Annex 4
Systemic risks of reinsurers

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Summary

1. Reinsurance provides economic benefit and helps financial stability by taking on risks which primary insurers do not want or cannot take. The ways in which reinsurers and primary insurers can pose systemic risks are similar (see note on sources of systemic risks). In addition, there are a few specific features of and developments in the reinsurance market which call for close monitoring and further analysis.

2. Firstly, reinsurance creates links between primary insurers and reinsurers and between reinsurers and other reinsurers (so-called retrocession). Potentially this can lead to contagion from reinsurers in the event of a default. However, insurers typically reinsure only parts of their liabilities and diversify their providers of reinsurance over a set of reinsurers. In addition, reinsurance contracts are regularly settled and/or collateralised. Studies suggest that the failure of a reinsurer can have an impact on individual insurers but not across the sector or beyond that to the financial system.

3. Second, reinsurance is a global business with a few large reinsurers dominating the market. The high concentration levels in certain product segments raise concerns about a lack of substitutes in the event of the failure of a large reinsurer. We note that in the past few years a large influx of capital from traditional and non-traditional investors has entered the market.

4. Third, some of the largest reinsurers are domiciled in the EU, covering risks around the globe. Reinsurers also operate in so-called offshore centres, covering risks of European insurers. The presence of large reinsurers in the EU calls for sufficient provisioning and capital levels to cover the exposures to the wide variety of tail-end risks, such as catastrophe risks. The presence of reinsurers in offshore centres calls for a critical assessment of regulatory regimes in those countries. The reduction of risk, provisioning and capital requirement at an EU insurer following a reinsurance contract with such a reinsurer should reflect the degree of equivalence of the prudential reinsurance regime in those countries with Solvency II.

5. Fourth, an alternative way of reinsurance is emerging: insurance-linked securities, for instance catastrophe bonds, transfer insurance risks to investors. This broadens the scope for risk transferral, but it also creates additional links between (re)insurers and financial markets. This might make the reinsurance market more vulnerable to investors' procyclical behaviour. For instance, the ongoing search for yield in the current environment attracts investors in catastrophe bonds, which in turn drives down the price of risks insured (even though the risks themselves may not have changed materially). The absolute volumes, though sharply increasing, are still modest for now.

6. Finally, insurers may set up reinsurance subsidiaries and move risks to these entities. In the event that the regulatory regime differs between insurers and such reinsurers, this may result in regulatory arbitrage. Solvency II, however, should mitigate this risk through group supervision, equal requirements between insurers and reinsurers and its equivalence regime. Only in cases where EU groups have captives as subsidiaries in countries outside the EU and the regulatory regimes in these countries are (temporarily) considered equivalent to Solvency II, but in practice they are not, could this mean arbitrage opportunities.

1. Background

1.1. What is reinsurance?

7. Reinsurance provides a way for an insurance company to protect itself from insurance shocks by passing on the risk to other insurers. This is done using largely the same business model as applies in primary insurance and comparable principles of provisioning and asset-liability management. Reinsurance redistributes or diversifies part of the risk associated with the business of issuing insurance policies. With coverage provided by reinsurance, a primary insurer may issue more policies, or policies with higher limits than would otherwise be possible, as some of the risk is transferred from the primary insurer to the reinsurer. This has the effect of increasing the capacity of primary insurance. This is possible as reinsurers absorb losses that are not retained by primary insurers, and in so doing they limit the earnings volatility of primary insurers and therefore the amount of capital needed to be held against potential losses.

8. Reinsurance, when properly structured, provides legitimate economic benefits:

   (i) providing capital relief to insurers, hence allowing them to expand their businesses, enhance their diversification and help them achieve economies of scale/scope;

   (ii) providing an incentive for insurers to expand into less well-known products or geographical markets, knowing that reinsurance is available as a backup;

   (iii) contributing to the resilience of the insurance market to severe risks;

   (iv) providing long-term investment to the real economy through their investment portfolios.

1.2. Scope

9. In spite of a significant amount of analysis from regulators and industry, there has been no consensus to date as to the systemic relevance of reinsurance, the systemic relevance of individual reinsurers, or the implications of the sector for macroprudential policy.

10. Because reinsurers and primary insurers essentially carry out the same kinds of activities and both have the potential to stray from pure (re)insurance, reinsurance companies can also have a systemic impact for the same reasons as primary insurers, for example via conducting non-traditional and non-insurance activities. Therefore, the conclusions in the note “Sources of systemic risk in insurance” will apply to reinsurers as well.

11. The current note examines the risks specifically associated with reinsurance activity. It does not consider whether particular reinsurers are systemically important, as this is considered in the work of the IAIS on identifying Global Systemically Important Insurers (G-SIIs).[1]

[1] Just recently the FSB and the IAIS decided to postpone the decision on the G-SII status of reinsurers and to further develop the methodology in order to appropriately address all types of insurance and reinsurance, and other financial activities of global insurers.

