financial system consequences. On the other hand, the transmission of monetary policy is stronger with floating rate mortgages, which can be positive, and households might also be less likely to build up excessive debt, which could have financial stability benefits.
216. Derivatives activity by insurers may contribute to pro-cyclicality in some cases (e.g. when risk-free rates are falling insurers may increase demand for interest rate swaps – as receivers of fixed rates – to insulate themselves against further falls, which could push rates down further).

As for securities financing transactions (above), there is evidence that margining practices in over-the-counter (OTC) derivatives have acted as a source of pro-cyclicality.⁵²

217. In **conclusion**, withdrawal or major disruption of participation in derivatives by insurers could have systemic consequences. The potential for contagion in a stressed scenario may arise from the disorderly or delayed unwinding of contracts, potentially exposing counterparties to undesired risks. There may also be counterparty losses (where exposures were not fully collateralised or market risk not adequately margined for). Furthermore, withdrawal of activities may disrupt markets by reducing supply and liquidity. To the extent that insurers take a particular side of transactions (relevant in particular to interest rate swaps – further work is needed to confirm this) which allows households and firms to hedge particular risks, withdrawal of services may either limit the ability to hedge and/or increase the price of doing so, which can have longer-run impacts on funding costs and management of risk in the system. In a going-concern context, derivatives activity by insurers may contribute to pro-cyclicality in some cases. Further quantitative work is needed to confirm the size, importance and nature of insurers' participation in these markets.

4.5. Non-insurance and non-traditional activities

4.5.1. NTNI annuity with guarantees

218. IAIS Principle 2, in the identification of G-SIIs, defines NTNI savings type products as “policies or products that expose the insurer to substantial market and liquidity risk and require a more complex risk management practice by the insurer in order to hedge those risks and may require substantial, complex, and dynamic use of derivatives, can be considered NTNI”. As discussed above, such products (for example variable annuities which offer material guarantees and ease of policyholder access) can, to some extent, appear deposit-like. As concerns banking products, features such as access can be desirable for, and beneficial to, policyholders. As with all savings products, variable annuities and similar products allow households to smooth income and efficiently use savings, and in some cases to transfer some investment risk onto insurers.
219. As for non-NTNI savings products, loss of cover would transfer these risks back onto policyholders and reduce their ability to smooth income and provide for retirement, and loss of outstanding claims and amounts (if not protected) could result in material financial distress.
220. However, the distress or failure, or behaviour during stresses of an insurer providing variable annuities or products with similar features, can cause particular types of detriment to financial stability, comparable in principle to the risks posed by banking products, which similarly involve liquidity/maturity transformation. As discussed above, high guaranteed returns are not usually possible with securities of the highest credit quality and liquidity. Illiquid investments make such policies vulnerable to higher-than-expected lapses, surrenders or even bank-type runs. Both of these could trigger fire sales or pro-cyclical behaviour in general.

⁵² CGFS (2010), “The role of margin requirements and haircuts in pro-cyclicality”.



221. Insurers often employ “dynamic hedging” strategies to protect themselves from such risks. That, in turn, could lead to herding behaviour in the tight markets for certain derivatives, as seen during the financial crisis. An unwinding of hedging, or increase in collateral demands, during periods of stress could also exacerbate pro-cyclicality. In both of these situations, the shock could be transmitted to other financial institutions.
222. There are a number of examples of variable annuity-type and similar products leading to material liquidity pressures on insurers, in some cases to the point of run-type scenarios. In Europe Ethias, a Belgian insurer, experienced run-type liquidity pressures in the recent crisis. In the European Commission’s response on emergency aid for Ethias,⁵³ the Belgian authorities argued that the fall in asset values backing policyholder guarantees eroded customer confidence and reduced Ethias’ access to liquidity. It was argued that the immediate liquidity issue arose from Ethias’ provision of a product with guarantees which could be withdrawn at any time without any exit penalty. During October 2008, withdrawals increased in response to concerns, reaching a peak of EUR 50 million in a single day, and totalling between EUR 400 million and EUR 800 million. This led to emergency support measures (including an extension of the deposit guarantee scheme to the Ethias product in question, and recapitalisation by the Belgian state).
223. In the US there are a number of examples of liquidity problems developing in annuity writers in the recent crisis. A number received support because of liquidity demands, including four that received TARP funds (TARP funds were made available to six life insurers: Hartford Financial Services Group, Prudential Financial, Principal Financial Group, Lincoln National, Allstate and Ameriprise Financial, although Prudential and Ameriprise did not take up the offer). The explicit aim of TARP funding was to stabilise the financial system during the financial crisis of 2008. Beyond the recent crisis, another example is the run on General American Life Insurance Company (GA Life) in 1999. GA Life had given customers the option of withdrawing their investments (liabilities) within seven days, and when rating downgrades prompted the withdrawal of funds GA Life could not satisfy customer demands.
224. In the succession of Japanese life insurer failures that occurred between 1997 and 2001, changes to the savings component of policies generated an incentive for policyholders to exit in advance of the failure of a weak firm (at least for healthy individuals who could get cover elsewhere). Asahi Life and Mitsui Life experienced rapid declines in insurance premiums.
225. In conclusion, as is the case for non-NTNI savings products, loss of cover would transfer these market risks back onto policyholders, and the loss of outstanding claims and amounts (if not protected) could result in material financial distress. In addition, NTNI products involving maturity/liquidity mismatch and/or utilising complex hedging could pose particular financial stability risks, including risks similar to those posed by banking where insurers face comparable types of liquidity pressures (which can manifest themselves as run-type stresses). These could, additionally, trigger fire sales or pro-cyclical behaviour in general. And the unwinding of dynamic hedging, or increases in collateral demands during stresses, could lead to pro-cyclicality and transmission of shocks.

⁵³ http://ec.europa.eu/competition/state_aid/cases/228044/228044_1016051_76_1.pdf



4.5.2. NTNI mortgage insurance

226. Lender-paid mortgage insurance transfers the credit risk associated with an identified pool of mortgage loans. In some cases this frees up capital, allowing further lending to the real economy. Whilst borrower-paid mortgage insurance also facilitates the transfer of credit risk away from the originating bank, it also provides additional benefits to the underlying borrower by overcoming traditional barriers to financing for those who may not have qualified for a mortgage, and enabling certain borrowers to become eligible for preferential interest rates. Whether lender- or borrower-paid, mortgage insurance supports demand for housing, which in turn supports demand for household goods and services.
227. An economic downturn, resulting in increased borrower defaults and nominal house price declines, could have a significant detrimental impact on mortgage insurers, materialising in substantial losses and even failures. Having suffered extensive losses throughout the crisis, certain mortgage insurers have made considerable efforts to exit existing policies in order to prevent incurring further losses.
228. The failure of firms or the withdrawal of provisions would see the insured credit risk returning to the originating banks' balance sheets. In all likelihood this would result in the originating bank facing increased capital charges against the returned risk and having to bear the full loss in the event of a borrower default. These institutions could be unable to bear the risk, thus creating contagion, or they could attempt to de-risk and so behave pro-cyclically. Institutions may also suffer losses on outstanding claims.
229. The provision of lender-paid mortgage insurance can be pro-cyclical in nature. However, it has not been used prolifically in Europe given the availability of alternative, more efficient credit risk transfer instruments such as securitisation. Borrower-paid mortgage insurance has historically tended not to be pro-cyclical in provision. In some European countries, mortgage insurance is mandatory at origination for borrowers with a loan-to-value above a specified limit.
230. In conclusion, disruption to or withdrawal of the provision of mortgage insurance could return risks to lenders, resulting in them facing higher exposures and/or capital requirements, as well as posing losses on outstanding claims – all of which could lead to contagion and/or pro-cyclical de-risking. The provision of lender-paid mortgage insurance could also be pro-cyclical.

4.5.3. Credit guarantees and monoline insurance

231. Monoline insurance provides payment protection to bondholders, often in the form of “credit wraps”. A credit wrap is provided on a specific bond rather than an entire issuance, whereby the provider promises to reimburse the investor for losses incurred on the underlying reference bond. This enhances the credit of the bond and often enables the bond to achieve a higher credit rating than would be achievable on a standalone basis. The bond rating is typically commensurate with that of the claims-paying ability of the monoline insurance provider, thus enabling certain investors with rating restrictions to purchase bonds, allowing risk transfer out of the banking system. The higher rating assigned to the bond typically permits lower capital charges in risk-sensitive capital regimes (where relevant), and improves the liquidity of the underlying bond. In the run up to the crisis, monoline wraps were commonly used in financial structures and products such as ABS and CDOs to protect either (i) the timely payment of principal and interest or (ii) the ultimate payment of principal and timely



payment of interest on specific bonds, and were also used where issuers were too small to be rated.

232. Traditionally, monoline insurers guaranteed municipal bonds, which historically experienced low default rates. In the run-up to the crisis, monolines increased profit growth by providing guarantees to financial structures and products such as ABS and CDOs. Historically low losses saw the price of monoline insurance reduce. During the crisis, certain ABS and CDO's were found to be significantly riskier than previously thought, and more highly correlated. This resulted in some monoline insurers having to make significant payouts. Many investors also faced uncertainty as to both the timing of these payouts and the probability of a payout.
233. Many monoline insurance providers had insufficient capital to maintain their ratings and, in extreme cases, perform on their liabilities. As a consequence, many monoline insurers were downgraded. Bonds protected by these monoline insurance providers were correspondingly downgraded to the higher of that achievable on a standalone basis and that corresponding to the monoline insurer's claims-paying ability.
234. Ratings downgrades had several consequences for both the investors and the monoline insurance providers. Bank investors were subject to higher capital charges due to the risk of increased losses in the event of non-payment. Furthermore, many investors holding bonds insured by a downgraded company chose to sell their holdings, or were forced to sell, due to investment mandates and rating restrictions. Forced sales ensued, resulting in losses which were exacerbated by the reduced liquidity of monoline wrapped bonds. Other institutions subsequently faced mark-to-market losses as a result of the reduced value of the underlying bonds. Investors questioned the viability of the entire monoline insurance industry. For monoline providers, the loss of a high credit rating, in some cases, eliminated their ability to write new business, reducing premiums available to cover future losses. IAIS suggests that the market no longer values such guarantees.
235. It should be noted that CDOs and certain ABS suffered from a lack of transparency resulting from complex and opaque structures, which made it difficult for investors to appropriately model these transactions and assess the likely risk and return. Monoline insurance provided a "seal of approval" which often reduced the amount of due diligence needed to be performed by the investor, thereby exacerbating the lack of transparency.
236. In **conclusion**, the problems in monoline insurance were a source of risk to financial stability in the crisis, acting as a centralised/simultaneous source of downgrade on a number of products held throughout the system, imposing widespread losses and triggering forced sales. Prior to the crisis it arguably contributed to the underpricing of risk by providing false comfort on a number of complex and opaque products such as CDOs.

4.6. Conclusions

237. This section has looked at what the impact on the real economy and financial system might be given a major disruption to the provision of different products and activities by insurers, and/or given certain (going concern) behaviours in their provision, in particular withdrawal or pro-cyclicality. This section does not look at the drivers of such disruption or behaviours or how material the disruption or scale of behaviour is within the insurance sector (this is covered in Section 4).
238. For the provision of property and liability cover to firms, the impact appears likely to be largely on the real economy rather than on the financial system per se. The material route for such an



impact is likely to be through withdrawal of, or disruption to, provision. The impact is likely to be greatest where the activity has material importance to economic supply, and cover is either mandatory and/or necessary to make the activity economically viable. Examples are likely to include marine, aviation and transport, general and specific liability, trade credit insurance and, in some cases, property (depending on the policyholder). Unlike the other types of cover, however, pro-cyclicality in the provision of trade credit insurance may also have amplified the real economic impact of the recent crisis. This might also have transmitted stress to lending banks, which is an issue particularly if withdrawal of cover increases their exposures in sync with broader financial downturn/stress.

