

# Switching of tangible and intangible assets between different insurance products

Studies on issues pertaining to the  
insurance production process  
with regard to the application of the  
Insurance Block Exemption Regulation (IBER)

**EUROPEAN COMMISSION**

Directorate-General for Competition

*E-mail: [comp-publications@ec.europa.eu](mailto:comp-publications@ec.europa.eu)*

*European Commission*

*B-1049 Brussels*

# **Switching of tangible and intangible assets between different insurance products**

**Studies on issues pertaining to the insurance production process with regard to the application of the Insurance Block Exemption Regulation (IBER)**

***Europe Direct is a service to help you find answers  
to your questions about the European Union.***

**Freephone number (\*):**

**00 800 6 7 8 9 10 11**

(\*)The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

## **LEGAL NOTICE**

The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

More information on the European Union is available on the Internet (<http://www.europa.eu>).

Luxembourg: Publications Office of the European Union, 2016

Catalogue number: KD-02-16-917-EN-N

ISBN 978-92-79-61487-3

doi: 10.2763/036576

© European Union, 2016

Reproduction is authorised provided the source is acknowledged.

This study was prepared by Europe Economics

Europe Economics is an independent consultancy specialising in the application of economic thinking and practice to a wide-range of public policy and market issues.



## Table of contents

Table of contents.....	1
Abstract.....	3
Executive summary .....	4
Disclaimer .....	4
Motivation for this study .....	4
Methodology .....	4
General.....	5
Why asset switching is important.....	5
Nature of insurers' assets .....	6
Constraints on asset switching.....	7
Analysis of scope to increase production by switching assets.....	7
1 Purpose and structure of this report.....	9
1.1 Background to and purpose of this report .....	9
1.2 Structure of this report.....	9
2 Methodology .....	11
3 Conceptual framework.....	12
3.1 Defining unconventional risks.....	12
3.2 Insurers' coverage of unconventional risks .....	15
3.3 Insurers' tangible and intangible assets .....	16
3.4 Why is asset switching important? .....	17
3.4.1 Legal perspective .....	20
3.4.2 Unconventional risk insurance .....	21
3.5 Overarching constraints in the context of unconventional risk .....	22
3.6 Constraints on asset switching .....	23
3.6.1 Regulatory constraints .....	24
3.6.2 Spare capacity constraint .....	33
3.6.3 Constraints on the ability to transfer risk .....	34
3.6.4 Constraints resulting from current profile of assets.....	41
3.6.5 Constraints resulting from current profile of liabilities .....	43
3.6.6 Constraints imposed by cooperative structures .....	44
3.6.7 Human capital constraints .....	45
3.7 Conclusions .....	46
4 Analysis of scope of insurer's ability to switch assets.....	49
4.1 Introduction .....	49

4.2	Distinguishing conventional and unconventional non-life risks .....	49
4.3	Production similarities .....	50
4.4	Capital constraints.....	51
4.4.1	The availability of surplus capital .....	52
4.4.2	Regulatory considerations.....	54
4.4.3	Existing portfolio of risks .....	54
4.4.4	The role of cooperative agreements .....	55
4.4.5	The capacity of an insurer to generate additional capital .....	55
4.5	Non-capital constraints.....	57
4.6	Conclusions on asset switching.....	58
4.7	Sources and proxies of market share data.....	60
5	Appendix: Stakeholder engagement .....	63
5.1	Selection of relevant stakeholders for interview .....	63
5.2	Development of questionnaire to support stakeholder engagement.....	63
5.3	Questions directed to academics.....	66
5.4	Questions directed to (re)insurers.....	66
5.5	Questions directed to brokers.....	69
6	Appendix: Legal analysis.....	71
6.1	Consideration of SSS in the decisions of authorities.....	71
6.1.1	EU Commission .....	71
6.1.2	United Kingdom .....	81
6.1.3	Germany.....	82
6.1.4	United States.....	85
6.1.5	Conclusions .....	87
6.2	List of Legal Decisions Analysed.....	89
6.2.1	European Case Law .....	89
6.2.2	US Case Law .....	92



## Abstract

The Insurance Block Exemption Regulation (IBER) grants an exemption to the application of competition rules to two categories of agreements in the insurance sector: information- and risk-sharing agreements. There are, however, difficulties in defining the relevant market and, as a consequence, in applying the market share thresholds that would be required to establish the exemption.

This study by Europe Economics investigates supply-side substitutability (SSS) in the context of, large, unconventional non-life risk, such as nuclear, cyber and natural catastrophe. An investigation of SSS is important because market share thresholds are crucial to establish the exemption of pools as per Article 5 of IBER. The study's focus is on the ability of insurers to switch tangible and intangible assets between different insurance products in the short-term, and on identifying the various constraints that may impede this process.

Our work implies that there is scope to, at least, switch assets to a small–moderate extent in unconventional non-life insurance in the short term. There is likely greater scope for the switching of assets to increase production in the 'more conventional' of the unconventional risks.

## Executive summary

### Disclaimer

The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

### Motivation for this study

On 24 March 2010, the European Commission adopted a new Insurance Block Exemption Regulation (IBER), valid until 31 March 2017. The IBER applies Article 101(3) of the Treaty on the Functioning of the European Union (TFEU) and grants an exemption to the application of competition rules to two categories of agreements in the insurance sector: information- and risk-sharing agreements.

The European Commission has engaged in a public consultation regarding the IBER, aiming at assessing its functioning. Stakeholders have reported uncertainties and diverging standpoints from authorities and courts regarding how to group different insurance products with similar production characteristics. More specifically, stakeholders identified difficulties in defining the relevant market and, as a consequence, in applying the market share thresholds that would be required to establish the exemption. In the context of applying these market thresholds, supply-side substitutability (SSS) can be a relevant analytical tool in place, or in support, of demand-side substitutability (DSS).

This study by Europe Economics focuses on unconventional risk. This is due to the context in which IBER is applied. The investigation of SSS in this context is made because market share thresholds are crucial to establish the exemption of pools as per Article 5 of IBER. Typically — but not exclusively — pools are the means through which co(re)insurance for unconventional and/or emerging risks is supplied, it follows that our assessment of asset switching will focus on unconventional risk.

The purpose of this study is to analyse the ability of insurers to switch tangible and intangible assets between different insurance products in the short-term, and to identify the extent to which various constraints may impede this process. This ability is one aspect of determining SSS, and the one that DG COMP has asked us to research here. The study's scope is to analyse these issues in the context of large, unconventional non-life risks and to consider the ability of insurers to switch assets. It will inform the European Commission in its review of the functioning of the IBER and in forming its views on the IBER's future (with it currently set to expire in March 2017).

### Methodology

In undertaking this study we have conducted various tasks:

- Literature review. We reviewed the economic literature to develop a conceptual framework to analyse the ability of insurers to switch assets between different insurance products.
- Conceptual framework. This focused on the systematic assessment of the potential constraints on asset switching, and the significance thereof.
- Legal analysis of competition cases. This analysis was conducted by our collaborators, competition law advisers, CMS-Hasche Sigle.
- Stakeholder engagement.