1.3. European context

12. The global reinsurance industry is dominated by large reinsurance companies, most of which are concentrated in one of the so-called “reinsurance centres” located in Germany, the US, Bermuda, Switzerland, the United Kingdom, France and Japan. Europe is home to the five largest reinsurers worldwide as measured by premiums written (Figure 1) with a share of around 54% of the global market[2], covering risks around the globe. In addition, some reinsurers are concentrated – mostly for tax reasons – in so-called “offshore centres” like Bermuda. In general the largest reinsurers have decades of experience in their business, giving them a competitive advantage which is furthermore based upon sophisticated risk-analysis and risk-management techniques.

Figure 1
Top ten global reinsurance groups by reinsurance premiums written in 2013, USD million

		Reinsurance Premiums Written			
		Life & Non-Life		Non-Life only	
2014 Ranking	Company	Gross	Net	Gross	Net
1	Munich Reinsurance Company	$38,333	$36,638	$23,423	$22,355
2	Swiss Re Ltd.	$32,934	$30,478	$20,670	$19,636
3	Hannover Rueckversicherung AG	$19,225	$16,833	$10,764	$9,454
4	Lloyd’s	$15,614	$11,329	$15,594	$11,311
5	SCOR S.E.	$14,116	$12,570	$6,675	$5,942
6	Berkshire Hathaway INC.	$12,776	$12,776	$7,339	$7,339
7	Reinsurance Group of America Inc.	$8,573	$8,254	$0	$0
8	China Reinsurance (Group) Corporation	$7,936	$7,523	$4,947	$4,867
9	Korean Reinsurance Company	$5,623	$3,635	$4,995	$3,115
10	PartnerRe Ltd.	$5,562	$5,391	$4,590	$4,427

Source: AM Best; Best’s review Sep 2014

13. In the past decades the reinsurance industry has seen a significant increase in written premiums, both in life and non-life businesses. For example in Germany gross written premiums (GWPs) for reinsurance increased by almost 33% between 2008 and 2012, while GWPs for primary insurance increased by less than 15% in the same period. In France, reinsurance GWPs increased by 38% in the same period, while primary insurance GWPs increased by 14% (Table 1).

[2] Global market is proxied here by the 50 largest global reinsurers.

Table1

Gross written premium in Germany, France and the UK[3]

(in mil. Euro)

Year	GWP Re-Insurers			GWP Primary Insurers		
	Germany	France	UK	Germany	France	UK
2012	51,053	10,860	20,276	243,878	255,124	217,877
2011	46,719	8,987	18,160	234,141	258,540	182,483
2010	43,307	8,063	16,676	230,445	228,863	171,877
2009	41,013	7,615	17,070	223,445	228,863	171,877
2008	38,431	5,807	15,907	212,715	207,015	179,785

Sources: BaFin reinsurance statistics, SNL Financial[4] and PRA regulatory returns.[5]

Notes: Domestic insurers are likely to seek reinsurance outside their borders as well; thus GWPs of German reinsurers, for example, will come both from German and non-German insurers.

14. The reinsurance market is a lot smaller than the market for primary insurance. For example, German primary insurers on average cede less than 10% of their premium income to reinsurers. This number is roughly the same globally. The IAIS indicated that in 2010 non-life insurance cedes less than 10% to reinsurers and life insurers ceded around 2%.[6] In France, 5% of all losses incurred by primary insurers are covered by reinsurance and just 2.5% of losses incurred by reinsurers have been covered by other reinsurance in recent years.[7]

2. Main risks faced by the reinsurance industry

2.1. Underwriting of risks

15. Reinsurers commit to covering the losses resulting from the reinsurance contracts held by primary insurers. However, primary insurers typically remain fully liable to pay policyholder obligations regardless of whether reinsurers meet their contractual obligations. To meet future obligations, reinsurance firms use the same insurance techniques and models for risk management as primary insurers and follow the same insurance accounting principles. On some occasions, the reinsurer may pass its own risks to capital markets (through securitisation, for example) or to another reinsurer. Figure 2 illustrates the transfer of risks in insurance and reinsurance.

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3 The figures shown are for legal entities based in Germany (including foreign branches, excluding foreign subsidiaries). "Reinsurers" comprise only pure reinsurers. Primary insurers may also write a small amount of reinsurance business.