239. Whilst loss of cover for property/life-health insurance for households could result in them taking back risks that could result in material financial distress, it is not clear that the direct channel to the real economy and financial system is as strong as it is for insurance provided to firms supporting real economic activity.
240. For both NTNI and non-NTNI accumulation products, substitutability of the provision of many of these by non-insurance sectors means that material disruption to, or loss of, provision will limit the impact on households, although it may increase the price or change product types. However, some insurance products, such as fixed annuities, may not have close non-insurance substitutes, and longevity cover may be more difficult to substitute. In addition, NTNI products involving maturity/liquidity mismatch and/or utilising complex hedging could pose particular financial stability risks, including those similar to risks posed by banking, where insurers face comparable types of liquidity pressures (which could manifest themselves as run-type stresses). These could additionally trigger fire sales or pro-cyclical behaviour in general, and the unwinding of hedging positions (particularly if disorderly) could lead to the transmission of shocks and specific pro-cyclical reactions.
241. The main type of impact imposed by insurers on asset and funding markets is likely to be pro-cyclicality. This can have material real economy and financial system impacts, the latter particularly in the case of fire-sale type sales by a group of insurers under stresses.
242. Nonetheless, withdrawal of investment (or material loss/disruption) could have material price impacts on markets, with significant financial stability impacts, particularly if disorderly. Going forward, there may be substitute sources of funding, but this may come at a higher price, potentially, in particular, for illiquid and long-dated assets. A material increase in prices could increase the shorter-run sensitivity of funding markets to interest rate changes and liquidity issues (including mismatch).
243. Insurers' activities in securities lending, liquidity swaps and repo, and derivatives may also have systemic consequences, as a result of loss of function, disorderly unwind and losses to counterparties (where exposures were not fully collateralised or market risk not adequately margined for). Furthermore, withdrawal of activities may disrupt markets by reducing supply and liquidity. Pro-cyclical provision of liquidity to the market, and/or pro-cyclical margining by insurers (plus pro-cyclical usage of derivatives), may amplify financial cycles and, particularly during stresses, liquidity crunches. Furthermore, to the extent that insurers take a specific side of derivatives transactions which allows households and firms to hedge certain risks, withdrawal of services may either limit the ability to hedge and/or increase the price of doing so, which could have longer-run impacts on funding costs and management of risk in the system.
244. In terms of other NTNI activities, disruption to, or withdrawal of, provision of mortgage insurance could return risks to lenders, resulting in them facing higher exposures and/or



capital requirements, as well as imposing losses on outstanding claims – all of which could lead to contagion and/or pro-cyclical de-risking. The provision of lender-paid mortgage insurance can also be pro-cyclical. The problems in monoline insurance acted as a centralised/simultaneous source of stress during the crisis, which was transmitted across the system. Prior to the crisis this arguably contributed to the underpricing of risk by providing false comfort on a number of complex and opaque products such as CDOs.

245. In all cases where disruption of provision arises as a result of failure(s), where there is insufficient compensation, collateralisation or other protection, losses may be imposed on policyholders and/or counterparties. In some cases these may be material, but are unlikely to result in direct financial system/real economy impacts – such as loss of life cover – although they may more generally damage confidence. In other cases, such losses might result in material contagion, e.g. where losses or costs are imposed on firms during stresses (e.g. via counterparty losses) which either transmit to other institutions/markets directly and/or result in pro-cyclical behaviour by firms. Furthermore, in all cases where failure is disorderly and/or rapid, the unwinding of activity or attempts to meet liabilities may be met with a pro-cyclical shedding of assets. Once again this will probably be most material in counterparty-type transactions with other institutions, or where (guaranteed) liabilities can be easily accessed by policyholders. Where the materialisation of liability/policyholder claims is at a slower pace (and cannot be expedited in the case of distress), asset positions can be unwound more slowly with less impact.
246. More analysis is needed of these issues before conclusions can be confirmed. Particular areas requiring more analysis include: (i) further quantitative work to assess the importance of insurers' activities in different asset, funding and derivative markets; (ii) further assessment of the likely size and materiality of losses imposed on households and firms by the failure of different types of insurance provider (before any mitigating impact from compensation schemes and recovery and resolution arrangements as discussed in the next section); and (iii) more work looking at the rationale for state support for a number of European insurers, and in particular which real economy/financial stability impacts were cited.

5. What could reduce the size of the impact?

247. The previous sections discussed how insurers can get into difficulties, how disruptions might arise and what problems a disruption or failure could cause to the economy. This section focuses on how the size of the impact or disruption can be reduced or negated in the case of the failure of an insurer or group of insurers, through the existence of recovery and resolution mechanisms, insurance compensation/guarantee schemes, and collateralisation.

5.1. Recovery and resolution

248. The costs of IUs' failure depend on a functioning recovery and resolution regime. Recovery and resolution mechanisms come into play when a supervisor/resolution authority has to step in and impose corrective measures or preventative actions to reduce the impact or extent of a failure of an insurer. In the absence of a resolution regime, a failing insurer would have to



wind-up which could lead to a disorderly failure with possible risks to financial stability and social costs. The outcome could even be political pressure on governments to bailout insurers, with a cost to the taxpayer. In the crisis, European insurers received over EUR 6.5 billion⁵⁴ in public support qualifying as state aid.

249. The views of the Geneva Association⁵⁵ are that the recovery and resolution of a failed insurer could be managed in an orderly fashion and should have no disruptive effects on the global financial system. They assert that the experience of the typical insurer during the recent financial crisis has shown that the insurance industry can provide a backbone to longer-term financial flows into assets and therefore contribute to the overall stability of the financial system. As such, failed insurers can often be managed through an orderly run-off, and sometimes even brought back to life with new capital, but exceptions to this have occurred and remain plausible, so orderly resolution arrangements may be necessary.
250. An orderly resolution process should ensure that a failing insurer (a) preserves critical economic functions; (b) minimises the contagion risk to other financial institutions and the real economy; (c) allows some or all of the insurer's business to be sold or transferred in an orderly manner to new owners, with the rest of the business wound down; and (d) enables the three outcomes above to be achieved at the lowest possible cost to tax payers.
251. The portfolio transfer tool option, mentioned above, enables an insurer to move all or some parts of its insurance business to another insurer, or to a bridge insurer, without the consent of each and every policyholder (subject to the approval of the regulatory authorities), allowing the maintenance of insurance contracts and continuity of cover beyond insolvency, and therefore safeguarding the interests of policyholders to the maximum. Another instrument which is currently under discussion is a resolution tool that would enable the restructuring of liabilities, including insurance, reinsurance and other liabilities, and allocate losses to creditors and policyholders in a way that is consistent with the statutory creditor hierarchy.
252. The FSB's publication Key Attributes of Effective Resolution Regimes for Financial Institutions require resolution regimes to be in place to deal with any insurer whose failure could be systemic. The IAIS has stated that specific insurance resolution tools such as portfolio transfer and run-off are prime mechanisms to ensure continuation of insurance contracts in the context of resolution. A series of resolution-related initiatives has followed on a global scale. The aim of an efficient resolution regime is to minimise the adverse impact a failing insurer could have on the stability of the system.
253. Recovery and resolution arrangements may help mitigate the impacts of failures. However, it is not clear how these would function in the face of the failure of a large insurer or multiple failures: more work is needed to analyse these issues. It is widely recognised that significant legal challenges exist in the ease of resolution of internationally operating financial entities, groups, or conglomerates.

⁵⁴ Source: European Commission (2015): Note for discussion by Expert Group on Banking, Payments and Insurance (EGBPI) meeting on 5 March 2015, available at <https://www.eduskunta.fi/FI/vaski/Liiteasiakirja/Documents/EDK-2015-AK-3427.pdf>.

⁵⁵ Geneva Association (2012), "Insurance and Resolution in Light of the Systemic Risk Debate", available at https://www.genevaassociation.org/media/99359/ga2012-insurance_and_resolution_in_light_of_the_systemic_risk_debate.pdf



Box

Current FSB discussions on recovery and resolution mechanisms of insurers

The G20 has agreed to take steps to end public bailouts of financial institutions which are “too big to fail”. As such, the FSB and international standard-setters have developed enhanced prudential and supervisory requirements, and recovery and resolution arrangements. The current international work on recovery and resolution of insurers is based on the FSB Key Attributes of Effective Resolution Regimes, published originally in November 2011 and updated in October 2014⁵⁶ in which further guidance was developed. The aim of the Key Attributes is to provide a set of tools that facilitate the resolution of financial institutions without resorting to the use of taxpayers’ money.

In summary, the Key Attributes list a number of features that should be a part of national resolution regimes for systemically important financial institutions (SIFIs). While the discussion initially focused mainly on banks, the attributes were designed to be a generic international standard that could be applied to all kinds of different financial sectors (e.g. banks, financial market infrastructures, insurance). At the summit in St. Petersburg in September 2013, the G20 committed to fully implementing the Key Attributes in all parts of the financial sector, including insurance.⁵⁷

To provide guidance on implementation and to ensure consistency across sectors, the FSB published, on 15 October 2014, sector- and issue-specific Annexes to the Key Attributes, including an annex on the resolution of insurers. In addition, a consultation paper on the identification of critical functions in global systemically important insurers (G-SIIs) was published on 16 October 2014.⁵⁸

Prior to this, the FSB and the IAIS published a “G-SII package” in July 2013, consisting of a methodology for identifying G-SIIs, an initial list of nine insurance groups that were deemed systemically important on the basis of this methodology, and a number of policy measures that should apply to them.

This list will be updated annually; the latest update was published in November 2014 with the initial nine G-SIIs identified in 2013. The FSB consulted with the IAIS and national authorities, and decided to postpone a decision on the G-SII status of reinsurers, pending further development of the methodology. By November 2015, the IAIS will further develop the G-SII assessment methodology as needed to ensure, among other things, that it appropriately addresses all types of insurance and reinsurance, and the other financial activities of global insurers.

The policy measures called upon the G-SIIs to develop a recovery and resolution plan (RRP) that included a liquidity risk management plan (LRMP). It also demanded that G-SIIs complete a systemic risk management plan (SRMP) by July 2014. The G-SIIs Policy Measures Paper describes the SRMP as a report that presents, in a coherent fashion, all applicable measures the G-SII intends to undertake in order to address its systemically risky activities⁵⁹. The implementation of the SRMP will be assessed by July 2016.

⁵⁶ FSB, “Key Attributes of Effective Resolution Regimes for Financial Institutions”, October 2014, available at http://www.financialstabilityboard.org/2014/10/r_141015/

⁵⁷ G20 Leaders’ Declaration: available at https://www.g20.org/sites/default/files/g20_resources/library/Saint_Petersburg_Declaration_ENG.pdf

⁵⁸ http://www.financialstabilityboard.org/wp-content/uploads/c_141016.pdf

⁵⁹ “Guidance for Systemic Risk Management Plans”, IAIS, 20 December 2013.



The package also included the establishment of crisis management groups (CMGs) comprising resolution and other relevant authorities from home and key host jurisdictions of each G-SII, and the development of specific cross-border cooperation agreements (COAGs). The CMGs ought to contribute to the development of the RRP and SRMP; the plans have to be agreed by the CMGs. One component of the work of the CMGs is to identify critical functions and critical shared services provided by the G-SIIs to safeguard their business continuity. The FSB and the IAIS are currently developing guidance on these critical functions by providing shared definitions and evaluation criteria. In October 2014, the FSB published, for consultation, guidance of the identification of critical functions and shared services for systemically important insurers.

As the further part of the G-SII package the IAIS is developing a Basic Capital Requirement (BCR) for global systemically important insurers, into which higher loss absorbency (HLA) will be built. The IAIS announced on 23 October 2014 that it had concluded the development of the BCR and, starting from 2015, the BCR is being reported on a confidential basis to group-wide supervisors and will be shared with the IAIS for refining purposes. From 2019, G-SIIs will be required to hold capital no lower than the BCR plus HLA. On 5 October 2015 the IAIS published the HLA requirement⁶⁰. The final outstanding element of the G-SII package is therefore the Insurance Capital Standard (ICS) which is intended to replace the BCR as a calculation basis for the HLA.

5.2. Insurance Guarantee Schemes

Features and positive contribution of Insurance Guarantee Schemes

254. The ease with which an insolvent insurer can be resolved depends on many factors, including the role of Insurance Guarantee Schemes (IGS), where they exist.
255. IGSs are mechanisms that provide last-resort protection to policyholders in the event of the insolvency of an insurance undertaking, and are triggered as a last resort, and only when other protection mechanisms have failed. IGSs typically cooperate with regulators and the receiver to liquidate assets, transfer policies to financially sound insurers and wind up the failed insurer. Importantly, IGSs do not provide rescue or bailout financing for financially troubled insurers, nor do they protect the general creditors of such companies. These schemes compensate policyholders for losses by paying claims that would otherwise have been paid by the insurance company had it not become insolvent.
256. In the event of a large insurance failure, IGSs can provide – apart from important protection to consumers – wider positive market impacts by preserving market confidence. IGSs help prevent or reduce the size of disruptions in the market, thus playing a key role in contributing to the stability of the financial system in the event of a failure, but do not address the impact of pro-cyclicality or withdrawal of products.
257. The insolvency of a given life insurer could cast doubt on the soundness of other life insurers and may, in the absence of an IGS, induce a gradual yet sustained “run” on these insurers, particularly those that are perceived to be vulnerable, to the extent that surrender penalties would have limited effect. This would lead to contagion effects within the insurance industry.

⁶⁰ "Higher Loss Absorbency Requirement for Global Systemically Important Insurers (G-SIIs)", IAIS, 5 October 2015.



IGSs may not only protect policyholders against direct financial loss incurred by the insolvency of an insurer, but may also maintain public confidence in the industry, reduce any contagion effects, and thereby contribute to the stability and competitiveness of the industry.

258. In the absence of compensation schemes, losses on outstanding claims or policies could transmit to other undertakings and result in material credit losses for banks and other counterparties, both in terms of exposure to companies who have lost cover, and through direct exposures to the insurers. The existence of such schemes is not only important in terms of limiting losses on outstanding claims but also, potentially, in enabling continuity of cover. The scheme can facilitate the transfer of insurance contracts from a failed insurer to a succeeding company.

Box

Policyholder protection fund – the Japan experience

Japan experienced the failure of several insurers during the economic slowdown of the late 1990s and early 2000s, and has since strengthened resolution regimes for insurers, including the creation of a resolution mechanism that utilises policyholder protection funds, and the introduction of a mechanism for liability restructuring. These developments have made it possible for failed insurers to be resolved in an orderly and flexible manner.