- Synthetic analysis. We then brought together these research strands to analyse the scope for switching assets within insurers in order to increase production, particularly in large, unconventional non-life risks.

## General

We begin by identifying what an insurer contemplating the insurance of a new risk would need to assess:

- Whether the insurer has sufficient assets available to insure the risk (capacity constraint);
- Whether the insurer has the required knowledge and experience (human capital constraint); and
- Whether there are any substantial entry barriers (e.g. regulatory, fiscal, linguistic, cultural, etc.) that could affect this decision.

DG COMP commissioned this research to explore the first of these, how insurers generate sufficient assets to generate the production of insurance for new risks. The other two considerations will only be considered insofar as they have any consequences on an insurer's capability to switch assets from one use to the insurance of new risks.

## Why asset switching is important

The rationale for including SSS in a competition study is based on the argument that even if there are no possibilities for the customers to switch to an alternative product, firms may still be subject to competitive constraints as producers may be able to quickly react to relative price increases by entering the market and gaining significant market share.<sup>1</sup> According to the Office of Fair Trading (OFT), when there is a high level of SSS, one should define the market "with reference to the similarity of production methods".<sup>2</sup>

This could be the case in the insurance market. It is generally accepted that DSS is limited as product markets are narrow (i.e. customers do not perceive different insurance products as substitutes). Therefore it is the extent to which SSS is observable that could in turn help to establish whether competition should be analysed within a context broader than the one implied by DSS. EFTA (2007) argues that different classes of risks that appear heterogeneous in a demand perspective can seem homogenous from a supply viewpoint.<sup>3</sup> The relevance of SSS for defining the relevant product market is inconclusive and appears to be determined on a case-by-case basis.

The key to SSS is checking whether the switch can occur seamlessly, i.e. in a relatively short timeframe and without incurring prohibitively large costs. In Padilla (2001), SSS would be relevant for markets where the following conditions are satisfied:

- The supplier **already owns all the assets** needed to produce, market and distribute the product;

---

<sup>1</sup> European Commission "Roundtable on barriers to entry" DAF/COMP/WD(2005)59, Directorate for Financial and Enterprise Affairs Competition Committee, October 2005. See section 4.1, pages 5 and 6.

<sup>2</sup> OFT (2004) "Market Definition - understanding competition law". See paragraph 3.17, page 14.

<sup>3</sup> EFTA Surveillance Authority (2007) "Business Insurance Sector Inquiry" Interim Report.

- If any assets are missing, these can be acquired **without any additional investments or sunk costs**; and
- The supplier should find it **profitable** to divert their production (i.e. it is commercially viable).<sup>4</sup>

CMS-Hasche Sigle has analysed authorities' decisions in the insurance area to determine actual practice on SSS. This analysis shows no uniform application of the principle of SSS. However, some courts do recognize that the demand-driven approach that is initially applied might lead to too narrowly defined markets.

As a rule, authorities and courts seem to apply SSS whenever it is needed to come to a reasonable and practical conclusion and result. The approach in the UK and USA seem to apply stricter conditions regarding SSS relevance for market definition than the approach of the Commission and Germany. Across all jurisdictions, there are instances where SSS can be applied, but also many cases where it has not been. This suggests a cautious approach to the application of SSS is appropriate.

### **Nature of insurers' assets**

In general there are two types of assets — tangible and intangible. Intangible assets cover non-physical assets such as intellectual property, goodwill, and brand recognition. Tangible assets capture all physical assets such as property, financial instruments and cash. In terms of balance sheets, insurers have predominantly tangible assets.

To ensure that their obligations to their clients can be met, insurers need to keep a portfolio of assets whose properties match the profile of their liabilities. This can include considerations around the duration profile of liabilities and inflation risk exposure. Designing an adequate combination of assets and liabilities is called capital management. This, however, is counterbalanced by considerations around the expected risks and returns of the assets invested in — the more 'safe' assets an insurance company holds, the lower is the expected return. Because of the variety of insurance products, an insurer can concurrently have different business models, and thus follow multiple capital management strategies.<sup>5</sup> Regulatory (prudential) requirements also affect capital management. The process of matching assets to liabilities is dynamic, i.e. whenever liabilities change (e.g. because the insurer enters a new market or because current liabilities mature) the asset portfolio may have to be revised.

While not reflected in the aggregated balance sheet, intangible assets such as know-how etc. could still have a significant impact on firms' strategies and their ability to respond to changing market conditions. Even if insurance products are not material goods, they are special types of services that require particular investments to generate them. Securing such services is likely to require highly qualified staff, or else the purchase of such expertise as is required from external consultants.

---

<sup>4</sup> Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" National Economic Research Associate, Report for DG Enterprises. See page 4.

<sup>5</sup> Insurance Europe (2013) "Response to EFRAG consultation on long-term investing activities business models". See page 1.

## Constraints on asset switching

Constraints on asset switching can be broadly categorised into capital and non-capital constraints with some categories exhibiting overlaps across the two dimensions as shown in the following list:

- Capital constraints: regulatory constraints, spare capacity constraint, risk transfer ability, current assets/liabilities constraints, and constraints imposed by cooperation schemes.
- Non-capital constraints: regulatory constraints, constraints imposed by cooperation schemes, and human capital constraints.

We consider in this study the insurers' ability to switch asset allocation quickly, or alternatively raise capital without cost, with our assessment of these constraints based on evidence collected through desk-based research and stakeholder engagement, as well as our own economic thinking. We find that:

- Regulatory capital constraints are unlikely to be a binding constraint on asset switching. Insurers' capital holdings for meeting market expectations and insurers' own judgements on funding costs, solvency and dealing with large losses are more significant constraints.
- Regulatory reporting and business planning requirements may somewhat hinder asset switching, although they are unlikely to be binding. Licences and minimum additional capital requirements may render small scale asset switches into new product areas commercially unattractive. Some insurers' (or syndicates') asset switching may be limited where they face risk aggregation limits, or where mandatory participation in one risk limits capital availability for another.
- Where the initial share of an insurer's capital in a particular risk area is low, the ability to switch assets is less constrained. However, given the nature of unconventional risks, the potential for positive diversification effects reducing capital requirements is likely very low.
- Sharing risks through cooperative structures should increase risk capacity, although this increase would depend on the precise nature of the agreement: the nature of liability; the geographical coverage; and the nature of risks covered.
- Ongoing profit generation may provide a meaningful source of additional capital, providing capital requirements are not too immediate or lumpy. Reinsurance may provide a quick way of raising capital, where insurers have pre-existing relationships with reinsurers, although volatility of reinsurance premiums and coverage may limit its use at certain times. Alternative Risk Transfer (ART) is only readily available in natural catastrophe risk and, as yet, has no material role in other unconventional risks. Insurers can also raise new risk capital.
- The significance of non-capital constraints is dependent on existing knowledge and experience of the risk in question. This is particularly true in unconventional risk, where relevant expertise (especially in actuarial and underwriting skills) is particularly scarce and given the greater lack of commoditisation in these risks.