4 Available at: **http://www.bafin.de/SharedDocs/Downloads/EN/Statistik*dl_12_rueck_ges_va.html?nn=2821450**.

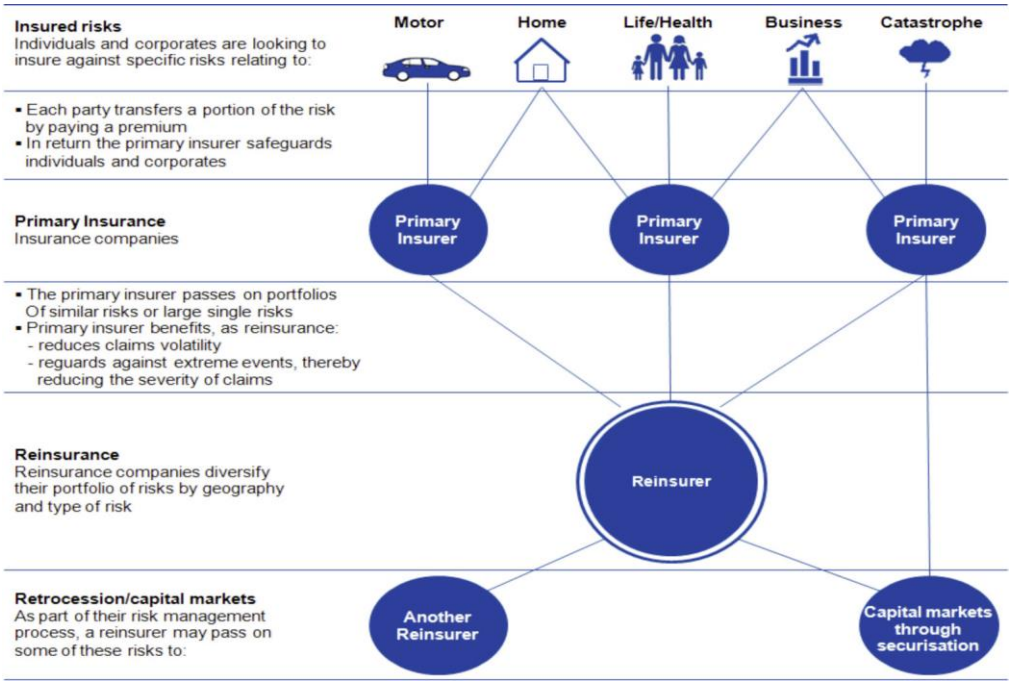
5 Data from the UK is converted using end-of-year spot exchange rates. The data looks at legal entities based in the UK. However, around 30% of primary life insurers' GPWs are reinsurance assumed.

6 IAIS (2012), "Reinsurance and Financial Stability".

7 The most recent year can correspond to 2012, 2013 or 2014 depending on the most recent data provided by firms.

Figure 2

Transfer of risks in insurance and reinsurance



Source: Swiss Re (2012), The essential guide to reinsurance

16. The nature of underwritten risks is normally similar to those in primary insurance. Reinsurance can be broadly separated into the non-life and life reinsurance market, with each posing different risks to the reinsurance industry, as illustrated in Table 2.

Table 2

Life reinsurance versus non-life reinsurance

	Life	Non-life
Risk concentration	Small/Medium	Large in catastrophe risks (e.g. US wind)
Risk profile	Long term	Short or long term
Claim	- Mainly Known - Unknown for longevity	Generally unknown
Premium rates	Fixed	Annual renewal
Main risks transferred	- mortality/morbidity risk - lapse or surrender risk - investment risk[1]	- large catastrophes (e.g. wind storm) - marine and aviation risks

Source: Adapted from Besner (2004).

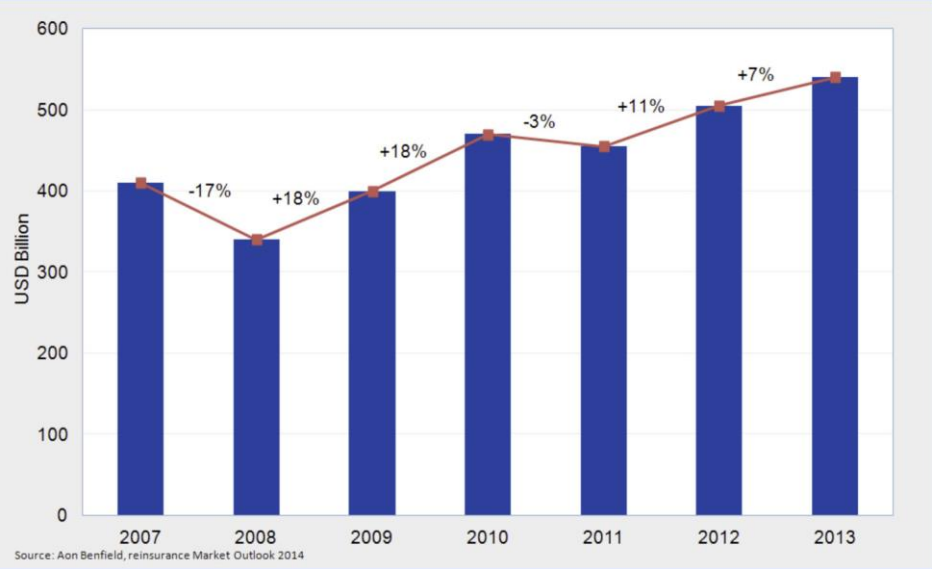
17. However, reinsurers typically cover the tail-end risks whereas insurers cover a larger part of the risks. Peak risks, i.e. risks that might entail large one-off payments, are generally associated with non-life reinsurance, although life reinsurance can present some as well via a sudden and large increase in mortality rates or pandemic risks.