One of the first failures was that of Nissan Life in 1997, and various insurance failures followed in the subsequent years. The main cause was the negative gap between interest rates guaranteed by the insurers (high for products sold during the economic bubble) and actual rates of investment return, combined with a falling stock market. The focus of resolution was on ensuring the continuity of existing contracts and on restructuring the insurance liabilities of failed insurers.

Compensation schemes played an important role, whereby financial assistance in the form of capital support was provided to the succeeding company to ensure transfer and continuation of contracts.

Current status quo of IGSs in the EU

259. IGSs have been implemented in a number of EU Member States. Correspondingly, many Member States have not yet established an IGS, or have implemented IGSs in product segments where IGSs were deemed necessary, but cover only specific types of insurance or have limited scope. For several Member States, it was the occurrence of a failure that led to the establishment of an IGS in the first place, serving as a catalyst to significant subsequent policy and regulatory reforms.
260. The absence of an EU recovery and resolution framework may limit policyholders' trust and freedom of choice. Policyholders can face unequal protection due to differences in resolution powers and IGSs between local and foreign insurers. Common resolution tools that ensure the equal treatment of policyholders in the event of crisis do not currently exist.
261. To this end, given the lack of any EU legislation so far, and the existing very fragmented landscape of IGS protection in the Union, the European Commission has begun discussion at EU level to propose an EU recovery and resolution regime for insurance. The desired outcomes that may be expected to result from an EU-wide approach to IGS (i.e. harmonisation of schemes in all Member States) may bring confidence in and enhance the



stability of the wider EU insurance market through the equivalent protection of insurance policies, and ensure that there is no wider collapse of the insurance market. In the event of the failure of one firm, maintaining confidence in insurance products and their providers is important.

262. As mentioned, there are currently significant differences in the coverage amount and funding between the existing national schemes. Given that the option of introducing a single EU-wide IGS is unlikely to present a feasible and politically accepted option⁶¹, this has instead resulted in a proposal for a minimum harmonisation directive. This means the introduction of national IGSs in all EU Member States – similar to the requirements in the banking and investment sectors – that comply with a minimum set of design features.
263. The operation of schemes has been limited in most countries to date, with some schemes not having dealt with a single case of insurer insolvency requiring intervention. However, there have been a few instances of more significant failures where claimants could have incurred sizeable losses if it had not been for the existence of the scheme (e.g. the case of Japan). There is, however, no direct evidence available to quantify the strength of the possible adverse effect on market confidence. Whether there would have been a significant impact on the economy if the scheme had not been in place cannot easily be quantified.
264. A feature of past financial disturbances and failures is that they have often served as a catalyst to significant subsequent policy and regulatory reforms. Many IGSs were introduced following a major default by one or more insurance undertakings (e.g. after the bailout of ING and Aegon in the Netherlands, see Annex 5) or have been triggered by insurers experiencing serious financial difficulties.
265. EU action on IGSs should ultimately aim at enhancing market confidence and furthering the stability of the EU internal market in insurance services. By increasing consumer confidence in insurance undertakings and products, an IGS may contribute to promoting consumer demand and ultimately enhance the stability of the financial system.

Limitations of IGSs in contributing positively to financial stability

266. The limitations of IGSs are highlighted in the paragraphs below.

Limitations in continuity and type of cover

267. Even with an IGS in place there may be inadequate policyholder protection as continuity of cover and payments cannot be fully achieved, because policies need to be adjusted following a time-consuming valuation. Ensuring continuity of cover, especially for mid/long-term life contracts and products that have an important social component, is one of the most essential aspects, not only from a policyholder protection perspective, but also from a macroeconomic perspective.
268. The failure of a life insurer can lead to considerable financial hardship for policyholders, especially for those reliant on retirement savings. Apart from lost savings, it may be difficult for someone to find similar cover again, due to intermittent changes in age and health. Life insurance is usually considered easily substitutable but, even so, it may be difficult to replace cover under the exact same terms. Even if contracts are taken over by another insurer –

⁶¹ Oxera (2007), Insurance Guarantee Schemes in the EU, published by the European Commission.



through a portfolio transfer – haircuts may be imposed on the level of guarantees, to make them more sustainable for the receiving insurer.

269. In the case of a non-life insurer failing, the losses for policyholders could be limited to premiums paid, but could be larger if they have outstanding claims at the time of failure.
270. In the event that multiple insurers fail, even if cover is substitutable, again, it may be difficult to switch cover or replace it on the same terms. This is more of an issue in the commercial insurance sector as loss of cover is a major problem if a substitute cannot be found on the same day.
271. Unless alternative schemes that have similar effects are in place, it might be necessary for insurers to, for example, hold additional loss-absorbing capacity (in resolution) to the extent necessary to ensure the continuity of insurance policies.

Unsustainable due to failure of large insurer (public funds put at risk)

272. There have been cases where IGSs have proven to contribute to financial stability (see the Japan example) and where current schemes have proven to function in the case of small insurance failures, but the resolution of a large life insurer in the EU has been largely untested so far. There may be exceptional circumstances in which state intervention in addition to IGSs is thought necessary to mitigate the welfare costs and economic consequences of widespread insurance failure. For instance, the Dutch government opted, at the height of the financial crisis, to provide state aid to a large life insurance group (see Annex 5 for details of public interventions in the EU insurance sector).
273. This may occur in cases where the failed insurers represent a very high share of the market, such that aggregate losses are large, or affect a significant or vulnerable proportion of the population, as could be the case in the event of widespread insurance failures. For example, the sharp decline in aviation insurance cover after the 9/11 World Trade Centre terrorism attacks forced governments to step in and provide officially sponsored aviation insurance schemes.
274. There could also be political pressure to bail out an insurer rather than let it enter insolvency. In the crisis, a number of European insurers received state support. Without a resolution regime with a credible loss allocation mechanism, there might be no alternative to a bailout.

Inadequate due to small and concentrated market

275. In a small and concentrated insurance market where the failure of one insurer would have a large impact, a policyholder protection scheme may prove inadequate in covering policyholder claims, putting remaining industry players under considerable financial strain to cover the costs of the scheme. In this context, a structural approach (e.g. portfolio transfers) may be a more appropriate and efficient way to protect policyholders and wind down the failed insurer.

Inadequate in the case of a double hit affecting multiple insurers

276. IGSs have proved to be resilient and capable of handling multiple insurer failures (e.g. in the case of Japan) due to the fact that a failing insurer typically still disposes of significant assets and the unwinding takes several years.
277. Having said that, however, multiple failures could place a large financial burden on remaining insurers, who may already be experiencing financial difficulties. An ex ante fund could, theoretically, help to lessen the impact of multiple failures and thus address, in a counter-cyclical manner, potential sector-wide problems. Ex ante funding helps to build up funds



during normal (non-emergency) times, allowing these funds to be drawn down upon the insolvency of one or more insurers, in times of potential market stress, in a counter-cyclical fashion.

278. According to a report by the OECD⁶², in practice the impact of multiple failures (and the resulting cost to the policyholder protection scheme) can be reduced when significant assets remain in the insolvent companies and policy-level claims receive priority over other claims. Payout is typically spread over a number of years for insurance obligations of a long-term nature.
279. Hong Kong has established a policyholder protection scheme with ex ante funding, with scope for recourse to possible additional levies. The rationale provided for this approach was the need to ensure the availability of an ex ante reserve to meet liabilities through an affordable levy that is counter-cyclical, thereby avoiding funding pressures that could affect the industry during an economic downturn⁶³.

Different level of protection cross-border

280. The differential level of protection across or within borders may impact negatively on market confidence and it may be plausible to assume that the failure of a large insurer with significant cross-border business could trigger a confidence crisis that could go beyond national borders and affect wider EU market confidence. As the level of cross-border activity is already high (higher than in the banking sector for instance) and is increasing⁶⁴, adopting an EU-wide approach to IGS is likely to become a more attractive option. The current status quo results in domestic and incoming EU insurers not being covered by the same IGS arrangements. A report by EIOPA in 2012⁶⁵ highlights the diversity of regimes across Member States and the importance of cross-border communication between Member States. However, it also points to the potential need for any future directive on IGS to provide Member States with sufficient flexibility to adapt the directive's requirements to fit their national framework. Gaps and differences in the scope of protection in national IGSs may undermine confidence, resulting in a sizeable impact in the event of the failure of a large insurer with significant cross-border operations.

Destabilising

281. In addition, the introduction of an IGS may be destabilising e.g. if the funding requirements jeopardise the financial stability of undertakings required to provide the funds. The FSB, in its consultation paper on the identification of critical functions in G-SIIs⁶⁶, highlights that fact that payments supported by unfunded IGSs may be more likely to spread industry contagion, although it would be less likely to cause distress to policy beneficiaries. Furthermore, the failure of a member insurer may cause other insurers distress by requiring them to increase

⁶² OECD (2013), "Policyholder Protection Schemes: Selected Considerations", OECD Working Papers on Finance, *Insurance and Private Pensions*, No 31, OECD Publishing, available at <http://dx.doi.org/10.1787/5k46l8sz94g0-en>

⁶³ FSB-HKSAR, 2011a, 2011b.

⁶⁴ Schoenmaker, Dirk and Sass, Jan, (2015), "Cross-border insurance in Europe, challenges for supervision", 8 February.

⁶⁵ Report on the Role of Insurance Guarantee Schemes in the Winding Up Procedures of Insolvent Insurance Undertakings in the EU/EEA, May 2012.

⁶⁶ http://www.financialstabilityboard.org/wp-content/uploads/c_141016.pdf?page_moved=1, October 2014.



their contributions to the fund. Unless the pool is insolvent, existing beneficiaries will not lose their payments entirely.

Moral hazard

282. Since IGSs redistribute costs from solvent insurers and their policyholders to the policyholders of insolvent insurers they may have adverse effects on incentives and the behaviour of market players, i.e. moral hazard. The objectives of compensation schemes would be reinforced if mechanisms to limit moral hazard were built into the structure of the schemes.

Summary of IGSs

283. Overall, IGSs form an important part of the consumer protection regime in the financial sector. Indeed, insofar as the impact of any insurer failure reaches beyond immediately affected policyholders and negatively affects consumer confidence in the insurance sector, then the consumer protection argument is further reinforced, and linked to the broader objective of stability and confidence in the insurance sector.

284. The limitations of IGS are that only certain types of claims are eligible for coverage by IGS, and compensation is subject to certain limits and/or deductibles.

285. Mutualising all losses via an IGS is unlikely to be sustainable, especially if a large life insurer fails, and would put public funds at risk. In this case there would be some policyholder detriment.

286. The extent to which compensation schemes can more efficiently respond to insurer insolvency has not yet been investigated. Nevertheless, the availability of payout arrangements or portfolio transfers prevents policyholders from taking rash actions, while speeding up the process of winding up a failed insurer. This may be an important element in ensuring stability. While the prevention of runs may not be of primary concern to the insurance industry, being able to provide policyholders with payouts quickly, where necessary, would lead to the greater stability of the insurance market and instil confidence in the sector.

287. Whilst we recognise the benefits of compensation schemes in helping to mitigate the impacts of failures, the limitations in coverage, the differences in the nature of such arrangements and schemes between countries, and the fact that they are unlikely to be able to withstand simultaneous multiple failures and failures of a large insurer, means that confidence could be undermined, resulting in a sizeable impact.

5.3. Collateralisation

288. Collateralisation can help limit the impact on the financial system. Collateral can be used to mitigate exposures to/by insurers.

289. New regulatory initiatives such as EMIR aim to increase collateralisation. The initiatives include rules on minimum haircuts applicable to collateral, collateral segregation and restrictions on the use of collateral.

290. Where transactions are collateralised there are less likely to be losses faced by counterparties should insurers fail, although collateralisation may present other problems.

291. The use of collateralised transactions can help reduce systemic risk, due to the diversification of risk capital into the capital markets with full collateral available for claims payments when required. The money required to pay claims is ring-fenced and cannot be eroded by other events that might occur. With broader pools of capital available to disseminate risk,



diversifying the sector capital base and allowing insurers to transfer risk to capital market investors, the increased use of collateralisation is positive for reducing systemic risk (all things being equal).