## Analysis of scope to increase production by switching assets

The insurance industry's supply ultimately depends on the amount of insurer capital. Increases in production lead to increases in capital requirements and, given a finite amount of risk capital, solvency ratios would deteriorate, at least in the short term. But capital held is greater than the minimum required, so there is scope — in Solvency

II — to eat into this in the short-term. This is also true, albeit to a substantially reduced extent, in terms of the surplus over and above “rating capital” (an unfeasibly attractive commercial opportunity would be needed for an insurer to risk its credit rating).

One way to respond to the capital requirement constraint would be to deploy part of an insurer’s surplus capital — on a short-term basis — to increase (profitable) insurance production. If this capital is raised for commercially viable (i.e. profitable) business purposes, then in time this will feed into increased capital in the future. In a business area with annual premiums, this could be relatively soon. Where contractual lengths were beyond one year or the nature of the risk area made profitability less immediately apparent then this would take longer.

Solvency II and domestic regulatory concerns are the sources of a further constraint. The adoption of Solvency II means that an insurer reports quarterly on their different production lines and domestic regulators often take an interest in material transactions and business progress. Significant increases of volume would need to be disclosed and substantiated, particularly if these deviate from those incorporated in the annual business plan.

An increase in production by an insurer could also face non-capital constraints, but these would differ in impact conditional on the insurer’s existing actuarial and underwriting knowledge and experience of the risk area in question. Such non-capital constraints can be seen as being underpinned by, but not wholly dependent upon, regulatory constraints too.

In our consideration of the ability of insurers to switch capital so as to increase production in a particular risk area we focus on a period of six–12 months. At the upper end of this range, this would mean that an insurer would be likely to have its annual planning process (including discussions with the local competent authority) and have scope to begin the execution of the plan within such a period. Our work implies that there is scope to, at least, switch assets (with a view of increasing production) to a small–moderate extent in all types of non-life insurance in the short term (say 6–12 months). There is likely greater scope for the switching of assets to increase production in the ‘more conventional’ of the unconventional risks, i.e. Natural Catastrophe, Large Ecological/ Industrial risks, and Professional Liability, and less in Terrorism/ Nuclear.

Switching assets, to increase production of an unconventional insurance product, by a more appreciable degree within a six-12 month period does not look achievable. Cyber could be a temporary exception because of the emergent nature of that market, i.e. insurers have a low starting point and demand could increase rapidly. Even in the case of a conventional risk, where the risk is particularly well known, the availability of data is good and adequate risk models are widely available, there are limits to the switching of assets/ increases in insurance production that are viable. At some level, dependent on the product and the insurer, significant capital availability and logistical issues (e.g. in terms of building claims management capacity) would arise — and be a cause of supervisory concern because of the consequent reduction in surplus capital.

Where an insurer was not already covering a particular risk area, switching production would face further constraints. For business reasons, underpinned by regulatory practice, entry to a new unconventional risk area (or indeed a more novel conventional one) would require the insurer to incur some sunk costs (e.g. around capability-building and discussions with the local supervisor).

# 1 Purpose and structure of this report

## 1.1 Background to and purpose of this report

On 24 March 2010, the European Commission adopted a new Insurance Block Exemption Regulation (IBER), valid until 31 March 2017. The IBER applies Article 101(3) TFEU and grants an exemption to the application of competition rules to two categories of agreements in the insurance sector: information- and risk-sharing agreements.

The European Commission has engaged in a public consultation regarding the IBER, aiming at assessing its functioning. Stakeholders have reported uncertainties and diverging standpoints from authorities and courts regarding how to group different insurance products with similar production characteristics. More specifically, stakeholders identified difficulties in defining the relevant market and, as a consequence, in applying the market share thresholds that would be required to establish the exemption. In the context of applying these market thresholds, SSS can be a relevant analytical tool in place, or in support, of DSS.

This study by Europe Economics focuses on unconventional risk. This is due to the context in which IBER is applied. The investigation of SSS in this context is made because market share thresholds are crucial to establish the exemption of pools as per Article 5 of IBER. Typically — but not exclusively — pools are the means through which co(re)insurance for unconventional and/or emerging risks is supplied, it follows that our assessment of asset switching will focus on unconventional risk.

The purpose of this study is to analyse the ability of insurers to switch tangible and intangible assets between different insurance products in the short-term, and to identify the extent to which various constraints may impede this process. This ability is one aspect of determining SSS, and the one that DG COMP has asked us to research here. The study's scope is to analyse these issues in the context of large, unconventional non-life risks and to consider the ability of insurers to switch assets. We also discuss what sets of products would show similar production characteristics and identify sources of available data for calculating the market shares of these sets.

This study seeks to draw on desk-based research and stakeholder engagement, the latter through a series of structured interviews with key industry players (insurers, underwriting agents, reinsurers and brokers) and academic experts. This report is intended to aid the European Commission in its review of the functioning of the IBER and in forming its views on the IBER's future (with it currently set to expire in March 2017).

Section 1.2 below sets out the structure of this final report.

## 1.2 Structure of this report

This report is structured as follows:

- Chapters 2 and 3 set out our [methodology](#) and describe our [conceptual framework](#) respectively for understanding the constraints on asset switching in the context of large non-life, unconventional risks.
- Chapter 4 sets out the [core economic analysis](#) of this study.

- The appendices contain a [description of the stakeholder engagement](#), the [questions](#) for each of the key stakeholder groups (academic experts, (re)insurers and brokers), the full legal analysis by CMS-Hasche Sigle and a [summary of the legal decisions](#) included in this analysis.



## 2 Methodology

Our approach had the following broad steps. First we developed our conceptual framework for the study. This was based upon a review of the relevant literature. The framework provides a description of how insurers view unconventional risks, a description of insurers' tangible and intangible assets from an asset switching and of the identification of the main production switching constraints.

The conceptual framework provided us with the insights necessary to develop materials for the stakeholder engagement. The stakeholder engagement process was a key part of this study which aimed to probe further into the issues identified through desk-based research, as well as to uncover other issues that did not emerge through the desk-based research.<sup>6</sup>

The stakeholder engagement process involved interviews with the following key parties, with the content of the questionnaire being dependent on the type of stakeholder being interviewed. The focus of these interviews was as follows (for further details see the annex):

- **Academic experts** – the focus was one understanding the applicability of the constraints identified through desk-based research specifically in the context of unconventional risks, and whether there were any other material constraints. The questions were qualitative in nature.
- **(Re)insurers** – the focus was on understanding the extent to which various managerial/commercial constraints and/or regulatory/risk capital requirements have constrained asset switching in the unconventional risk space. This included scenario analysis, where respondents were asked to consider the viability of certain asset switches taking into account timescale, cost and commercial attractiveness.
- **Brokers** – the focus was on understanding what the demand-side (i.e. the brokers) believed were the most significant asset switching constraints faced by (re)insurers, based on their interaction with them. This included the same scenario analysis as that used for (re)insurers.

We also engaged with credit rating agencies (CRA).