18. Reinsurers underwrite a broad range of risks and rely on geographic diversification.[8] This enables them to better withstand large one-off losses without failing, as in theory two natural events in different parts of the world should not be correlated with each other (e.g. the probability of a hurricane in the US should be uncorrelated with the probability of a tsunami in Japan). Reinsurance activities are by definition more geographically diversified than the underlying insurance business, as the amount of capital needed by international reinsurers to support catastrophic risks is lower than the amount of capital needed by local insurers.[9] For example, only a quarter of the premium income of German reinsurers comes from German primary insurers.

19. The current reinsurance market experiences an abundance of capital, partly driven by the influx of additional investors searching for yield (see paragraph 3.3), partly driven by the so-called reinsurance cycle (after a period of low prices and high losses, some reinsurers retreat from the market, causing prices to go up, which attracts new investors). Global reinsurance thus remained relatively well capitalised even during the financial crisis and has seen a significant boost in capital since 2009 (see Figure 3).

Figure 3
Global reinsurance capital

(USD billion)



Source: Aon Benfield, "Reinsurance Market Outlook 2014".

8 Outreville (2012), "A note on geographical diversification and performance of the world's largest reinsurance groups".

9 Cummins et al. (2008), "The costs and benefits of reinsurance", CIRRELT.

2.2. Liquidity risks

20. In common with primary insurance, reinsurance claims are often paid over a long period of time.[10] (Re)insurers have to pay policyholders claims following an insured event, but there can !be quite some time between a loss event and the payment being made to policyholders due to the time it takes for policyholders to report and insurers to assess claims.

21. Considering the typical contractual arrangements between reinsurers and primary insurers, the default of a reinsurer should not have a significant liquidity impact on primary insurers, because primary insurers and reinsurers usually settle their accounts quarterly or annually.

22. Reinsurers have to post collateral in some non-European jurisdictions, depending on their own credit rating. The use of collateral could then imply that liquidity is more of an issue for reinsurers than it is for primary insurers in these jurisdictions, since a downgrade could trigger calls for additional collateral from counterparties thus exacerbating the reasons that led to the downgrade in the first place. In Solvency II, the inclusion of collateral in a reinsurance contract is not allowed.

23. Like primary insurers, reinsurers may run liquidity risk because they mismatch assets and liabilities or engage in non-traditional non-insurance (NTNI) activities. The ESRB IEG paper on sources of systemic risk explores these risks.

3. Risk posed by reinsurance

3.1. Intra-industry interconnectedness

24. As a result of the transfer of insurance risks to reinsurers, there is a degree of interconnectedness between these institutions. One question is the extent to which the failure of a firm in the reinsurance market might destabilise the insurance market more widely. As has been mentioned before, reinsurers generally dampen the impact of the insured events a cedant might be exposed to and further enable cedants to increase their underwriting portfolio. Out of this function, the collapse or distress of a single reinsurer may cause the following problems for primary insurers:

    - Failure of the reinsurer to pay its share of the claims;
    - Loss of reinsurance capacity accompanied by an increase in reinsurance premium affecting the business model of primary insurers;
    - Loss of possible investments of primary insurers in reinsurers; as second-round effect: loss of possible investments of other companies (financial or non-financial) in reinsurers, possibly affecting primary insurers invested in those companies;
    - Loss of confidence in the (re)insurance sector or herding reactions/behaviour of so far healthy insurance undertakings.

25. The ceding party always retains its contractual obligation to the customers so primary insurers keep “skin in the game”. This implies that they have to carefully manage their credit risk

[10] IAIS (2012), “Reinsurance and Financial Stability”.

exposure.[11] As such, insurers might be incentivised to seek reinsurance from a firm with better credit ratings and a higher expectation that it would fulfil its obligations. Since the already large and diversified reinsurers are more likely to benefit from good credit ratings, a too narrow focus of insurers on a handful of already large reinsurers could, all else equal, potentially increase concentration in the market with potential consequences for the insurance market if one large reinsurer were to fail. It should, however, be noted that Solvency II addresses counterparty default risk and – together with rules for sound risk management – incentivises primary insurers to diversify reinsurance. Combined with the rather small fraction ceded to reinsurers, capital buffers of primary insurers should generally be sufficient to cover a reinsurer default.