5.4. Conclusion

292. The size of a disruption caused by a systemic, failing insurer may be reduced through orderly recovery and resolution mechanisms and the existence of well-operating compensation schemes. An orderly resolution could minimise any impact on financial stability, ensure the continuity of critical functions, and avoid exposing taxpayers to loss.
293. By providing consumer protection and confidence, IGSs promote consumer demand for insurance protection and contribute to stability. There have been cases where IGSs have proved to contribute to financial stability (see the Japan example) and where current schemes have proved to function in the case of small insurance failures, but the resolution of a large life insurer in the EU remains untested, with a very few exceptions.
294. Nevertheless, IGS compensation is subject to certain limits. In insolvency there may be inadequate policyholder protection as continuity of cover and payments cannot be achieved, because policies need to be adjusted following a time-consuming valuation. Resolution tools can provide continuity of critical functions.
295. In addition, since IGSs redistribute costs from solvent insurers and their policyholders to the policyholders of insolvent insurers, IGSs may have adverse effects on incentives and the behaviour of market players.
296. Gaps and differences in the scope of resolution regimes and the protection provided by national IGSs may undermine confidence, resulting in a sizeable impact in the event of the failure of a large insurer with significant cross-border operations.
297. Mutualising all policyholder losses via an IGS is unlikely to be sustainable. IGSs may not be able to cover all the policyholder losses in the event of a large or simultaneous failure of several large insurance companies. This needs to be taken into consideration when setting IGS coverage and protection limits. Otherwise, a government bailout may be necessary in extreme scenarios. For instance, the Dutch government opted, at the height of the financial crisis, to provide state aid to a large life insurance group.
298. Unless alternative schemes that have similar effects are in place, it might be necessary for insurers to, for example, hold additional loss-absorbing capacity (in resolution) to the extent necessary to ensure the continuity of insurance policies.
299. There could also be political pressure to bail out an insurer rather than let it enter insolvency. Without a resolution regime with a credible loss allocation mechanism, there might be no alternative to a bailout.
300. Recovery and resolution arrangements and compensation schemes may help mitigate the impact of failures, although the coverage and nature of such arrangements and schemes varies between countries and, being untested, it is not clear how these would function in the face of the failure of a large insurer, or multiple failures.
301. Collateralisation can help to reduce the impact on the financial system. Where transactions are collateralised there are less likely to be losses faced by counterparties should insurers fail, although collateralisation may present other problems.



6. Summary conclusions

302. This section outlines our conclusions and identifies where further work is needed.
303. Insurance, when properly functioning, helps contribute to financial stability: insurers can be valuable providers of stable long-term finance and liquidity to the financial system. The sector provides vital services which benefit the real economy by allowing the transfer and efficient management of risk, potentially enabling activities to be undertaken that would otherwise be unviable in terms of profitability. Services provided to households can enable them to deal with costly shocks, and help in the smoothing of lifetime income.
304. However, there are a number of ways in which insurers can negatively impact the real economy and the financial system. These include gone-concern impacts on the real economy via their failure, and going-concern impacts via their behaviour whilst in business. Many of these impacts may be simply through disruptions to the sector's ability to perform the positive roles outlined above, such as where insurance cover is lost and risks are returned to policyholders, or where functions in the financial system are interrupted, stopped or provided in a destabilising manner. However, there are additional ways in which insurers might pose risks such as the imposition of losses which could have knock-on consequences for others in the system or economy. The source of these impacts is through two main routes: first, when insurers amplify shocks emanating from elsewhere in the system or real economy through their failure and/or behaviour, and second, when they generate the shocks themselves.
305. On the basis of our analysis and literature review conducted so far, we have identified a number of key scenarios that are likely to pose systemic risks in the context of the potential for material impacts on financial stability and the real economy. These are discussed below.
306. First, non-traditional non-insurance (NTNI) activities, such as those involving material liquidity transformation and interconnectedness. These can increase the probability of both pro-cyclicality and the failure of insurers, in part because they increase insurers' exposure to financial market conditions, and increase insurers' exposure to liquidity risk from both policyholders and counterparties. NTNI activities materially amplify the impacts of both pro-cyclicality and the failure of insurers on the real economy and financial system because of interconnectedness and contagion.
307. Second, the potential for pro-cyclical behaviour which can amplify financial market or real economy cycles, booms or stresses, arising from:
- Pro-cyclicality in asset allocation, including the provision of credit and liquidity to the system, particularly in stresses through the potential for asset fire sales.
 - Pro-cyclicality in some types of insurance provision – in particular where the risks being underwritten move pro-cyclically with financial market conditions or the real economy. The key area we identified here was pro-cyclicality in trade credit insurance (TCI), taking the form of both pro-cyclical pricing/writing of cover but also, potentially, TCI insurer distress/failures being correlated with financial market conditions. The analysis suggests that other types of credit insurance could behave similarly (for example monolines in the recent crisis), although levels of this type of activity are low at present.
308. Third, the potential for material disruption arising from a double-hit scenario impacting both assets and liabilities. This is likely to be a more relevant scenario for life insurance – in particular, for accumulation/decumulation products. Whilst the analysis suggests a significant degree of substitutability within the sector, and with other sectors, such substitutability alone cannot prevent losses on existing policies/savings upon insurer failure, which could, in



principle, be material for these products, and widespread given the presence of large firms. A slower pace of failure provides time to rebuild capital or for others to step in to provide a substitute. A disruption which accelerates quickly allows no time for the market to recover.

309. The key double-hit scenario involves potential multiple failures, as a result of common vulnerabilities to asset stresses and prolonged low interest rates (i.e. the risk of a double hit). The EIOPA 2014 stress test has shown that part of the EU insurance sector is vulnerable to this risk due to rigid guaranteed returns and maturity mismatches. In these cases, substitutability is weakened materially, particularly where new capital inflow is limited or slow.
310. Losses incurred by household policyholders in the event of multiple life insurance failures could be possible even in the presence of compensation schemes – given their likely inability to withstand a major (or multiple) failures, which could put public funds at risk should a bailout be necessitated. Even where the compensation scheme does operate there may be inadequate policyholder protection, as continuity of cover and payments cannot be achieved because policies need to be adjusted following a time-consuming valuation. Whilst run-off may be a useful tool for dealing with failure and mitigating potential losses in some cases, in others continuity of cover might suffer if there was an absence of adequate recovery and resolution arrangements. This could impose costs and losses on households, even when long-run substitutability is possible. The differences in the scope of resolution regimes and the protection provided by national IGSs may undermine confidence, resulting in a sizeable impact in the event of the failure of a large insurer with significant cross-border operations. At the same time, IGSs should provide Member States with sufficient flexibility to adapt requirements to fit with their national framework, so what is important is not necessarily harmonisation within the EU but also some minimum level of requirements.
311. Material impacts on the real economy and financial system deriving from disruption to life insurance may also derive in part from fire sales of asset holdings in distress. There may also be material disruption to securities lending and derivatives activities – including the potential for losses to be imposed on counterparties in these activities or for them to close out positions which could impose further losses on policyholders and potentially trigger more asset sales. Again, adequate recovery and resolution schemes could help mitigate some of these impacts. Further work is needed to assess this.
312. For other major activities undertaken by insurers we identified some cases where the impact of material disruption could be high, but the probability of this occurring was generally considered to be lower than in the above scenarios. We also identified some cases where the impact was lower. This is not to say that these scenarios are not relevant for financial stability and the real economy, but we consider them to be less of a threat than the scenarios identified above. These cases are outlined below.
313. First, material disruption to particular classes of commercial insurance such as marine, aviation and transport (MAT) insurance, general and specific liability insurance, and in some cases property insurance (depending on the policyholder), could have a high impact on real economic activity. Loss of cover in these areas could make some activities unviable by returning to firms risks that cannot be borne economically, and by reducing access to/increasing the cost of borrowing (when lenders require insurance, e.g. commercial property). For some economic activities such as construction, insurance is mandatory – without it such activities would have to cease altogether.
314. However, analysis suggests that there is probably substitutability between providers of non-life insurance. The IAIS found that, in general, these markets tend to be fragmented and



competitive. Evidence on concentration levels for different lines of business for EU non-life insurance also suggests that there is probably substitutability in these sectors. However, some specialised lines of business are more concentrated in some countries than the aggregated evidence used by the IAIS; concentration levels are also higher than in the US. More work is needed to ascertain whether there are specific markets in particular EU countries where concentration is high enough to prevent substitutability. There may also be scenarios where the dominance of a particular player builds up to the point where there is a lack of substitutes, and failure of that player occurs. This can happen, for instance, when an insurer quickly gains market share through uncontrolled growth and aggressive pricing, and under-reserving builds up unnoticed, as evidenced by the case of HIH in Australia.

315. More generally, analysis of substitutability must also assess contestability: low barriers to the inflow of new capital would increase the long-run ability to transfer business, all things being equal. We understand that the analysis of contestability of insurance markets is limited. More work on barriers to entry and contestability could usefully augment further concentration analysis.
316. Nonetheless, even when substitutability is sufficient in the longer run, there may still be costs and delays to securing new cover (and in receiving claims from failed firms) in the shorter run. A faster pace of failure may exacerbate the problem by giving policyholders less time to secure new cover. Given the critical nature of insurance for some economic activities, substitutability and contestability needs to be accompanied, where appropriate, by orderly recovery and resolution schemes, run-off and adequate, well-operating insurance compensation schemes to ensure both long- and short-run continuity of cover for such critical services. Again, more work is needed to assess the ability of recovery and resolution arrangements and compensation schemes to fulfil this role.
317. Second, we also consider the potential for material disruption to life-health and general insurance provided to households. Disruption would be likely to have a moderately lower impact on the real economy and financial system relative to our key scenarios, given that whilst losses can be large for individual households, such losses are contingent on the insured event occurring and so would be expected to hit only a subset of insured households at any one time. Policies with material value that has built up (such as benefits) or those that would otherwise be costly to replace (e.g. medical insurance once a condition has developed or the policyholder has aged) may impose higher losses. Losses and costs may be reduced by compensation schemes and the use of run-off, but in some cases recovery and resolution arrangements may assist in securing continuity of cover, which is particularly important where payments under the policy are critical to a household's functioning. In the longer run, analysis suggests that there is an adequate level of substitutability in these markets, but as for commercial and general insurance, more work is needed by the IEG, including an investigation into the ability of new capital to flow into the market following a failure(s).
318. Finally, we note that in all types of activity there are scenarios where insurers choose to withdraw the provision of a product. This may occur following a particular shock – for example the withdrawal of terrorism cover following a particular series of events, or simply in response to changes in business models and longer-run/structural changes in profitability. For the reasons outlined above, such withdrawal of cover, if complete (or widespread), could have a material impact on real economic activity and financial stability. Particular examples include those types of insurance necessary to permit the functioning of key economic activities. In such cases governments may choose to step in to facilitate the provision of cover. We do not, however, identify such scenarios in our list of key risks – whilst we recognise the impacts and



possibility of such events, this is beyond the scope of what could be addressed by prudential measures (macro or micro).



Addendum 1

Categorisation of insurers' activities

Table 3
categorisation of insurers' activities. Adapted from Eling and Pankoke, 2014.

Underwriting	Traditional	Life	Life insurance Annuities
		Non-life	Health insurance Property and casualty insurance Liability insurance Legal insurance
	Non-traditional	Life	Annuities with guarantees/variable annuities Group annuities Separate accounts
		Non-life	Credit insurance Financial guarantees CDSs/CDOs
		Reinsurance	Insurance-linked securities (e.g. catastrophe bonds) Industry-loss warranties
	Funding and investing	Traditional	Life, non-life, reinsurance
Non-traditional		Life	Securitisation of embedded value in upfront paid commissions Securitisation of present value of future profits Short-term funding
		Life, non-life, reinsurance	Securities lending
		Non-life, reinsurance	Credit rating utilisation



Addendum 2

Literature review – overview

Academic Studies: Are insurers systemically risky?

Grace (2010) conducted a series of tests on insurer stock prices to help determine “whether insurers contribute to systemic risk or whether they are potential victims of systemic risk”. The findings suggest that AIG was systemically important but that, generally, the insurance industry is not a significant source of systemic risk. In a network analysis, Hautsch et al. (2013) find that insurers are often positioned in the centre of a financial system, implying relatively strong interconnectedness. Many insurance companies, however, turn out not to be systemically relevant in their paper, despite their central position. This is because they mainly act as risk takers and, therefore, are more likely to suffer from systemic risk than to emanate it.

Many academic studies use market data, such as stock prices, to examine the systemic risk of insurers. The following are the most important of these studies:

- Acharya et al. (2010) use stock price data and find that several insurers ranked highly on an econometric measure of systemic risk when compared to systemically important banks. Leverage is a key determinant of systemic risk. [Comment KM: I took this from another article of theirs but assume this is the case for this one as well?]
- Baranoff et al. (2012) conclude that core insurance activities do not give rise to systemic risk. Only derivatives for speculation and mismanagement of short-term investments could lead to such risks in the insurance sector.
- Billio et al. (2011) also use stock price data and conclude that “a liquidity shock to one [financial] sector propagates to other sectors eventually culminating in losses, defaults, and a systemic event”. The study also finds that financial firms have become more highly interrelated and less liquid during the past decade, and concludes that the increase in interconnectedness is a significant systemic risk indicator. In particular, banks and insurers appear to be the most contagious types of financial institutions, and insurers seem to be the only institutions that affect banks in bilateral relations. In common with other studies, Billio et al. (2011) attribute the increased interconnectedness of insurers with other parts of financial markets to the increased importance of non-core activities.
- Chen et al. (2012) construct a systemic risk measure to examine the inter-connectedness of banks and insurers. The results indicate that the impact of banks on insurers is stronger, and of longer duration, than the impact of insurers on banks. Stress tests have confirmed that banks create economically significant systemic risk for insurers, but not vice versa.
- Baluch, Mutenga, and Parsons (2011) investigate the role of the insurance industry in the financial crisis, with an emphasis on European markets. Their analysis reveals a significant correlation between the banking and insurance sectors and, similar to Billio et al. (2011), finds that the correlation increased during the crisis period. They conclude that systemic risk is lower in insurance than in banking but has grown in recent years due to increasing interlinkage between banks and insurers, and growing exposure to non-traditional insurance activities.