A total of ten interviews were conducted: two interviews with academic experts; six interviews with (re)insurers (including one CRA); and two interviews with brokers. The response rate was disappointing. In our view the main explanation for this is that the stakeholders approached had little appetite to participate in the study. There was a view that the questions necessary for our work probed too deeply into the mechanics of the firms making them reluctant to participate fully.

We nevertheless believe that we obtained sufficient responses such that the results complement in a meaningful and informative way the findings of our desk-top research. Our final analysis brings together the conceptual framework (developed through desk-based research and our own economic reasoning) and the findings of the stakeholder engagement.

---

<sup>6</sup> Here we provide a high-level summary of the stakeholder engagement process. For further details see Appendix 5, specifically Section 5.1 for a more detailed description of the stakeholder engagement process and Sections 5.2 to 5.4 for indicative lists of questions asked in interviews with academics, (re)insurers and brokers.

### 3 Conceptual framework

In this chapter we describe our conceptual framework for the study. This provides a description of how insurers of unconventional risks adjust their business offering in order to participate in the sharing arrangements that are required to cover such risks. Subsequently, we discuss the nature of insurers' tangible and intangible assets and discuss the importance of asset switching. The chapter concludes with a presentation of the main switching constraints and some concluding remarks.

#### 3.1 Defining unconventional risks

There is no widely accepted definition of unconventional risk in the literature. The more common aspects present in definitions of unconventional risk are that:

- the losses occur with very low probability, such that there is very limited understanding (from historical data) on the potential severity of the risk or its probability of occurring; and
- the losses that do arise would be too large for any individual insurer to cover in isolation.

Therefore, unconventional risks can be seen as risks for which a single insurer would find it more difficult to provide cover. Theoretical specifications of what constitutes an unconventional or emerging risk tend to relate to the extent of insurability characterising such risks. The seminal work within this context was provided by Berliner (1982)<sup>7</sup> who devised a comprehensive approach for differentiating between insurable and uninsurable risks, as set out in Figure 3.1. (A fuller treatment of this topic can be found in our sister study for DG COMP, on cooperative arrangements).

**Figure 3.1: Berliner's insurability criteria**



Unconventional risks can be seen as risks which fail (or are close to failing) one, or more, of the risk insurability criteria set out above. Other frameworks of risk insurability have been developed since the seminal work of Berliner, but they essentially present largely similar (if slightly condensed) versions of the Berliner framework.

Academic frameworks devised to assess risk insurability can be particularly useful because they provide an authoritative and comprehensive check-list to assess risk insurability, whilst allowing a precise identification of those features that limit the ability to insure a given risk. In fact, Berliner's insurability criteria are also extensively used by actuarial professionals in the industry.

Our parallel study for DG COMP on cooperative arrangements offers a definition of unconventional risks. An unconventional risk was considered to be any risk that imposes insurability challenges as defined by Berliner's insurability criteria. In the

---

<sup>7</sup> See Berliner, B. (1982) *Limits of Insurability of Risks*, Englewood Cliffs, NJ: Prentice-Hall.

literature, the application of these criteria has identified the following risk categories as possessing characteristics that are typical of unconventional risks (see Table 4.1).

- Cyber security;
- Natural catastrophes;
- Nuclear incidents;
- Terrorism; and
- Ecological damage, e.g. due to large-scale industrial accident.

The following table sets out academic attempts to determine the insurability of these unconventional risks.

**Table 3.1: Insurability limitations of unconventional risk types**

<b>Risk</b>	<b>Insurability limitations</b>	<b>Source</b>
<b>Cyber-risk</b>	<p>Correlation among risks</p> <p>Risk pools are too small and cannot be diversified; also lack of adequate reinsurance</p> <p>Lack of data</p> <p>Changing/emerging nature of cyber risks (e.g. new regulations)</p> <p>Moral hazard and adverse selection issues</p> <p>Problematic cover limits that do not account for indirect costs</p> <p>High premiums</p>	<p>Biener et al. (2015)<sup>8</sup></p> <p>Jaffee and Russell (1997)<sup>9</sup></p>
<b>Natural catastrophe</b>	<p>Excessive losses in case of event occurrence</p> <p>Lack of data</p> <p>Large capital requirements</p> <p>Correlation among risks</p> <p>Limited capacity</p>	<p>Jaffee and Russell (1997)</p> <p>Kraut (2014)<sup>10</sup></p> <p>Ibragimov et al. (2008)<sup>11</sup></p> <p>Dumm et al. (2015)<sup>12</sup></p>
<b>Nuclear risk</b>	<p>Excessive losses in case of event occurrence</p> <p>Limited geographical diversification</p> <p>Correlation with other risks</p> <p>Lack of data</p>	<p>Reichel and Schmeiser (2015)<sup>13</sup></p> <p>Paudel (2012)<sup>14</sup></p>
<b>Terrorism risk</b>	<p>Lack of liquidity</p> <p>Lack of data</p> <p>Correlation with other risks</p> <p>Moral hazard and adverse selection issues</p>	<p>Kraut (2014)</p> <p>Kunreuther and Michel-Kerjan (2007)<sup>15</sup></p> <p>Ibragimov et al. (2008)</p>

<sup>8</sup> Biener, C., Eling, M., and J. H. Wirfs (2015), "Insurability of Cyber Risk: An Empirical Analysis". Working Papers on Finance No. 2015/3, Institute of Insurance Economics (I.VW-HSG).

<sup>9</sup> Jaffee, D. M. and T. Russell (1997), "Catastrophe Insurance, Capital Markets, and Uninsurable Risks". *The Journal of Risk and Insurance*, vol. 64(2), pp. 205-230.

<sup>10</sup> Kraut, G. (2014) "A fair pool sharing mechanism for illiquid catastrophe risk markets" Munich Risk and Insurance Center Working Paper 19.

<sup>11</sup> Ibragimov, R., Jaffee, D. and Walden, J. (2008) "Non-diversification traps in catastrophe insurance markets" *Review of Financial Studies*, vol. 22, no 3, pp. 959-93.

<sup>12</sup> Dumm, R., Johnson, M. and Watson, C. (2015) "An examination of the geographic aggregation of catastrophic risk" *The Geneva Papers*, Vol 40, pp. 159-177.

<sup>13</sup> Reichel, L and Schmeiser, H. (2015) "The liability regime of insurance pools and its impact on pricing" *University of St Gallen Working Papers on Risk Management and Insurance*.

<sup>14</sup> Paudel, Y. (2012) "A comparative study of public-private catastrophe insurance systems: Lessons from current practices" *The Geneva Papers*, Vol 37, pp.257-285.

<sup>15</sup> Kunreuther, H. and Michel-Kerjan, E. (2007) "Evaluating the effectiveness of terrorism risk financing solutions" *NBER Working Papers* 13359.

	Excessive losses in case of event occurrence	
<b>Ecological damage</b>	Moral hazard issues	Liu (2013) <sup>16</sup>
	Events not sufficiently statistically independent (i.e. lack of accidentalness)	Hollaender and Kaminisky (2000) <sup>17</sup>
	Lack of data	
	Excessive losses in case of event occurrence	

Source: Europe Economics.