26. This is confirmed so far by the experience and national analysis of the Dutch, US and French reinsurance markets:

- Worst-case scenario analyses in the US conclude that despite close interconnectedness the likelihood of systemic risk caused by reinsurance transactions is relatively small.[12]
- The failure of reinsurance cover does not have implications for the insurance markets in the Netherlands in terms of contagion. On average, the solvency, capital and profit levels of life insurers are not affected by reinsurance failures. However, some individual non-life insurers are vulnerable to reinsurer failures. Smaller primary insurers are especially exposed to such risks.[13]
- In 2012/2013, the ACPR conducted stress tests containing a scenario in which reinsurers were weakened by an endogenous or exogenous shock with possible direct contagion for insurers. Even in extreme cases of a default of one or more reinsurer(s), all insurers would be able to comply with their margin requirements.

3.2. Retrocession

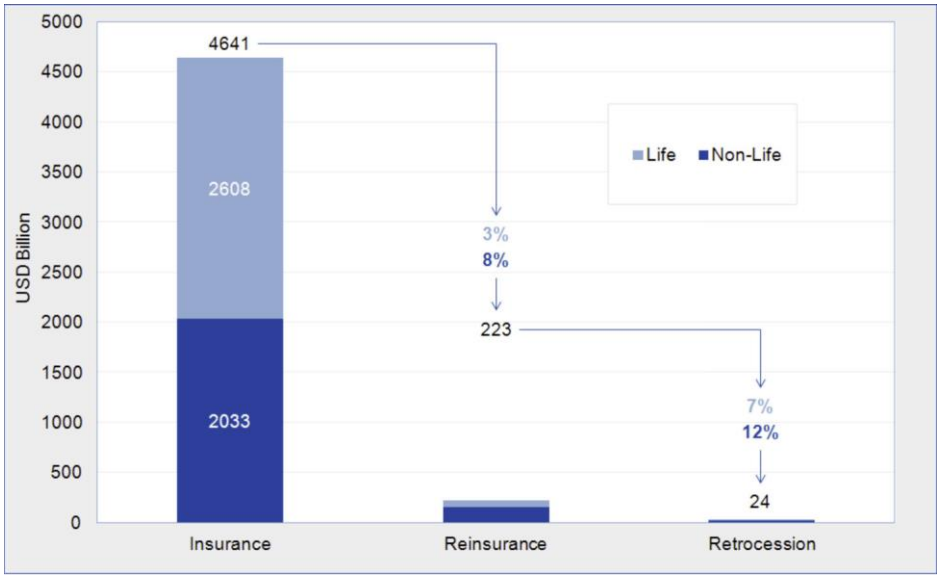
27. Aside from their ties to primary insurers, reinsurers are typically cedants themselves when transferring risks to other reinsurers (so called “retrocession”). Figure 4 illustrates the relative size of the global reinsurance market compared with the primary insurance market. As measured by premiums, 8% of the non-life primary insurance risks have been passed on to reinsurers and 12% of that has been retroceded. Similarly, 3% of the life primary insurance risks have been passed on to reinsurers and 7% of that has been retroceded.

11 IAIS (2012), “Reinsurance and Financial Stability”.

12 Park and Xie (2014),” Reinsurance and Systemic Risk: The Impact of Reinsurer Downgrading on Property–Casualty Insurers”.

13 Lelyveld et al. (2009), “An empirical assessment of reinsurance risk”.

Figure 4
Global premium volumes in primary insurance, reinsurance and retrocessions in 2013



Sources: A.M. Best, Swiss Re sigma, EGI calculations.

28. Retrocession has grown in more recent years but is still small: in 2013 GWPs in the retro market amounted to an estimated USD 24 billion worldwide (compared with about USD 223 billion GWPs in the global reinsurance market and USD 4,641 billion in the primary insurance market).[14]

29. In general the retrocession market is characterised by opacity and therefore information on risk concentration is not readily available. The possible impact of the default or distress of a single reinsurer on other reinsurers seems to be remote, because retrocession is often collateralised. The most commonly cited incident of distress caused by retrocession is the London market retrocession spiral. In the 1980s a retrocession spiral affected the Lloyd's syndicates and London market companies offering excess of loss insurance, the so-called LMX spiral. Due to opacity, certain primary insurers and reinsurers had unknowingly reinsured their own risks. When the spiral unwound, however, losses were contained within the insurance and reinsurance markets. While some companies and individual members of Lloyd's suffered severe losses, there was no systemic impact on the broader financial market and the real economy.[15]

30. In conclusion, retrocession is a small part of the global reinsurance business, let alone the global insurance market. It adds to the intrasectoral connectedness and increases opacity, as it is not always clear where the risk is covered. It may thereby pose risks within the reinsurance sector, but given its current size it is unlikely to go beyond that.