- In addition, Bernoth and Pick (2011) find evidence of the importance of interlinkages between banking and insurance for predicting the financial fragility of the sectors. Modelling these linkages through unobserved common factors and their impact on the distance to default leads to an improvement in forecast accuracy both for individual institutions and for systemic risk.
- Cummins and Weiss (2012) performed an analysis of the overall US insurance industry with respect to systemic risk, and conclude that the core activities of US insurers do not pose a systemic risk. To provide further information on the non-core activities of insurance firms, an analysis was conducted on systemic and non-systemic risk samples. The results indicate that the systemic firms had, on average, more business segments than non-systemic insurers, and the difference was statistically significant. Based on their tests, systemic firms had, on average, higher derivatives holdings both for hedging and for non-hedging purposes than the non-systemic firms.⁶⁷ Also, systemic insurers had larger amounts of multi-class commercial mortgage-backed securities (MBS) and total private asset-backed securities (ABS). The conclusion that banking-type activities are the key to the systemic importance of insurers also receives backing from case studies (e.g. Das et al. 2003).
- Although insurers do not appear to be a primary source of systemic risk to the financial markets through inter-institutional connections, they may be particularly relevant in Europe in too-big-to-fail conglomerates, given that many of them belong to large financial groups.⁶⁸ Stringa and Monks (2007) show that direct ownership links between UK banks and life insurances induce contagion from the latter to the former during events that hit the life insurance industry as a whole, while indirect channels do not seem to have significant effects. In contrast, a case study on the need for state aid by European bancassurers in the context of the recent financial crisis lent support to the view that the contagion emanated more often from the banking than from the insurance side (ECB 2013). Slijkerman et al. (2005) note that the diversification benefits of conglomerates may prevail if the investment risk profiles of the units differ. New financial products may increase the convergence of these risk profiles and hence risk transfer, both within and between financial institutions. These academic results are reflected in the recent FSB work on SIFIs (see the section on policy contributions).
- Gabrielle Demange (2008) analyses the design of insurance schemes in the presence of aggregate shocks and moral hazard. In particular, the paper analyses how the sharing of macroeconomic risks across groups is affected by partial insurance against idiosyncratic risks. The design of unemployment insurance schemes in different economic sectors, and the design of pension annuities in an unfunded social security system, are described. Therefore, the insurance sector is not only affected by macroeconomic conditions, but can also exhibit feedback to those conditions and hence to the rest of the financial system.

⁶⁷ Prudential was omitted from the analysis to obtain this result. See Cummins and Weiss (2012).

⁶⁸ Kashyap (2002) points to the problem of double gearing between insurers and banks in the context of the Japanese financial crisis. Owing to the interconnectedness between the sectors, a failure to tackle the problems of the financial sector in an overarching manner promises to doom any reform plan.



- Most previous research has come to the conclusion that insurers are not systemically risky, as long as they are engaged in core insurance activities (insurance underwriting, reserving, claims settlement and reinsurance). Studies of individual insurers, based primarily on stock prices and/or credit default swap spreads, suggest that some individual insurers rank highly with respect to systemic risk measures. Of course, stock prices and credit default swap spreads reflect both the core and the non-core activities of insurers. There are also other problems with using market data, e.g. that they build on the strong assumption that markets have the correct information and interpret this information correctly. In addition, intragroup exposures may be particularly important for too-big-to-fail institutions, or SIFIs, in a European context. Detecting systemic risk in this regard would require analysis at group level.

Academic studies: Why do insurers fail?

- In a US context, Cummins et al. (1995) and (1998), and Cheng and Weiss (2011) test the ability of the risk-based capital formula (RBC), introduced in 1994, to detect insurance vulnerabilities, with mixed results. Specifically, Cummins et al. (1995) find that the accuracy of the formula can be improved through regressing the individual components⁶⁹ separately and that the formula works better in predicting failures of small than of large companies. Cummins et al. (1998) find that the FAST (Financial Analysis and Surveillance Tracking) audit ratio system dominates RBC as a static method for predicting insurer insolvencies over a three-year horizon. Adding cash flow simulation variables improves the accuracy of solvency predictions. Cheng and Weiss (2011) show that the accuracy of the RBC ratio in predicting insolvencies varies over time. Failures are, in addition, significantly related to an insurer's exposure to hurricane-prone areas, changes in interest rates, the industry-wide combined ratio, and the industry-wide Herfindahl index of premiums written. Finally, in the US life insurance context, Carson and Hoyt (1995) find evidence of high leverage being associated with financial fragility.
- Fewer contributions exist on European data. Ashby et al. (2002) constructed risk maps on the basis of 21 cases of insurers that had either breached their solvency requirement or come close to doing so. They focused on identifying the microeconomic, managerial errors and bad practices that leave an insurance company vulnerable to external events such as an adverse change in the prevailing social or economic climate, and result in bad reactions to these changes. Shiu (2005) finds evidence of a relationship between the low solvency of UK life insurers and their high leverage, as well as high investments in bonds and shares. De Haan and Kakes (2007) show that insolvency risk for Dutch insurers is increased through low solvency and profitability, and short-tailed business. Stephan D. Werner provides a description of episodes in the interwar period, when many German insurers were licensed and subsequently failed, and when even some large insurers were close to failure. This historical experience highlights the possibility that extremely difficult macroeconomic conditions can lead to the collapse of much of the sector.

⁶⁹ These include separate risk models related to investment and underwriting activities, various types of business risk, and, for life insurers, interest rate developments.



- Focusing on the Dutch financial sector, Minderhoud (2003) concluded that systemic risk was particularly important due to the high level of concentration and large cross participations. Another conclusion was that the carrying of life insurance activities by banks might increase systemic risk, possibly due to the common high exposure of life insurers to securities markets. The introduction of the SIFI framework also has the potential to introduce risks to financial stability, which should not be overlooked. It should also be noted that the designation of one institution as G-SII may reinforce its perception as being “too big to fail” and therefore makes it more likely that it would be supported by the government if it were to face problems. There is ample literature, including Okura (2013), analysing the moral hazard problem and the multiple ways in which it can manifest itself in the broader financial sector and, more specifically, in the insurance sector.
- The paper by Marc Philippe Radice (2010), *Finma Working Paper: Assessing the potential for systemic risks in the insurance sector. Considerations on Insurance in Switzerland*, aims to give a view of systemic risks in the insurance sector and comments on the impact of a failure of a key insurance function or institution on the financial sector and the real economy in terms of shortage of capacity or other spillover effects. The emphasis of this paper is mainly on Swiss insurance. The paper provides definitions of systemic importance, criteria on systemic relevance and also gives an overview of scenarios such as a run on an insurer, the loss of insurance capacity, contagion through investments, default on credit default swap obligations, and defaults caused by limited fungibility of capital and liquidity.
- Sharpe and Stadnik (2007) show, using Australian data, that the insurers most likely to be distressed are generally small and have low returns on assets and cession ratios. Relative to holdings of liquid assets, they have high levels of property and reinsurance assets, and low levels of equity holdings. They also write more overseas business, and less motor insurance and long-tailed insurance lines, relative to fire and household insurance.
- Factors related to macro conditions and industry structure that may contribute to financial fragility, include high competition and variations in long-term interest rates (Cummins et al. 1995, Browne et al. 1999, Shiu 2005, De Haan and Kakes 2007 and Cheng and Weiss 2011).
- Russell, David, Stephen G. Fier, James M. Carson and Randy E. Dumm (2013) analysed life insurance policy surrender activity to determine whether surrender is a function of certain macroeconomic variables and, therefore, highly correlated across policies. The results support the Emergency Fund Hypothesis and the Interest Rate Hypothesis. In addition, there is evidence that surrenders relate significantly to policy replacement activity, such as in Outreville (1990), which we refer to here as the Policy Replacement Hypothesis. The significant relationship between policy surrender and macroeconomic factors strongly supports insurer efforts to understand and actively manage disintermediation risk via insurance contract features and investment policy.

Literature on Insurance Cycles

- Boyer, M. M., Jacquier, E. and Van Norden, S. (2012): On the basis of autoregressive model (AR) estimates, it is considered that there is strong evidence of cycles in insurance underwriting performance as measured by the premium-to-loss ratio. Indeed, there is a large body of literature that attempts to explain this documented cyclicity.



First, we show that the parameter estimates from AR models do not lead to any such inference and that, on the contrary, the evidence in the data are consistent with no cyclicity at all. Second, we demonstrate that a number of different filters lead to the same conclusion, i.e. that there is no evidence of in-sample or out-of-sample predictability in annual insurance underwriting performance in the United States.

- Cummins, J. David, and Outreville, J. Francois (1987): Cycles are created in an otherwise rational market through institutional, regulatory, and accounting factors. Empirical evidence from several countries supports this hypothesis.
- Doherty, Neil A. and Garven, James R. (1995): Insurance profits exhibit cyclical behaviour that has been attributed to capital market constraints. We show that changes in interest rates simultaneously affect the insurer's capital structure and the equilibrium underwriting profit. Depending upon asset and liability maturity structure, capital market access, and reinsurance availability, insurers will be differently affected by changing interest rates. We find that the average market response to changing interest rates roughly tracks market clearing prices. These "cyclical" effects are enhanced for firms with mismatched assets and liabilities, and more costly access to new capital and reinsurance. This evidence supports the capacity constraint hypothesis.
- Eling, Martin, and Luhnen, Michael (2000): Underwriting cycles, i.e. cyclical patterns in property-liability insurance prices and profits, are a phenomenon that has found broad acceptance among academics and practitioners in the insurance industry over the last few years. In particular, they have been incorporated into enterprise risk management, solvency models and market scenario analysis. This paper contributes to the empirical literature by considering underwriting cycles in German property liability insurance from 1957 to 2006 for the full market and for nine lines of business. Mean cycle lengths in the German market range between 3.3 years (homeowners) and 7.5 years (credit), with an average of 5.3 years for the whole market. A novel sensitivity analysis on cycle lengths provides a test of the capacity constraint hypothesis, which is rejected on the basis of our empirical data.
- Lazar, Dorina and Denuit, Michael (2012): This article studies the dynamic relationship between premiums and losses in the US property–casualty insurance market, accounting for the external impacts of GDP and interest rates. Compared with the existing literature, the present work innovates in that the dynamic relationships between premiums, losses, GDP, and interest rates are studied in a cointegration framework, single equation and vector approach, involving long- and short-run dynamics. The results suggest a stable long-run equilibrium between premiums, losses and the general economy. In the short term, the premiums adjust quickly and significantly to the long-term disequilibrium and show strong autoregressive behaviour. External factors contribute to explaining the dynamics of premiums.
- Leng, Chao-Chun, and Meier, Ursina B. (2006): The paper sets out to use the loss ratio series of Switzerland, Germany, the USA and Japan to test whether underwriting cycles still exist internationally and to identify possible structural changes. Based on financial theory and insurance pricing theory, a cointegration analysis was performed to check the possible causes of structural changes. All four countries have breaks in different years. This result leads to the hypothesis that the factors affecting underwriting cycles are mainly country specific, such as the economic environment and regulations, rather than global/international. Although the financial theory and the insurance pricing theory



suggest that the loss ratio series should be cointegrated with the interest rate series with a cointegrating coefficient of -1, the empirical results do not support the theories.

Policy Contributions

- FSB – Financial Stability Board (2010): The article recommends a policy framework for addressing the systemic and moral hazard risks associated with systemically important financial institutions (SIFIs) whose disorderly failure, because of their size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity. The report sets out recommendations for improving the authorities' ability to resolve such institutions in an orderly manner, without exposing taxpayers to losses, while maintaining continuity of their vital economic functions. The report recommends that, in particular, financial institutions that are clearly systemic in a global context (G-SIFIs) should have a higher loss-absorbency capacity than the minimum levels agreed in Basel III. These institutions must also be subject to more intensive coordinated supervision and resolution planning to reduce the probability and impact of their failure. As experience is gained, the FSB will review how to extend the framework to cover a wider group of SIFIs, including financial market infrastructures, insurance companies and other non-bank financial institutions that are not part of a banking group structure.
- FSB – Financial Stability Board (2011): The article summarises how G20 Leaders asked the FSB to develop a policy framework to address the systemic and moral hazard risks associated with systemically important financial institutions (SIFIs). In Seoul, G20 Leaders endorsed this framework and the timelines and processes for its implementation. The development of the critical policy measures that make up this framework has now been completed. Implementation of these measures is ongoing, and full implementation is targeted for 2019. The group of G-SIFIs will be updated annually and published by the FSB each November. The methodology, and the data used by it, will be publicly available so that markets and institutions can replicate the authorities' determination. In this regard, the argument has been made that risks emanating from systemically important financial institutions (SIFIs) should be dealt with using macro-prudential measures targeting these institutions, such as capital requirements, intensive supervision, transparency and effective resolution regimes (Ötker et al. 2011).
- FSB – Financial Stability Board (2013): The article presents the policy framework published by the FSB in November 2011. For each G-SII the following are included: recovery and resolution planning requirements, enhanced group-wide supervision, and higher loss absorbency requirements.
- The IAIS (2009) suggested that the specificities of the insurance activity should be duly considered when attempting to extend this broad definition to the insurance sector, namely regarding the specificities of underwriting (inverted cycle) and the risk management approach which is adopted (focus on asset-liability matching). Although it is recognised that insurance is a financial sector with significant links to the real economy, it differs from the other financial services by its business model, which is based on the transfer of risk to insurers through an "inverted cycle of production". This means that insurance undertakings collect premiums at the inception of the contract, in exchange for the payment of claims which may arise during or after the end of the contract. Unlike other financial sectors, the insurance business does not significantly



depend on debt financing, but insurers are, instead, large long-term institutional investors in the economy. The links to the real economy are therefore present on both sides of their balance sheets, through long-term investments on the asset side and by the assumption of underwriting risks recognised as insurance liabilities. Taking into consideration these specificities and the way they could affect the systemic relevance of insurers, the IAIS proposed the addition of a timing-related fourth sub-element, to complement the three originally developed, i.e. size, lack of substitutability and interconnectedness. This would allow the recognition of all potential forms of systemic risk, including that eventually originating from the insurance sector (considered to materialise over longer time horizons, rather than generating immediate shock effects).