The report also noted that emerging risks may fall within the unconventional risk typology, at least until they are well-understood. Some key insurance industry players, such as Swiss Re and Hannover Re, publish lists of 'emerging risks' which can be seen as a good starting point for identifying unconventional risks in practice. However, such an approach should be used as a guide only, given the discrepancies between different lists of emerging risks, and given that they exclude risks which are well-accepted as unconventional risk but which are no longer emerging, e.g. nuclear risk.

In addition, there are also so-called emerging risks that are largely conventional. Similarly, a risk that is generally not perceived as unconventional could suddenly become so in the event of an abrupt change in the industry's perception of its characteristics, thus necessitating its mutualisation (e.g. a risk which is relatively well-known but its incidence and impact become more intensified, or a risk which is not new but is characterised by a systemic component which makes its consequences less manageable than originally envisaged). The above suggest that the dividing line between conventional and unconventional risk is not static in nature. Rather, it shifts based on the market and actuarial properties of the specific risks in question.

### 3.2 Insurers' coverage of unconventional risks

Unconventional risks are generally regarded as risks which possess certain features that render coverage by individual insurers unviable.

Markets for unconventional risk instead tend to be characterised by cooperation schemes between individual (re)insurers (and sometimes the State), in order to offer coverage. These cooperation schemes can be seen as a means of addressing the insurability criteria that a certain risk fails to meet. For example, a cooperation scheme comprised of multiple insurers can help to overcome the issues of very large losses and difficulty in assessing probability of occurrence by pooling the resources and actuarial data of their individual members.

There are two key types of cooperation schemes found in markets for unconventional risks: co(re)insurance pools and ad hoc co(re)insurance agreements.

Co(re)insurance pools are typically formed by (re)insurers who seek to co(re)insure risks that would otherwise be difficult to cover through other market arrangements. Risks covered in many pools typically have a low probability of occurrence that is difficult to estimate but with potentially severe foreseeable damages. Pools are therefore most typically formed to create production capacity for particular types of

<sup>16</sup> Liu, J. (2013) *Compensating Ecological Damage: Comparative and Economic Observations*. Intersentia, Cambridge, United Kingdom.

<sup>17</sup> Hollaender, K. and Kaminisky, M.A. (2000) "The past, present and future of environmental insurance including a case study of MTBE litigation" *Environmental Forensics*, Vol 1, pp.205-211.

risk, for which it is difficult to assess the probability of occurrence and the potential total size of claims payable. For instance, pools are usually established for new risks (e.g. large-scale environmental damage), or risks that have substantially changed in nature over time (e.g. terrorism), for which the market does not have sufficient information to address them efficiently.

Ad hoc co(re)insurance agreements, on the other hand, are suggested to be most suitable for risks entailing large potential losses, where:

- individual domestic insurance companies do not have sufficient capacity or resources to accept the risk on a standalone basis, which can particularly be the case in smaller countries; and
- alternative solutions (if available) are more costly.

Moreover, ad hoc co(re)insurance agreements allow for greater flexibility as, in case a co(re)insurer withdraws from the market or declines to renew a contract, continuity is still available from the remaining co(re)insurers and it is only necessary to replace via the broker's services the departing company. Ad hoc agreements are developed in the market to meet the specific insurance needs of a customer, facilitated and negotiated by a broker. As a result ad hoc agreements provide for greater flexibility with respect to the specific types of risk coverage, size of risks, financial strength and willingness to commit. An ad hoc agreement may, for example, form in an insurance market in which a pool already operates, because the insurance premiums and/or cover limits offered by these pools are not attractive to individual members.

### **3.3 Insurers' tangible and intangible assets**

The aim of this section is to discuss the types of assets held by insurers active in the coverage of unconventional risks.

In general there are two types of assets — tangible and intangible. Intangible assets cover non-physical assets such as intellectual property, goodwill, and brand recognition. Tangible assets capture all physical assets such as land, equipment, financial instruments and cash. In terms of balance sheets, insurance companies have predominantly tangible assets. According to ECB data, most of the assets of insurance corporations in the euro area are financial assets such as securities other than shares, investment funds and money market funds shares, and shares and other equity. Less than two per cent of the total assets were non-financial assets.<sup>18</sup> According to a survey conducted by Insurance Europe, the majority of insurers invests in corporate bonds (36%), government bonds (28%) and equities (15%).<sup>19</sup>

Insurance involves the use of contracts to reduce or redistribute risk or uncertainty; this materialises in an agreement where one side (the customer) trades an uncertain future loss against a certain payment today (paid to the insurer). By receiving payments from customers, insurers accept a liability to pay the agreed amount in the case covered by the insurance policy.

To ensure that such obligations can be met, insurers need to keep a portfolio of assets whose properties match the profile of the liabilities they have. This can include

---

<sup>18</sup> See European Central Bank (ECB) website "Aggregated balance sheet of euro area insurance corporations and pension funds: 2014". See: [https://www.ecb.europa.eu/stats/money/icpf/html/pension\\_funds\\_2014.en.html](https://www.ecb.europa.eu/stats/money/icpf/html/pension_funds_2014.en.html).

<sup>19</sup> Insurance Europe (2013) "Funding the future Insurers' role as institutional investors". See page 19.

considerations around the duration profile of liabilities and exposure to inflation risk. The process of designing an adequate combination of assets and liabilities is called capital management. This, however, is counterbalanced by considerations around the expected risks and returns of the assets invested in — the more ‘safe’ assets an insurance company holds, the lower is the expected return. Because of the variety in insurance products, an insurer can concurrently have different business models, and thus follow multiple capital management strategies.<sup>20</sup> Regulatory (prudential) requirements also affect capital management. Last, we note that the process of matching assets to liabilities is dynamic, i.e. whenever liabilities change (e.g. because the insurer enters a new market or because current liabilities mature) the asset portfolio may have to be revised.

While not reflected in the aggregated balance sheet, intangible assets such as know-how etc. could have a significant impact on firms’ strategies and their ability to respond to changing market conditions. Even if insurance products are not material goods, they are special types of services that require particular investments to generate them. Insurers have to invest resources to acquire an in-depth knowledge of the insured risks (either internally or else bought in from external experts); they have to be able to classify prospective policy-holders into appropriate categories and determine the proper rates to charge and the corresponding adequate levels of equity to use, actuarial reserves to keep and cash flows to reinvest; finally insurers have to maintain suitable marketing and claims-handling structures in order to sell their insurance products (although these latter two items may be more restrictive in unconventional insurance than in more conventional forms of non-life insurance). All of the above tasks are likely to require highly qualified staff, or else the purchase of such expertise as is required from external consultants.

### 3.4 Why is asset switching important?

This section establishes the link between insurers’ ability to switch assets and the potential impacts on competition in the market. We use the concept of SSS to explain the mechanisms through which asset switching could foster competition. The framework of SSS allows us to identify the key determinants of when SSS is more relevant. The section concluded with a discussion placing the concept of SSS within the context of unconventional risk insurance.