[14] Munich Re; Statista.com; S&P "Global Reinsurance Outlook 2012"; A.M. Best, Swiss Re sigma.

[15] IAIS (2012), "Reinsurance and Financial Stability".

3.3. Interconnectedness with the rest of the financial system

31. Just like primary insurers, reinsurers are linked with the rest of the financial system through their investments, derivatives positions and other financial transactions. In addition Alternative Risk Transfer (ART) is a linkage with the financial system that is specific to reinsurance.

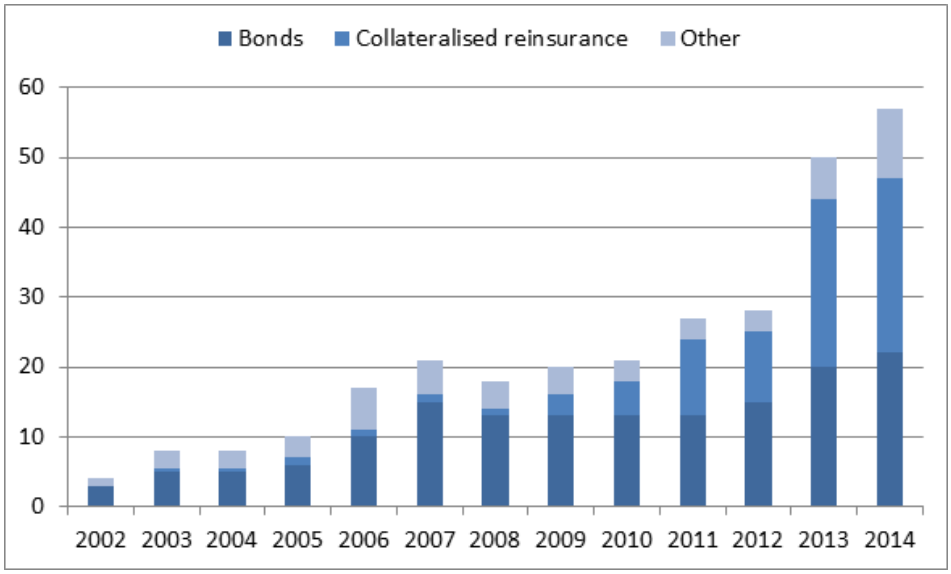
32. ART allows (re)insurers to move risks to investors. Historically, the main vehicle has been an SPV that merged catastrophe insurance risk (such as US earthquake risk) with credit risk by issuing a bond where the repayment of the principal depends on the event reinsured (should the catastrophe takes place, the (re)insurer is exempted from repaying the principal). Whilst these products have been available for more than 20 years, their substantial growth over the past three years has raised questions as to their impact on the traditional reinsurance market.

33. The most prevalent types of ART are catastrophe bonds and collateralised reinsurance. The first is a traded security (insurance-linked security), while the second is a private deal struck between the insurer and the investor. ILSs are generally thought to have little to no correlation with the wider financial markets, as their value is linked to non-financial risks such as natural disasters, longevity risk and life insurance mortality. In the current low-yield environment, ILSs offer an attractive yield uplift. As a result, the market for ILSs has grown rapidly and yields have fallen. This in turn impacts the price of risks in the reinsurance market.

34. While investors have bought more than USD 55 billion worth of ART, a sevenfold increase in ten years, this accounts for little more than a tenth of total reinsurance capital.

Figure 5
ART worldwide

(USD billion)



Source: ESRB, based on Aon Benfield Analytics.

35. The IAIS argues that with securitisation of risks the absence of credit extension minimises the systemic effects – i.e. as the obligations of the primary insurer are non-transferable, then analogies between securitisation of risks and the subprime market are unlikely. However, it is important to note that ART transfers insurance risks to non-insurance firms (i.e. capital

markets); this increases the exposure between sectors, hence enhancing interconnectedness and susceptibility to common shocks. Also, risk pricing may be distorted by investors searching for yield or suddenly retreating from the market. The former could lead to overinflated asset prices, whereas the latter might promote an amplification of the cycle of reinsurance premium.

3.4. Substitutability

36. The substitutability of reinsurance raises two specific questions: i) Could specific primary insurers be affected by the failure of a significant reinsurer? ii) Could certain primary insurance products cease to be offered if all the reinsurance available for that particular product were to stop being provided?

37. In a normal economic environment, the market should be able to absorb and address the negative externalities of a failure. In a stressed environment, however, insurers' needs for capital might be more pressing and the distress of a reinsurer might aggravate the already weak financial condition of some primary insurers relying on it. Such a scenario could instead impact the provision of insurance to the real economy.