- IAIS (2011) Insurance and Financial stability: The article concludes that insurance activity is different from banking activity and therefore traditional insurance activities are not seen as giving rise to any systemic risk. Only those entities exploring non-traditional or non-insurance activities can be more vulnerable to financial market developments and, therefore, are more likely to amplify or contribute to systemic risk. Examples of such activities are financial guarantee insurance, the underwriting of credit default swaps, transactions for non-hedging purposes, derivatives trading, or the leveraging of assets to enhance investment returns.
- IAIS – International Association of Insurance Supervisors (2013a); *Global Systemically Important Insurers: Initial Assessment Methodology*. This summarises the IAIS methodology as of July 2013 (IAIS 2013a) which was developed with the support of a data collection exercise, using 2011 year-end data from selected insurers. Data were collected at a group level for 50 insurers in 14 jurisdictions on certain criteria (e.g. insurance groups with total assets of USD 60 billion or more and a ratio of premiums from jurisdictions outside the home jurisdiction to total premiums of 5% or more; insurance groups with total assets of USD 200 billion or more and a ratio of premiums from jurisdictions outside the home jurisdiction to total premiums of between 0% and 5%). It also involved insurers that were added by supervisors such as, for example, financial guarantee insurers. The IAIS assigned, according to the indicator approach, selected indicators in these categories: size; global activity; interconnectedness; non-traditional and non-insurance activities; and substitutability. According to IAIS (2013a), this framework included several policies, focusing on the application of more intensive and coordinated supervision, increasing the ability to resolve SIFIs in an orderly manner, requiring higher loss absorbency to reflect the greater risks that these institutions pose to the global financial system, strengthening the core financial infrastructures, and providing other requirements required by national authorities.
- IAIS – International Association of Insurance Supervisors (2013b); *Global Systemically Important Insurers: Policy Measures*. In line with the general statement (2013a), the IAIS (2013b) published, in parallel, the list of policy measures applicable to them: the application of the recovery and resolution planning requirements, defined under the FSB's Key Attributes⁷⁰, namely the establishment of crisis management groups (which should carry out resolvability assessments), the development of recovery and resolution

⁷⁰ FSB Key Attributes of Effective Resolution Regimes for Financial Institutions, available at https://www.financialstabilityboard.org/publications/r_111104cc.pdf



plans, including liquidity risk management plans and, finally, the development of institution-specific cross-border cooperation agreements among the relevant resolution authorities; and enhanced group-wide supervision, including direct powers of the group-wide supervisor over holding companies and the oversight by this supervisor of the development and implementation of a systemic risk management plan; higher loss absorbency requirements for non-traditional and non-insurance activities, which should be met by the highest quality capital. Given the absence of a global insurance capital standard, on the basis of which this measure could be applied, the IAIS was mandated to develop straightforward, backstop capital requirements for all group activities, including non-insurance subsidiaries. The main objectives of these measures are the reduction of moral hazard and the internalisation of the externalities created by the possibility of the disorderly failure of G-SIIs. They are expected to reduce the probability and impact of such failures and create incentives for the reduction of the systemic risk of G-SIIs.

Industry-sponsored research

Some studies were conducted before the crisis, and mainly focused on whether reinsurance creates systemic risk for the insurance industry.

- Swiss Re (2003) investigated whether reinsurers pose a major risk for their clients, the financial system or the economy. The broad conclusion is that systemic risk does not exist in reinsurance, but the study concedes (presciently) that reinsurers are linked to the banking sector via credit derivatives – the same instruments that brought down AIG.
- The Group of 30 (2006) investigated the degree to which the reinsurance sector may pose systemic risk. The study presents the results of a “stress test” projecting the results of reinsurer failures equivalent to 20% of the global reinsurance market. The conclusions are that even failures of this magnitude would be unlikely to trigger widespread insolvencies among primary insurers, and that the effects on the real economy would be minimal.
- Bell and Keller (2009) investigated the systemic risk of the insurance industry, concluding that insurers engaged in insurance (core) activities are not systemically risky. As a consequence, they are not “too big to fail” (TBTF) or “too interconnected to fail.” However, they argue that insurers engaging in non-traditional activities such as credit derivatives can pose systemic risk, which can be controlled through the use of more rigorous risk-based capital requirements.
- The Geneva Association (2010) concludes that insurers did not play a major role in the financial crisis, apart from monolines and insurers engaging in non-traditional activities such as credit default swaps. Two non-core activities are identified as potential sources of systemic risk: (1) derivatives trading on non-insurance balance sheets and (2) mismanagement of short-term funding from commercial paper or securities lending.



Addendum 3

Case studies

Periods of heightened stress have often resulted in an increased number of failures. In the 1980s, a number of casualty insurers in the US, such as Mission Insurance Co. and Transit casualty Insurance, became insolvent due to insufficient loss reserves following a period of inadequate pricing. In the 1990s, several US insurers failed, including Executive Life Insurance Co., Mutual Benefits Life Insurance Co., First Capital Holdings Corp., Monarch Life Insurance Co., Kentucky Central Life Insurance Co. and Confederation Life Insurance Co. They failed due to a combination of illiquid asset concentrations and a lack of liquidity to meet maturing liabilities. In 2000, Japanese life insurers, such as Chiyoda Mutual Life Insurance Co., Kyoiei Life Insurance Co. and Toho Mutual Life Insurance Co., failed because guaranteed interest rates were no longer sustainable, given the low interest rate environment.

Liquidity: Several US insurance companies failed in the 1990s due to concentrations in illiquid assets matched by liability structures that accelerated in times of stress. Illiquid assets could not meet the liabilities that became due. Executive Life failed because investments in high-yield bonds lost market value and became less liquid on the secondary market.

Reinforced by Liquidity: In 1995 General American entered into an arrangement with Integrity Life Insurance Co. (unit of ARM Financial). General American distributed funding agreements by ARM and reinsured 50% of this business to Integrity. RGA (Reinsurance Group of America) agreed to reinsure 25% of General American's risk. The business kept on growing, and by 1999 the funding agreement business accounted for 95% of Integrity's insurance liabilities, demonstrating that risk concentration and the effect of rapid growth contributed to the company's distress. ARM's shareholders' equity decreased until the end of 1999. In mid-1999 it announced that it was looking for a buyer. Shortly afterwards, General American recaptured the reinsurance from Integrity, and put USD 3.4 billion of liabilities and related assets onto General American's balance sheet. One week later, General American was taken under administrative supervision as it could not meet the high surrender demands. The same thing happened to Integrity a couple of days later. Metropolitan Life stepped in to acquire both General American and RGA at the end of August.

Under-reserving and underpricing: Equitable Life failed due to an earlier underpricing of guarantees embedded into products and the overuse of equities to back policy liabilities. Others, such as Mutual Risk Management Ltd, Trenwich Group Ltd, Acceptance Insurance Cos. Inc., PMA Capital Insurance Co. and Frontier Insurance Co. also failed because of underpricing and reserving problems. Globale Rueck ultimately went insolvent as it had to significantly strengthen its reserves. Cosmic Insurance also failed following inadequate reserving in 2002. Soft pricing and reserving initially helped the company to grow rapidly, especially in motor and fire insurance. The problems began when the company faced losses from higher claims and inadequate loss reserves. Cosmic's demise was also spurred by an aggressive investment profile that was high in equities, and by the concentration of its business lines. Cosmic raised additional capital to strengthen its financial position, but in the end had to stop writing new business as it could not restore the regulatory solvency margin. Kuo Hua Insurance Co. Ltd, a non-life insurer, and Kuo Hua Life Co. Ltd both suffered from under-reserving issues. Nissan Mutual Life also suffered from inadequate capital resources. In times of negative spreads it was taking on investment risk to compensate, creating higher risk profiles. Drake Insurance also failed because of underpricing.

Unforeseen claims and catastrophes: Taisei Fire & Marine Insurance Co. Ltd was hit badly following the terrorist attack on the World Trade Center in 2001 following which it merged with



Sompo Japan Insurance. It also failed because of management issues. Western Pacific Insurance failed because of earthquakes and inadequate reinsurance purchases.

Management and governance issues: Risk management issues, in combination with tight pricing and reserving, were the cause of underwriting losses. The failure of Independent Insurance also reflected problems with inadequate governance. Growth was achieved through underpricing, followed by under-reserving overseen by the CEO. Reinsurance irregularities were also a problem. The company also had a history of price undercutting and reserving issues. AIG also expanded outside its areas of competence, alongside rapid growth. Its diversification into quasi-banking was compounded by governance and ERM issues.

Expansion into new areas and non-core activities: HIH collapsed due to overexpansion, having grown through acquisitions, and organically. Reserving became a problem as well. The company also relied heavily on brokers. Scottish Re also paid heavily for acquisitions in order to grow quickly. However, before failing, it announced a plan to put business into run-off.

A high tolerance of investment risk: Mannheimer Leben ran into trouble due to a very high investment in shares.

Insurance companies that failed	Reasons for failing
FAM (Fire, Auto and Marine)	The owner was jailed. He falsified the assets held by the company to make it appear solvent when it was not. 400,000 motorists in the UK were left without cover in 1966. Reasons for failure: rapid expansion, fraud and greed, underpricing.
Homestead	They ran into difficulties in the 1990s due to a combination of poor management, high dividend payments, and rapid growth. In October 1995 an investment fund bought Homestead's holding company in what could be deemed an industry buyout.
Insurance Corporation of Ireland	They expanded at a time when premium rates were low and falling. Attracted long queue of brokers. It was not long before rumours started to spread that ICI must be sustaining heavy losses given how active they were in the market. They became insolvent in 1985.
Weaver companies now known as KWELM (Kingscroft, Walbrook, El Paso, Limestreet and Mutual Re)	Writers of large amount of casualty business, especially that emanating from the US. This was a period when such business was largely unprofitable, largely as a result of the exposure to asbestos, pollution and health hazard claims which heavily impacted those years. Other participants in the market suffered losses resulting from such exposures. Rumours started. A USD 5 million bottom layer on an aggregate medical malpractice program for a group of New York Hospitals which they priced at 30% was one of the reasons why some Lloyd's and London Market underwriters stopped buying reinsurance from them on the basis that, for long-tail business, there was a significant risk that they would be insolvent by the time the claims became due for payment. Nevertheless, the companies survived for more than five more years before they finally failed.
Taisei Marine and Fire	Filed for court protection in November 2001. Underwriting was outsourced. Also, no adequate reinsurance protection.
Transit Casualty	Failed in 1985 as underwriting was outsourced and loss reserves proved deficient following a period of inadequate pricing; also rapid expansion into new areas, excessive reliance on reinsurance.
Mission Insurance Company	Failed because of overreliance on reinsurance company and reserves proved deficient following a period of inadequate pricing.
St Helen's Insurance	Did not write any new business for about 23 year before it was placed into voluntary winding-up in 1989. Suffered severe losses from a hurricane and was also hit by sizable asbestos claims.
Drake Insurance	Motor insurer that presumably saved money on reinsurance in order to save money. The FSA stepped in in 2000 because Drake was not maintaining a high enough solvency margin. Also, underpricing in times when profits on motor business could only be gained through investment income. The main reasons for failure appear to be: underpricing, lack of reinsurance.
Chester Street Insurance Holdings	Unforeseen exposure to asbestos and under-reserving in 2001.