The concept of SSS, alongside DSS, is primarily used for defining the relevant market. Demand-side substitutes include *“all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products’ characteristics, their prices and their intended use”*.<sup>21</sup> Supply-side substitutes are products which are interchangeable from the suppliers’ point of view. This is defined as their ability *“to switch production to the relevant products and market them in the short term without incurring significant additional costs or risks in response to small and permanent changes in relative prices”*.<sup>22</sup> The usefulness of these concepts of substitutability stems from the fact that potential substitution could impose a significant competitive pressure on incumbent(s) even in highly concentrated markets. If in response to price changes customers can easily switch away from more expensive products and/or suppliers can enter more profitable markets, the extent to which incumbent suppliers could take advantage of their market position is limited. As

---

<sup>20</sup> Insurance Europe (2013) “Response to EFRAG consultation on long-term investing activities business models”. See page 1.

<sup>21</sup> European Commission “Commission Notice on the definition of the relevant market for the purposes of Community competition law” *Office Journal*, December 1997, paragraph 7.

<sup>22</sup> European Commission “Commission Notice on the definition of the relevant market for the purposes of Community competition law” *Office Journal*, December 1997, paragraph 20.



such, substitutability is a key concept not only for market definition but more generally for studies regarding the state of the competition in the market. While DSS is usually more relied upon in such analysis, there are circumstances under which SSS is particularly important.

The European Court of Justice (ECJ) established the importance of SSS in the process of defining the relevant market in the case *Continental Can* against the European Commission, where the ECJ rejected the market definition as it had failed to consider SSS.<sup>23</sup> As the ECJ demanded the incorporation of SSS in market definitions, the European Commission explicitly introduced the approach of including SSS in the process of defining the relevant market.<sup>24</sup>

The rationale for including SSS in a competition study is based on the argument that even if there are no possibilities for the customers to switch to an alternative product, firms may still be subject to competitive constraints as producers may be able to quickly react to price increases by entering the market and gaining significant market share.<sup>25</sup> According to OFT (2004), when there is high level of SSS one should define the market *“with reference to the similarity of production methods”*.<sup>26</sup>

This could be the case in the insurance market. It is generally accepted that DSS in this context is limited as product markets are narrow (i.e. customers do not perceive different insurance products as substitutes). Therefore, it is the extent to which SSS is observable that could in turn help to establish whether competition should be analysed within a context broader than the one implied by DSS. EFTA (2007) argues that different classes of risks that appear heterogeneous in a demand perspective can seem homogenous from a supply viewpoint.<sup>27</sup> The European Commission has accepted the potential relevance of SSS for larger insurers:

*“From a supply side perspective, the conditions for insurance of different risk types are quite similar and most large insurance companies are active in several risk types. This suggests that many different types of non-life insurance should be included in the same product market.”*<sup>28</sup>

On the other hand, the Irish Competition Authority has argued against the relevance of SSS and notes that:

---

<sup>23</sup> *Europemballage Corporation and Continental Can v Commission of the European Communities*, Case 6/72, 21.02.1973.

<sup>24</sup> European Commission “Roundtable on barriers to entry” DAF/COMP/WD(2005)59, Directorate for Financial and Enterprise Affairs Competition Committee, October 2005. See section 4.1, pages 5-6.

<sup>25</sup> European Commission “Roundtable on barriers to entry” DAF/COMP/WD(2005)59, Directorate for Financial and Enterprise Affairs Competition Committee, October 2005. See section 4.1, pages 5-6.

<sup>26</sup> OFT (2004) “Market Definition - understanding competition law”. See paragraph 3.17, page 14.

<sup>27</sup> EFTA Surveillance Authority (2007) “Business Insurance Sector Inquiry” Interim Report. See page 14.

<sup>28</sup> European Commission, Case No COMP/M.3035 – *Berkshire Hathaway/Converium/Guam*, paragraph 25. Cited in EFTA Surveillance Authority (2007) “Business Insurance Sector Inquiry” Interim Report. See page 14.



*"It is the lack of accurate and detailed data regarding risks that makes it difficult for providers to move from one niche in the motor insurance business to others."*<sup>29</sup>

The relevance of SSS for defining the relevant product market is inconclusive and appears to be determined on a case-by-case basis.

The key to SSS is checking whether the switch can occur seamlessly, i.e. in a relatively short timeframe and without incurring prohibitively large costs. In order to capture these features the "SSS test" has been developed. According to Padilla (2001), SSS would be particularly relevant for markets where the following conditions are satisfied:

- The supplier **already owns all the assets** needed to produce, market and distribute the product;
- If any assets are missing, these can be acquired **without any additional investments or sunk costs**; and
- The supplier should find **it profitable** to divert their production.<sup>30</sup>

Padilla (2001) also notes that SSS is only relevant insofar as customers perceive the products offered by the new entrants as substitutes to the products offered by the incumbent(s). Otherwise, the products introduced by the entrants would not in fact challenge the position of the incumbent(s) as the demand for their products would remain unchanged.

As argued by Padilla (2001), for SSS to be a sufficiently significant threat to the incumbent(s), a response to price changes should be "nearly universal" among the potential entrants, i.e. if the change in price creates the opportunity of profit gains most of the potential suppliers should be encouraged to enter the market. Verifying this assumption may require investigating whether:

- Most suppliers are already manufacturing the entire product line;
- Most existing product lines could be **easily adjusted** so as to produce the relevant products;
- Most producers have either **enough spare capacity** or could divert enough production from other goods to effectively respond to an increase in the prices of relevant products; and
- Most producers have (or are likely to have) **similar market positions** for the various products that form the resulting (enlarged or aggregated) relevant market.<sup>31</sup>

These conditions are often fulfilled by firms whose main 'asset' is human capital, i.e. firms that are defined by the skills of their employees rather than by a set of products. The characteristics of such firms enable them to flexibly respond to demand pressures as most of their labour is "integrated into a common pool from which resources are

---

<sup>29</sup> Irish Competition Authority (2005) "Competition issues in the non-life insurance market – Final report and recommendations" vol I, pp 62. Cited in EFTA Surveillance Authority (2007) "Business Insurance Sector Inquiry" Interim Report. See page 14.

<sup>30</sup> Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" NERA, Report for DG Enterprises. See page 4.

<sup>31</sup> Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" NERA, Report for DG Enterprises. See page 5.

drawn to meet clients' needs just in time".<sup>32</sup> Many professional services companies are examples of such companies where SSS plays an important role in competition studies.<sup>33</sup>

Applying this reasoning to insurance companies we can see that their position is more ambiguous. Because of the importance of both tangible and intangible assets in insurance business models, the extent to which SSS is possible requires further analysis.

In terms of human capital, the available evidence is limited; insurance companies may be thought able to relatively easily acquire it when needed (either as new staff or indirectly through hiring consultants or otherwise outsourcing the requirement). However, it is possible that the unconventional nature of the risks being considered may mean that human capital is in the short term unavailable to some insurers (i.e. it is a scarce resource). On the other hand, the importance of other asset switching limitations might overshadow human capital concerns in limiting their ability to enter a new market if the constraints on switching such assets are significant.