38. The higher the concentration in a particular reinsurance segment, the more difficult it could be for insurers to substitute the reinsurer they are in business with. In 2012, five European reinsurers were part of the top ten global reinsurers list, accounting for over 50% of the global reinsurance market share (Table 3). The reinsurance industry has always been relatively international and concentrated, with the top three firms (i.e. two European and one US firm) typically receiving around 45% of all reinsurance business and the top ten firms receiving about 80 percent.16 This suggests that the failure of one of these players could affect the reinsurance sector as a whole and leave a substantial gap in the underwriting of reinsurance business. Concentration can raise serious concerns if it occurs in specific niches, because it requires specialisation of firms in certain areas which might be difficult to replace.

Table 3
European reinsurers' market share

Rank in top 10 Global Reinsurers (2012)	Company	Domicile	Estimated market share in 2012	Estimated market share in 2011
1	Munich Re	Germany	19.3%	18.6%
2	Swiss Re	Switzerland	13.6%	13.3%
3	Hannover Re	Germany	8.8%	8.3%
5	Lloyd's	United Kingdom	6.1%	6.2%
6	SCOR	France	6.0%	5.1%
Total			**53.8%**	**51.5%**

Source: S&P, "Global Reinsurance Highlights 2013"[17]

[16] Available at: **http://revueassurances.ca/wp-content/uploads/2012/06/14-Outreville006.pdf**.

[17] As ratings indicate, the largest European reinsurers have a (very) strong capacity to meet their financial commitments.

39. The gap could be filled either by having a notable number of smaller reinsurers stepping in, by decreasing the risk ceded by primary insurers or by an increased participation in reinsurance provisions of investors (ART). If gaps are filled by smaller reinsurers, this would be more beneficial for the economy (e.g. through an increase in competition), but it would be less likely that the growth and expansion of several firms could occur in the short term given, for example, resource constraints. As such, it would be more likely that in the short term primary insurers' transfer of risks would either be limited, with consequences for the amount of risk they are prepared to insure the real economy for, or rely on other investors.

40. Given the lack of evidence and historical data, it is difficult to draw firm conclusions on the consequences of a big failure in the reinsurance market. As ratings indicate, the top five European reinsurers have a strong capacity to meet their financial commitments.

41. The second question described at the beginning of the section takes a broader view of the impact on the industry and policyholders if reinsurance in one specific market segment ceased to exist. Would it matter if there were no reinsurance sector? In order for the lack of reinsurance to affect the real economy, it would need to significantly disrupt the underwriting capacity of insurers.

42. The effects on primary insurers depend on their reliance on reinsurance cover, which is generally more valuable when insurers' claims are volatile. This volatility depends on the lines of business, regional diversification and size. Diversification usually reduces the volatility of claims, but is generally better attained by bigger firms with more resources and the capacity to achieve it. As such, smaller firms are on average more reliant on reinsurance and hence more likely to be affected by the lack of reinsurance cover. From a system-wide view, this implies that a reduction in the business of small insurers as a consequence of a reduction in reinsurance cover is unlikely to pose a risk to the financial system. This does not preclude the problem of herding behaviour among many small primary insurers as a consequence of a shortage of reinsurance cover.

43. It might be that in some circumstances the complete absence of reinsurance for certain specialised products or for those associated with catastrophic losses might keep primary insurers away from providing coverage as well. Such a scenario could impact the wider economy, as an economic recovery would be slower following a catastrophic event, for example, if firms and households did not have access to insurance and had to bear all the losses on their own.

3.5. Risks arising from the high market concentration in the EU and offshore centres

44. As noted in the introduction, the largest EU reinsurers have a significant footprint across the globe. Table 4 shows that four European countries account for 54% of the risks written by reinsurers across the world, suggesting a very prominent international presence. While this is beneficial in terms of diversification, it could also mean that a negative shock affecting the reinsurance business in a non-European country could affect the financial position of the EU reinsurance group, including the business models of arms operating in European countries. This risk should, however, be mitigated by the Solvency II concentration risk requirement.

Table 4
Global market share (%) of reinsurers based on their home country

	1980	1999	2001	2003	2005	2007	2009	2010
Germany	46.1%	29.8%	32.5%	27.1%	22.5%	26.4%	30.2%	28.4%
United States	16.9%	26.7%	24.7%	19.1%	20.9%	19.9%	17.6%	19.1%
Bermuda	--	2.3%	4.7%	11.3%	16.2%	12.9%	13.8%	15.8%
Switzerland	21.4%	18.8%	19.1%	17.5%	15.7%	17.7%	14.3%	13.1%
United Kingdom	4.8%	4.8%	6.1%	4.8%	4.5%	5.6%	6.7%	6.7%
France	5.0%	5.9%	7.4%	4.4%	3.8%	5.8%	6.3%	6.2%
Japan	2.0%	2.3%	1.9%	6.1%	5.9%	6.2%	4.7%	4.4%
Rest of the world	3.8%	9.4%	3.6%	9.7%	10.5%	5.5%	6.4%	6.3%

Source: Outreville (2012).