Insurance companies that failed	Reasons for failing
Independent Insurance Company	Went into liquidation in 2001. Reasons, among others were: under-pricing and rapid expansion/growth (into new countries, such as France and Spain and into new areas such as the London Market), false reporting, i.e. including fraud.
AIG	In 2008, the US government took control of AIG in an USD 85 billion bailout. A meltdown could have cost the financial industry USD 180 billion, according to RBC Capital Markets, because AIG provided insurance on more than USD 441 billion of fixed-income investments held by the world's biggest institutions, including USD 57.8 billion in securities tied to subprime mortgages. Failed because of expansion outside its areas of competence, coupled with rapid growth.
HIH	With USD 7.8 billion in assets, HIH was considered one of Australia's largest insurance firms and failed in 2001. It was the second-largest Australian insurer. Failed because of overexpansion. Had exposure to the aggressively competitive Californian workers' compensating market, the company had also grown under a dominant management style, aggressively chasing new business. Also dependent on broker business.
Scottish Re Group	Developed a leverage growth model with a pattern of overpaying for acquisitions. Put remaining treaties into run-off in late 2008 following the stop on writing new business in early 2008.
Equitable Life Assurance Society	EL aimed to distinguish between guaranteed annuity rate (GAR) and non-GAR policyholders. A court ruling prompted the restructuring. Also inefficient pricing and reserving of guaranteed products.
Independent Insurance Company	Went into liquidation in 2001. Reasons, among others were: under-pricing and rapid expansion/growth (into new countries, such as France and Spain and into new areas such as the London Market), false reporting, i.e. including fraud.
Globale Rückversicherungs AG	In 2002 it ran into group solvency problems. The reinsurance subsidiary in the US made losses. It belonged to Rolf Gerling (2/3) and Deutsche Bank (1/3). Failed predominantly due to deficient reserves for casualty lines following a period of inadequate pricing industry-wide, compounded by weak risk management.
Manheimer Leben AG	The crisis was eventually created by one company within the group but led to a crisis of the overall group due to intercompany obligations. Mannheimer Leben went into trouble due to a very high investment in shares. Protektor was created following the failure of Mannheimer Leben in 2003.
Fortis/Ageas	After receiving a bailout from the Benelux governments, its Belgian banking operations were sold to BNP Paribas, while its insurance and banking subsidiaries in the Netherlands were nationalised by the Dutch government and renamed ABN AMRO. The Dutch insurance arm of Fortis was split off as ASR Nederland. Fortis retained the rest of its insurance operations (remaining the largest provider in Belgium), and changed its name to Ageas in April 2010, with ownership of the Fortis brand having passed to BNP Paribas. Participation in the purchase of ABN Amro made Fortis very vulnerable and undercapitalised on the eve of the sub-prime crisis. The funding plan for the acquisition did not work as the crisis had started, and the structured credit investments by Fortis had to be simultaneously impaired.
VDV Lebensversicherung (Greece/Germany)	Failed in 2002 because of solvency problems.
Mutual Benefit Life Insurance Co., Executive Life Insurance Co. and Confederation Life Insurance Company	Failed in 1992-1994 in the US due to a combination of illiquid asset concentrations and a lack of liquidity to meet maturing liabilities.
Nissan Mutual Life	Failed in 1997. As no protection scheme for policyholders existed, suspicions about the credibility of life insurers spread rapidly, and many life insurers voluntarily closed their business.



Insurance companies that failed	Reasons for failing
Japanese life insurers such as Chiyoda Mutual Life Insurance Co., Kyoei Life Insurance Co. and Toho Mutual Life Insurance Co.	Entered rehabilitation proceedings or closed their business in 2000 under regulatory orders because guaranteed interest rates on savings products were no longer sustainable, given low interest rates in Japan.
Several international non-life insurers and reinsurers failed, including Mutual Risk Management Ltd, Trenwick Group Ltd and Converium Reinsurance (North America) Inc.	Failed from 2002-2005 predominantly due to deficient reserves for casualty lines following a period of inadequate pricing industry-wide, compounded by weak risk management.
Several US Life Assurance failures including First Executive Corp., Executive Life Insurance Co. of CA, First Capital Holdings Corp., Mutual Benefit Life Insurance Co, Monarch Life Insurance Co, Kentucky Central Life insurance Co. and Confederation Life Insurance Co.	Failed from 1991-1994 due to asset concentrations.
General American/RGA	In 1995, General American entered into an arrangement with Integrity Life Insurance Co., a unit of ARM Financial, whereby General American would distribute funding agreements designed by ARM and reinsure 50% of the funding agreement business to Integrity. Reinsurance Group of America Inc. (RGA) agreed to reinsure 25% of General American's retained risk under the funding agreement program. By 1999, the funding agreement business accounted for 95% of Integrity's insurance liabilities, demonstrating that risk concentration and the effect of rapid growth also contributed to the company's distress. Due to a rise in interest rates, ARM's shareholders' equity decreased by about 50% between Dec. 31, 1998, and June 30, 1999. On July 29, 1999, the company announced that it would restructure its funding agreement business and seek a buyer. Surrenders on the funding agreements, which allowed investors (mainly sophisticated mutual funds) to put the funding agreements to the company with seven days' notice, increased significantly due to the announcement and subsequent lowering of the ratings on ARM. On 3 August 1999, General American recaptured the reinsurance from Integrity, which forwarded USD 3.4 billion of liabilities and related assets onto General American's balance sheet. On 10 August of the same year, General American was taken under administrative supervision by the Missouri Department of Insurance because of its inability to meet high surrender demands. On 20 August, similar action was taken on Integrity by the Ohio Insurance Department at the company's request because of insufficient liquidity to meet its remaining obligations. RGA returned USD 1.4 billion of liabilities and USD 1.8 billion of assets to General American related to the funding agreement retrocession agreement, and other agreements related to its legacy as successor to the General American Reinsurance business. Metropolitan Life Insurance Co. (MetLife) stepped in to acquire both General American and RGA one week later.
Several failures such as Mutual Risk Management Ltd, Trenwick Group Ltd, Acceptance Insurance Cos. Inc., PMA Capital Insurance Co. and Frontier Insurance Co.	Failed in 2002 to 2004 due to underpricing and reserving problems.
Cosmic Insurance	Failed in Singapore in 2002 and was subject to regulatory takeover following inadequate reserving. Strategy of soft pricing and reserving helped the company to grow rapidly in motor and fire insurance and performance bonds. The strategy ultimately proved inadequate in the face of growing payments to policyholders, driven by court rulings on payments that were higher than anticipated. It experienced continued losses arising from higher claims, large uncollected premium balances, and inadequate loss reserves. Cosmic also had an aggressive investment profile that was high in equities and had a concentration of its business lines. It did raise additional capital to strengthen its financial position, but the amount raised was insufficient to restore the regulatory solvency margin for its domestic insurance policies that the Insurance Act required it to maintain. Cosmic had to stop writing new business or accepting renewals in 2002.
Kuo Hua Insurance Co. Ltd	Was taken over in 2005 because of its fragile capitalisation. Taiwan's operating environment is highly competitive and most insurance companies are relatively small in capital size.
Kuo Hua Life Insurance Co. Ltd	Was taken under regulatory control because of negative reported capital in 2009. Also suffered a negative spread burden due to its asset-liability mismatch risk.
Quinn Insurance Ltd	In March 2010, following an application by the Central Bank of Ireland, the Irish High Court appointed joint provisional administrators to Quinn Insurance Ltd, due to what the regulator stated were "significant breaches" of regulatory solvency requirements. The Central Bank's decision to apply to the High Court for the appointment of the Administrators was based on the emergence of the guarantees to the benefit of other non-insurance parts of the Quinn Group, a significant concern that Quinn Insurance Ltd's technical reserves were insufficient and that the manner in which the business of Quinn Insurance Ltd was being, and had been, conducted had failed to make adequate provision for its debts.
Western Pacific Insurance Ltd	Placed into liquidation in New Zealand effective April 2011, because the cost of the earthquake exceeded its reinsurance cover.
Dexia	Losses in US monoline subsidiary FSA, combined with counterparty losses (Lehman, US, IE, IC and TR banks) and valuation losses in stock market portfolio; capital injections to FSA in 2007 from holding; USD 5 billion liquidity line to FSA in June 2008 that endangered Dexia.
KBC	Losses in Q3 2008 owing to exposures to Lehman Brothers and Washington Mutual, impairments on shares, revaluation of CDOs (by far the biggest factor) and exposures to Icelandic banks. Although the capital of the group was able to absorb the losses and still stay above the regulatory capital requirements, recapitalisation was required to reassure financial markets. Double leverage remained unchanged, preserving future lending capacity at 115% gearing ratio. Additional CDO losses in Q4 and Q1 2009 plus restructuring of a monoliner that had insured CDO exposures and mark-to-market adjustments led both solvency ratios of the recapitalised conglomerate to fall sharply.



Insurance companies that failed	Reasons for failing
Irish Life & Permanent	An example where the insurance arm supported the banking arm. Heavy reliance on wholesale markets and high exposure to IE property markets with tracker mortgages and high LTV ratios; but very limited exposure to IE commercial property (unlike other IE banks). Insurance profits were sufficient to support the capital position of the banking business until July 2011 (despite pre-tax loss of EUR 15 million in 2009 owing to increased redemptions of customers facing reduced incomes). The low-risk unit-linked policies supported capital. Asset management arm also remained strong throughout the crisis. Mortgages and high LTV ratios; but very limited exposure to the IE.
Aegon	Losses in Q3 2008 owing to exposures to Lehman Brothers and Washington Mutual (EUR 350 million) and a revaluation of corporate bond portfolio by EUR 2.5 billion ⁷¹ that caused a confidence shock in the insurance company which had sold policies that protected policyholders from stock market losses.
SNS Reaal	2008: EUR 750 million ⁷² capital aid for withstanding increased stock market fluctuations and market turmoil which put the buffers in the insurance business under pressure. 2013: In the "too-big-to-fail" category. Steep loan losses on real-estate projects in US, ES and NL. Most private parties were wary of getting involved because of the risk involved in distressed property loans. Double leverage impeded the search for solutions. The MoF stated that it was too difficult to isolate activities so only the parts of public relevance could be rescued.
General American/RGA	In 1995, General American entered into an arrangement with Integrity Life Insurance Co., a unit of ARM Financial, whereby General American would distribute funding agreements designed by ARM and reinsure 50% of the funding agreement business to Integrity. Reinsurance Group of America Inc. (RGA) agreed to reinsure 25% of General American's retained risk under the funding agreement program. By 1999, the funding agreement business accounted for 95% of Integrity's insurance liabilities, demonstrating that risk concentration and the effect of rapid growth also contributed to the company's distress. Due to a rise in interest rates, ARM's shareholders' equity decreased by about 50% between Dec. 31, 1998, and June 30, 1999. On July 29, 1999, the company announced that it would restructure its funding agreement business and seek a buyer. Surrenders on the funding agreements, which allowed investors (mainly sophisticated mutual funds) to put the funding agreements to the company with seven days' notice, increased significantly due to the announcement and subsequent lowering of the ratings on ARM. On 3 August 1999, General American recaptured the reinsurance from Integrity, which forwarded USD 3.4 billion of liabilities and related assets onto General American's balance sheet. On 10 August of the same year, General American was taken under administrative supervision by the Missouri Department of Insurance because of its inability to meet high surrender demands. On 20 August, similar action was taken on Integrity by the Ohio Insurance Department at the company's request because of insufficient liquidity to meet its remaining obligations. RGA returned USD 1.4 billion of liabilities and USD 1.8 billion of assets to General American related to the funding agreement retrocession agreement, and other agreements related to its legacy as successor to the General American Reinsurance business. Metropolitan Life Insurance Co. (MetLife) stepped in to acquire both General American and RGA one week later.
Insurance companies that failed	Reasons for failing

⁷¹ Source: http://www.marketwatch.com/story/aegon-swings-to-loss-plans-to-free-up-more-capital?siteid=rss&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A%20marketwatch%2Fmarketpulse%20%28MarketWatch.com%20-%20MarketPulse%29.

⁷² Source: <http://www.globaltradealert.org/measure/netherlands-aid-sns-reaal-nv>.