#### **3.4.1 Legal perspective**

CMS-Hasche Sigle's analysis of European Commission cases and national cases in Germany, the United Kingdom and the United States assesses how SSS is applied in different legal frameworks, and so speaks to the importance of asset switching. The full legal analysis is presented as an appendix to this report.

The analysis by CMS-Hasche Sigle shows there is not a uniform application of the principle of SSS across Europe and the US. It is true, however, that the practice of the European Commission and German authorities and courts recognize in general that the demand-driven approach can lead to defining markets too narrowly. For this reason, on a case-by-case basis, SSS has also been sometimes been taken into consideration (either additionally to the demand-side approach, or instead of it). As a rule, authorities and courts seem to apply SSS whenever needed to come to a reasonable and practical conclusion and result. In this sense, the application is rather result-oriented.

The practice and rulings in the UK and US seem to be more strictly focused on the demand-driven definition of market and takes into account SSS only in exceptional cases. However, it can be concluded from the analysis that all cases begin with the demand-driven definition. A brief summary of the application of SSS by the European Commission, Germany, the UK and the US is provided below.

In the past the European Commission defined a relevant market by regarding each class of insured risks as a separate market. The analysis of relevant cases shows that the European Commission defined the relevant market on the basis of demand-side considerations. However, the Commission has moved away from this practice, especially in cases involving non-life insurance, with consideration of SSS gaining more importance. Even so, the consideration of SSS is on a case-by-case basis. In practical terms, the Commission has generally left the market definition open where it was not crucial to the decision.

---

<sup>32</sup> Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" NERA, Report for DG Enterprises. See page 24.

<sup>33</sup> Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" NERA, Report for DG Enterprises. See page 24.

Germany uses principles in line with the procedure of the Commission. The court decision of the German Higher Regional Court of Düsseldorf on auditor's third-party liability (*Versicherungsstelle* Wiesbaden) illustrates the limits of a demand-driven definition when it comes to certain specific insurance products. If the insurance product is designed to be offered to a specific class of professionals, a demand-driven definition of the market is not entirely convincing and there is need to consider SSS. As an example, a law firm could never reasonably be insured under an insurance contract designed specifically for tax advisers. In this particular case, however, it was argued that insurers might nevertheless be able to adapt their products to other clients or classes of clients.

The UK has Merger Assessment Guidelines that establish when and how SSS will be used to define markets. The UK Merger Assessment Guidelines, SSS is used as an additional criterion to define a market when: (1) production assets can be used by firms to supply a range of different products that are not demand-side substitutes, and the firms have the ability and incentive quickly to shift production between these different products; and (2) the same firms compete to supply these different products and the conditions of competition between the firms are the same for each product.<sup>34</sup>

The United States segments the insurance market based on the horizontal merger guidelines established by the U.S. Department of Justice and the Federal Trade Commission.<sup>35</sup> The guidelines provide that an analysis needs to start with a market definition, where the market definition solely focuses on DSS factors. In general, the SSS condition will not be reflected in the market definition. However, the horizontal merger guidelines provide just one exception: the authorities may use an aggregate description of markets, "if this type of supply side substitution is nearly universal among firms selling one or more of a group of products".<sup>36</sup> Thus, somewhat similar to the UK guidance, the US guidelines provide a slightly different emphasis and stricter conditions regarding SSS relevance for market definition than the approach of the Commission and Germany.

Across all jurisdictions, there are instances where SSS can be applied, but also many cases where it has not been. This suggests a cautious approach to the application of SSS is appropriate. The legal analysis is provided as an Appendix to this study.

### **3.4.2 Unconventional risk insurance**

This study focuses on unconventional risk due to the context in which IBER is applied. The investigation of SSS in this context is made because market share thresholds are crucial to establish the exemption of pools as per Article 5 of IBER. Typically — but not exclusively — pools are the means through which co(re)insurance for unconventional and/or emerging risks is supplied, it follows that our assessment of asset switching will focus on unconventional risk.

---

<sup>34</sup> Office of Fair Trading (2010) "Merger Assessment Guidelines". CC2 (Revised), a joint publication of the Competition Commission and the Office of Fair Trading. See paragraph 5.2.17, page 33.

<sup>35</sup> US Department of Justice and the Federal Trade Commission (2010) "Horizontal Merger Guidelines".

<sup>36</sup> US Department of Justice and the Federal Trade Commission (2010) "Horizontal Merger Guidelines". See section 5.1, page 16.

Insurance companies which cover unconventional risks are affected by two idiosyncratic features that are important for SSS assessments. The first feature relates to the “nearly universal” requirement that was mentioned above. At the core of this requirement is the ability for most potential entrants to be able to respond to profitable opportunities. However, in the area of unconventional risk, this requirement is challenged by the fact that there are only a few potential insurers that can serve as leaders in co(re)insurance arrangements; this severely limits the scope for universality. To add to that, the knowledge of these potential leaders is likely to only cover specific unconventional risk areas to which these insurers have had previous exposure.

Moreover, the very fact that co(re)insurance structures require a leader position may be thought to violate one of the key aspects of the “nearly universal” requirement, i.e. that most producers have (or are likely to have) similar market positions for the various relevant product markets. The presence of a leader is in sharp contrast with the required aspect of similarity. Many market participants are only capable of meeting the requirement as followers in some form of cooperative agreement (e.g. a pool led by an underwriting agency) — they are not able to write such business directly. As a result, the perceived threat that potential new entrants can impose on the incumbents can be limited.

The second feature relates to decision making by insurers and how concerns about capital can restrict the ability of potential entrants to respond to profitable opportunities in an immediate manner. In an industrial context, companies’ fixed assets can often be called upon to increase production as they do not always operate at full capacity. For insurance companies, however, the concept of spare capacity is conceptually different. An insurer engages in an annual budgetary process that will result in them committing its risk capital to particular business lines (also leaving a buffer against regulatory levels) and planning how it will invest available cash (to generate income, and to match expected liabilities).

In the industrial sector, SSS involves the optimisation of unused spare physical capacity; in insurance, however, the optimisation process is financial and is conducted initially during annual planning. This feature need not, however, invalidate the immediacy requirement, since insurers can and do change production and re-optimize investment portfolios intra-year. An insurer could respond to sudden increases in prices in an “immediate” way (within six-twelve months), when:

- the optimisation process has led to a situation in which the surplus capital is invested in liquid assets that can be turned over quickly and for which, doing so would not imply a loss of expected return;
- budgeting decisions can be revised intra-year; and
- even if the above does not hold, then the profitable opportunity arises at a time that is sufficiently close to the dates of the next annual optimisation process.

### **3.5 Overarching constraints in the context of unconventional risk**

Unconventional risk faces two types of overarching constraints that necessitate the formation of cooperation schemes in order to insure it. For such risks, a single insurer and delegated underwriting procedures in the open market may fail (or be unwilling) to provide appropriate coverage. This is to a large extent due to:

- The losses arising in case of event occurrence being too large to be absorbed on a stand-alone basis (“capacity constraint”); and

- The presence of significant margins of error (e.g. due to lack of relevant historical data) when assessing the implications of the risk and/or of its probability of occurrence (“assessment constraint”).