45. Apart from the EU, many reinsurance firms are domiciled in so-called offshore jurisdictions, most notably Bermuda. This raises concerns about common exposures of EU insurers to this jurisdiction.

46. Three mitigants should reduce this risk:

    (a) Undertakings have to take into account credit and concentration risks when choosing their reinsurers, under both Solvency I and II.

    (b) The supervisory system of the country in which the reinsurer is domiciled should play a role in the credit assessment.

    (c) In addition, supervisory systems of some “offshore jurisdictions” – such as Bermuda – are currently being investigated for their equivalence to Solvency II. In the event that they are assessed as being equivalent, the local supervisory regime should contain risks run by the reinsurer equivalent to Solvency II. In the event that they are assessed as not being equivalent, EU insurers will get less capital relief when reinsuring their risks with a reinsurer in a non-equivalent jurisdiction.

3.6. Procyclical investment behaviour

47. Reinsurers, similar to primary insurers, especially those reinsuring life risks, can be seen as significant long-term investors in the market and can behave in a procyclical manner, as described in the note on sources of systemic risks. In addition non-life insurers can be forced to sell assets by large amounts when confronted with large claims, typically for catastrophe risk insurance.

48. The impact, however, is not expected to be large given the size of the reinsurance industry relative to financial markets and given the global reach of most reinsurers. Their global assets make them less home-biased than primary insurers and therefore less dominant in specific funding markets. For example, as of April 2014 German reinsurers held less than EUR 12 billion of their assets in German bonds compared with primary insurers holding around EUR 156 billion in German bonds[18]. In a similar vein, as of December 31 2012 French sovereign

[18] BaFin survey of 30 largest insurance groups (including five reinsurers) and pension funds.

bonds owned by SCOR amounted to EUR 183 million. By the end of 2013 they amounted to EUR 273 million. This represents a share of 5.4% of the total amount of sovereign bonds owned by the group. The total amount of French sovereign bonds owned by French insurers equalled EUR 289 billion by the end of 2012.

3.7. Captive reinsurance[19]

49. For the US, there is, for example, a debate on that topic in a recent paper of the Federal Reserve Bank of Minneapolis (2014): "Growing Risk in the Insurance Sector".[20] The Federal Reserve raises the concern that life insurance companies in the US can avoid the applicable capital requirements by setting up a captive reinsurer in specific US states with lower capital requirements.[21,22] The size of this market was EUR 364 billion (2012) compared with the USD 270 billion (2012) market for third-party reinsurance. The Federal Reserve is alarmed by the fact that the risks in these captive reinsurers are not transparent to supervisors and the SPVs involved might be underfunded. The SPVs often use conditional letters of credit by the parent company as collateral. Parallels can be drawn with the liquidity lines provided by parent banks for off-balance-sheet SPVs in 2007.

50. There is evidence that an additional layer of risk is added by the securitisation of such "excessive" capital requirements in a special kind of insurance-linked note called "redundant reserves notes". A securitisation structure has the potential to reduce transparency for the ultimate investors and reach a larger part of the capital markets.

51. There are several ways in which this could be relevant for the EU insurance market. Similar capital alleviation for EU insurers via the setting up of captives is not possible under Solvency II, as captives are subjected to materially the same requirements as regular insurance companies. Furthermore, the strong group supervision ensures that risks cannot be "hidden" in affiliated companies. The possibility of capital alleviation by setting up a captive reinsurer in an offshore jurisdiction is prevented by the equivalence process, as described in the ESRB IEG paper "incentives of prudential regulation". The concerns raised by the Fed emphasise how important it is that this equivalence process in Solvency II is interpreted in a conservative manner, since it can prevent such regulatory loopholes.

52. Another contagion possibility could potentially exist if captive reinsurance subsidiaries of US insurers were set up in the EU. However, these would be subjected to the conservative Solvency II requirements directly.

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19 The definition of a "captive" insurer/reinsurer in the Solvency II directive and the US is different. In Solvency II, a captive is an insurance undertaking of a non-insurance undertaking.

20 Available at: **https://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=5283&**.

21 Available at: **http://www.naic.org/store/free/MDL-830.pdf**.

22 Available at: **http://www.naic.org/documents/cipr_ag38_121212.pdf**.

53. Against that background it can be concluded that there is no immediate risk stemming from similar structures on the EU insurance market. However, risks from such structures could affect the EU insurance market indirectly via contagion from the US market. This is possible mainly in the following two ways: i) Investments (or other receivables) of EU insurance companies in US life insurers. Even though such investments are covered by regulatory capital, they should be monitored in a close way; ii) Investments of EU insurers in redundant reserves securitisations.