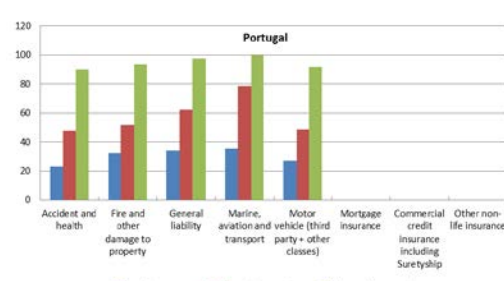
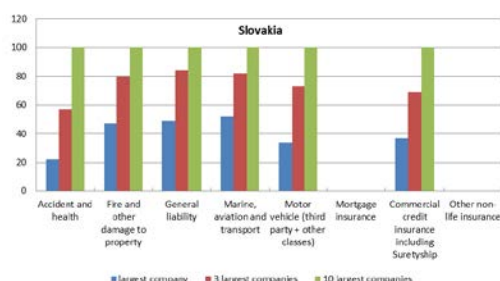
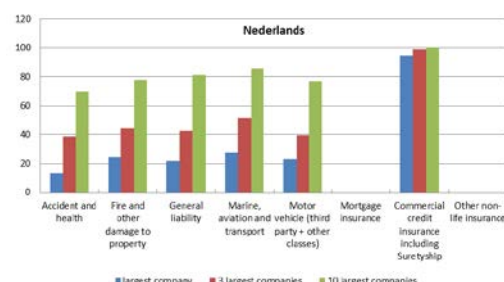
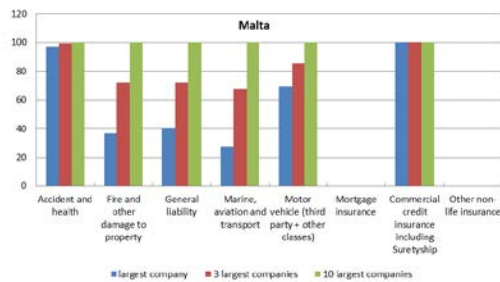
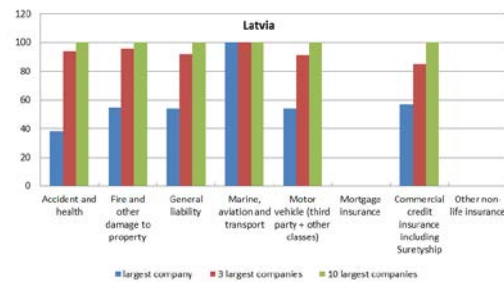
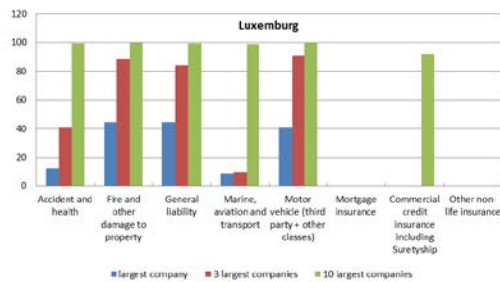
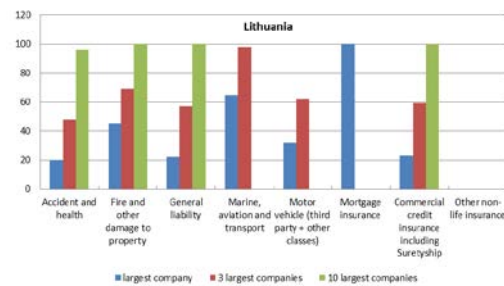
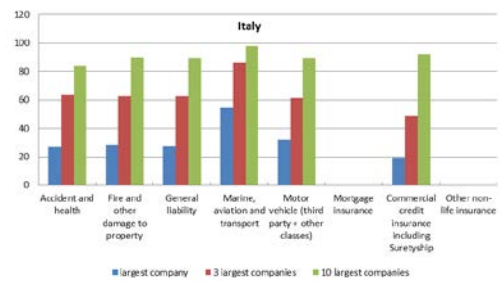


Addendum 4

Non-life insurance concentration by country (un-weighted average)

Figure 14





Addendum 5

Public interventions in the EU insurance sector

In Europe, during the recent financial crisis several Member States intervened, after approval by the Commission, to support insurance undertakings through state aid, either by absorbing impaired assets (e.g. ING: EUR 0.75 billion) or recapitalising them (e.g. Aegon: EUR 3 billion; Ethias: EUR 1.5 billion; ING: EUR 4.75 billion). A number of financial conglomerates which combine banking and insurance activities have been supported by public funds. These interventions seem to have been primarily motivated by problems on the banking side.

Unprotected insurance failures may lead to a slowdown of the real economy for two reasons. First, the reduction in policyholders' wealth can severely affect their consumption behaviour. Second, when insurance companies fail, the economy's overall ability to manage risk is reduced. There is evidence that the collapse of insurance undertakings can significantly harm the development of the economy over the ensuing months or years. The likelihood of such disruptions is clearly greater where the insurance market is concentrated or the collapse affects many undertakings at the same time.

Examples of cases of European insurers being bailed out are discussed below, looking at the reasons why aid was necessary, what damage the government was trying to avoid, and looking at the existence or otherwise of compensation schemes.

State intervention in the Netherlands, ING, 2008

ING was bailed out in 2008 by the Dutch government, receiving a cash injection, after mortgage backed securities had landed ING in big trouble. After the last payment in 2015, ING will have paid the state a total of EUR 13.5 billion for the capital injection of EUR 10 billion, yielding the government a return of 12.5%.

Importance of ING in the Dutch economy and in the market

ING had a market share of 15-20% in life insurance and 5-10% in non-life insurance (related to gross written premiums in 2008). It therefore had a certain dominance in the market.

Why did the Dutch government provide state aid? What damage was it trying to avoid?

Against a backdrop of an overall loss in confidence in financial markets, ING faced sustained large losses in investment portfolios, resulting in declining solvency ratios and falling stock market value. The government intervention was aimed at strengthening the financial buffers, among other things, in order to secure access to financial markets. Also, there were increased signs of reputational effects (loss of confidence), both within financial conglomerates, and for other financial institutions and the general financial system and economy. Within financial conglomerates, confidence effects may have caused distress at the insurer to spread to the bank or vice versa. Problems at the insurance part could therefore easily result in a loss of confidence in the group as a whole, or in the bank. In addition, there was a fear of reputational contagion to other financial institutions or to the financial system in general.

ING had a pivotal function within the Dutch financial sector – a loss of confidence in such a core institution would have led to a further disturbance of the financial situation at the time, and harmful spillover effects in the economy as whole. The local systemic importance of ING's banking operations provided the impetus for the government to ensure it did not come under stress. As



such, in view of the serious threat to financial stability, state aid was approved as the remedy for a serious disturbance in the economy.

Existence of compensation schemes

No compensation schemes were in place at the time covering either life or non-life insurance. The Netherlands is one example of a country where IGS was established as a consequence of insurance failure. Occurrence of failure led to the establishment of IGS.

State intervention in the Netherlands, Aegon, 2008

Aegon followed suit in joining fellow Dutch insurer ING in tapping the government bailout fund, receiving a EUR 3 billion capital injection. Unlike ING, Aegon did not have a banking division and appeared much more sufficiently capitalised than its Dutch competitor. Aegon had been regarded as one of Europe's most vulnerable life insurers because two-thirds of its operations were in the United States. Aegon accepted state support following losses on investments in US mortgage-backed securities and the US financial sector.

Importance of Aegon for Dutch economy and market

In 2008, Aegon was the Netherlands' second-largest supplier of pensions, with almost a quarter of the Dutch market. It ranked third with a 10.6% market share of the Dutch life insurance market in terms of gross premium income in 2005 and 2006. In 2006, the market for life insurance premiums accounted for just over 5% of Dutch GDP. It was internationally listed and one of the leading financial institutions in the Netherlands with three main, established markets: the United States, the Netherlands and the United Kingdom.

Why did the Dutch government provide state aid? What damage was it trying to avoid?

The Dutch government took measures to restore confidence in the financial system and, as part of this intervention, committed to providing capital support to each financial institution that faced difficulties, as part of a European plan to calm financial markets. In view of the specific position of Aegon in the Netherlands and worldwide, the importance of Aegon for the Dutch economy was recognised. This was also confirmed in a letter from the DNB to the Commission which stated that Aegon had a pivotal role within the Dutch financial system and that a loss of confidence in such a core institution would have led to a further disturbance in the financial system. A public sector capital intervention in Aegon was, therefore considered a necessary and appropriate means to strengthen, and thus restore, market confidence in the Dutch financial sector.

The reasons stated above for ING are similar to those for Aegon. The government intervention was aimed at remedying a loss of confidence and ensuring financial stability.

Existence of compensation schemes

No compensation schemes were in place at the time covering either life or non-life insurance. The Netherlands is one example of a country where IGS was established as a consequence of insurance failure. Occurrence of failure led to the establishment of IGS.

State intervention in Ethias, Belgium 2008

At the outbreak of the financial crisis Ethias, the Belgian insurer already discussed in Section 4, was hit by a loss of customer confidence and was confronted by a severe liquidity crisis due to a sudden surge in withdrawals of funds by its clients. A key feature was low or non-existent surrender



charges on major product lines. Ethias' situation spiralled out of control during September and October 2008, reducing its capital and its solvency margin to below the regulatory limit, and causing it to run into severe difficulties. This led to the Belgian government injecting EUR 1.5 billion in capital to restore the company's solvency margin and imposed radical changes to the company's governance in the context of restructuring.

Importance of Ethias for Belgian economy and market

Ethias historically operated as a group of mutual companies. It was the third insurer by market share in the Belgian insurance market.

In 2007, Ethias accounted for almost 13% of the Belgian insurance market, essentially in the area of life assurance and supplementary pensions, but also in that of third party liability insurance and the coverage of industrial accidents.

Why did the Belgian government provide state aid? What damage was it trying to avoid?

According to the Belgian authorities, the business carried out by Ethias was very important to the country's economy. First, Ethias was one of the country's leading insurance groups, both in the market for public entities and in that for private individuals. Ethias counted among its members more than 540 towns and municipalities, the ten provinces, the regional and language community authorities, hundreds of public social assistance centres and thousands of inter-municipal and other associations. Ethias's continued existence was therefore considered important to the functioning of the Belgian State. Most public institutions were insured by Ethias, and would have found themselves in a state of legal and financial uncertainty should Ethias have ceased trading.

In addition, Ethias offered several investment products accounting for a non-negligible share of ordinary Belgians' savings. Any uncertainty about the survival of these funds may have damaged Belgians' already fragile confidence in the country's financial institutions.

Furthermore, Ethias was one of the Belgian financial world's major investors. For example, its shareholdings in other financial institutions (in particular Dexia, in which Ethias held 6.5% of the shares prior to Dexia's capital increase) brought with them the risk of a leverage effect on the entire Belgian financial system. Insolvency would have had significant negative consequences for the public at large, and would have weakened the Belgian financial system as a whole. It would also have meant the loss of over 1,400 direct jobs and a considerable number of indirect jobs (particularly in Liège and Hasselt, where the Ethias group was a leading employer, but also to some extent in Brussels and elsewhere in Belgium).

Finally, losses of the insurer passed on to policyholders could have caused or deepened financial market turbulence and instability as policyholders would have reacted with sudden mistrust of the whole insurance sector, leading them to surrender their policies en masse. To put it differently, when a large number of policyholders decide to surrender their policies at the same time, this may lead to an exacerbated downward spiral in stock market prices as insurers may have to sell large quantities of assets in order to obtain the necessary liquidity.

In this context, the Commission and the Belgian state considered that the establishment of a recapitalisation mechanism for the Ethias group was necessary. The strengthening of its capital base stabilised not only the beneficiary, but also the financial system as a whole. The view was that such an intervention was necessary in order to boost confidence in the proper functioning of the financial system.

Compensation scheme



In Belgium, a special scheme existed that covered only very specific classes of non-life insurance (workers' accidents). As far as Ethias was concerned, therefore, no support could be provided.

Since 2008, life insurers have had the option of participating, upon request, in an insurance compensation scheme to the benefit of their clients. Participation in this scheme was not originally mandatory and there was therefore no automatic coverage. Only Ethias decided to participate in this compensation scheme at that point. Starting from January 2011, the participation in the protection scheme has become mandatory for insurance companies.

Intervention in Quinn Insurance Ltd (QIL), Ireland 2010

QIL was an Irish general insurer which ran into difficulties in 2010. In March 2010, following an application by the Central Bank of Ireland, the Irish High Court appointed joint provisional administrators to Quinn Insurance Ltd, due to what the regulator stated were "significant breaches" of regulatory solvency requirements. The Central Bank's decision to apply to the High Court for the appointment of the Administrators was based on the emergence of the guarantees to the benefit of other non-insurance parts of the Quinn Group, a significant concern that Quinn Insurance Limited's technical reserves were insufficient, and that the manner in which the business of Quinn Insurance Ltd was being, and had been, conducted had failed to make adequate provision for its debts. These breaches of solvency rules by the company left Irish taxpayers with a bill of up to EUR 1.3 billion for claims against the state-funded insurance compensation scheme.

As part of the restructuring, the Irish general insurance part of QIL was sold to a joint venture between the US insurer Liberty Mutual and Anglo Irish bank, while the UK operations were wound down.

Importance of QIL to the Irish economy and market

QIL was a leading insurer in the Irish market. It was the largest Irish-owned general insurer. QIL employed over 2,800 staff in its operations in Ireland and in its Northern Ireland and UK offices. The table below provides information on QIL's market shares in the non-life insurance segment. It was a significant player in the Irish insurance market.

Table 4
QIL market shares of gross written premium in Ireland 2009-2010

(percentages)

Market share/%	2009	2010
Liability insurance	11.1	7.5
Motor insurance	17.0	13.9
Property insurance	4.3	4.1
Health insurance	-	21.0
Non-Life insurance	10.4	8.6

Source: Irish Insurance Federation statistics from EC report on State Aid SA.33023 to Quinn Insurance.



Why did the Irish government provide state aid? What damage was it trying to avoid?

The Irish Insurance Compensation Fund (ICF) is a fund established to finance the repayment of policyholders' claims in the event of an administration or liquidation, covering the gap between the firm's assets and its liabilities. The funding for the ICF was initially provided by the Irish state in the form of a loan to the ICF in order to enable it to disburse funds to QIL upfront, while a levy on the industry was put in place to raise the necessary funds. The proceeds of the levy contributed to the repayment of the state loan.

Without the support QIL would have been liquidated, leading to limits on the repayments to policy holders. Therefore, from an economic point of view administration (with the split and sale of the viable part) was the most efficient way of dealing with the failing insurance company.

Compensation scheme

A compensation scheme was already in existence in Ireland. The Insurance Compensation Fund (ICF) was used and a contribution was made to ensure policyholder protection. The funding to the ICF was provided in the form of a mandatory levy on the non-life insurance industry.