The capacity and assessment constraints lead to the formation of cooperation schemes in the area of unconventional risk. Even within these schemes, however, insurers face several additional constraints that affect the nature of their participation and their ability to respond to market opportunities. We now turn to these.

### **3.6 Constraints on asset switching**

Depending on the profile of liabilities, insurance companies invest their assets with the goal of obtaining an optimal portfolio of underwriting and investment position that is consistent with their business strategy. Based on the discussion in the previous section we can see that a seamless asset switch is likely to be key for the ability to take advantage of profitable opportunities in the insurance market. Otherwise, companies that are active in one insurance area would not be able to quickly respond to changing prices in other insurance areas as they would be restricted by the extent to which they can adjust their asset mix, and thus in their ability to offer new insurance products. The same would apply to insurers that are already active in the coverage of particular unconventional risks and wish to increase their exposure in a timely and commercially viable manner.

The European Commission (2007) lists a number of restraining factors that determine the ability to supply any type of insurance. Apart from the concerns regarding the ability to assess risks and probabilities, the potential to be profitable, and financial capital, the supply of insurance might be affected by the following factors:

- Regulatory and legal restrictions.
- Ability to pool risk exposures.
- Adequate information to price insurance contracts – this is the assessment constraint mentioned above.
- Acceptable level of moral hazard.
- Financial capacity to absorb very large losses – this is the capacity constraint mentioned above.<sup>37</sup>

In the remainder of this section, we discuss those constraints which we deem pertinent to constraining asset switching in the field of unconventional risks. We recognise that the ability to pool risk exposures is key to a well-functioning insurance market. Indeed, in the field of unconventional risks, pooling of risk and other cooperative schemes is the norm and, therefore, the focus of our discussion in this regard is on what constraints are imposed by such cooperative schemes. We also recognise the importance of having sufficient financial capacity to absorb very large losses, and this is captured through our discussion of the capital requirements set out in Solvency II and the discussion of spare capacity.

Furthermore, inadequate information and moral hazard risks can restrict insurer's entry into new markets, as they pose concerns that insurers should consider when assessing their ability to switch assets.

---

<sup>37</sup> European Commission (2007), “Business Insurance” Interim Report. See section 3.2, pages 18-20.

While individual insurers' motives to participate in cooperative structures are driven primarily by the assessment and capacity constraints, their behaviour within these structures, or when wishing to join such structures, is influenced by the set of constraints that is presented below. The key asset switching constraints that insurers could face include: regulatory constraints; spare capacity constraints; constraints imposed by cooperative structures; constraints imposed by current asset and liability profiles and human capital constraints. These constraints can be categorised into capital and non-capital constraints with some categories exhibiting overlaps across the two dimensions as shown in the following list:

- Capital constraints
  - Regulatory constraints.
  - Spare capacity constraint.
  - Risk transfer ability.
  - Current assets/liabilities constraints.
  - Imposed by cooperation schemes.
- Non-capital constraints
  - Regulatory constraints.
  - Imposed by cooperation schemes.
  - Human capital constraints.

### **3.6.1 Regulatory constraints**

#### **EU-level regulatory constraints**

Solvency II is the latest European Union Directive designed to harmonise insurance regulation across Member States; it was only fully implemented on 1 January 2016.<sup>38</sup> The Directive consists of three pillars: Pillar 1 on quantitative requirements; Pillar 2 on qualitative requirements and supervisory review; and Pillar 3 on reporting and disclosure. These are a group of measures imposed on insurance companies to reduce the risk of insolvency and, therefore, enhance customer protection.

In the context of constraints on asset switching, Pillars 1 and 2 of Solvency II are of greatest importance. There are three key aspects of Pillar 1 of Solvency II:

- Market-consistent valuation of assets and liabilities.
- Enhance quality of capital held.
- Risk-based capital requirements.

We consider the implications of each in turn.

*Pillar 1 – Market-consistent valuation of assets and liabilities* – in Solvency I, capital requirements were determined based on a profit and loss account measure (claims and premiums) rather than the balance sheet approach that Solvency II adopts (assets and liabilities).<sup>39</sup>

---

<sup>38</sup> Solvency II – Directive 2009/138/EC of the European Parliament and of the Council.

<sup>39</sup> KPMG (2011) "Solvency II. A closer look at the evolving process transforming the global insurance industry". See page 9.

Solvency II specifies that the value of a (re)insurer's assets and liabilities will be based on current *financial market* values, rather than original *accounting* values, thus providing a more accurate reflection of a firm's solvency.

Originally, this raised concerns among industry experts about a shift towards shorter-term assets, as the balance sheet valuation of longer-term assets would be affected by the risk of short-term price movements.<sup>40</sup> However, the introduction of the matching adjustment as part of the long-term guarantees package of Solvency II, helped to address these concerns of bias against longer-term assets to cover insurers with longer-term liabilities.

The matching adjustment is applied to the discount rate that insurers can use in valuing certain types of liabilities. This would mean that if there is a time of market stress that causes asset values to fall, a higher discount rate on certain liabilities would reduce the present value of liabilities on the balance sheet, and thus maintain a higher capital base than in the absence of the matching adjustment. Therefore, the matching adjustment should make it easier for insurers with long-term liabilities to maintain the required capital base at times of market stress. This matching adjustment is only available to those insurers that hold long-term, illiquid assets to maturity in order to match long-term expected pay-outs to policy holders (and only once supervisory approval has been sought).

This matching adjustment could act as an impediment to asset switching (in the context of a desire to increase production in a particular risk segment) — at least in times of market stress. It was not referenced as a constraint in our stakeholder engagement.

*Pillar 1 – Enhanced quality of capital held* – Solvency II distinguishes between the tiers of capital. Capital is rated based, firstly, on its ability to be called upon on demand to fully absorb losses on a going-concern basis, and, secondly, in the case of winding up, on the total amount being available to absorb losses and being refused to its holder until the obligations to policyholders and other beneficiaries of (re)insurance contracts have been met.

Capital which substantially possesses both of these features is classed as Tier 1 (such as equity and retained earnings); capital that only substantially possesses the second feature is classed as Tier 2 (such as subordinated debt); while all other capital is classed as Tier 3.

Solvency II specifies that at least one-third of the Solvency Capital Requirement (discussed in more detail below) must be met by Tier 1 capital, and that no more than one-third is made up of Tier 3 capital. Therefore, this aspect of Solvency II, combined with the risk-based capital requirements discussed below, may limit an insurer's ability to switch assets, if their new risk profile were to require a large increase in the amount of Tier 1 capital on an insurer's balance sheet.

*Pillar 1 – Risk-based capital requirements* – In Solvency I, in order to cover the risks insurers held a fixed margin in addition to their required reserves. Solvency II introduces a risk-sensitive framework where the risk of asset-value fluctuations is captured explicitly in the form of risk-adjusted capital charges.

Specifically, Solvency II has introduced two capital requirement levels – the lower 'Minimum Capital Requirement' (MCR) and the higher 'Solvency Capital Requirement' (SCR) – and has set out the required responses should a firm's capital holdings fall below either. If the SCR is not covered by capital, insurers face serious measures by

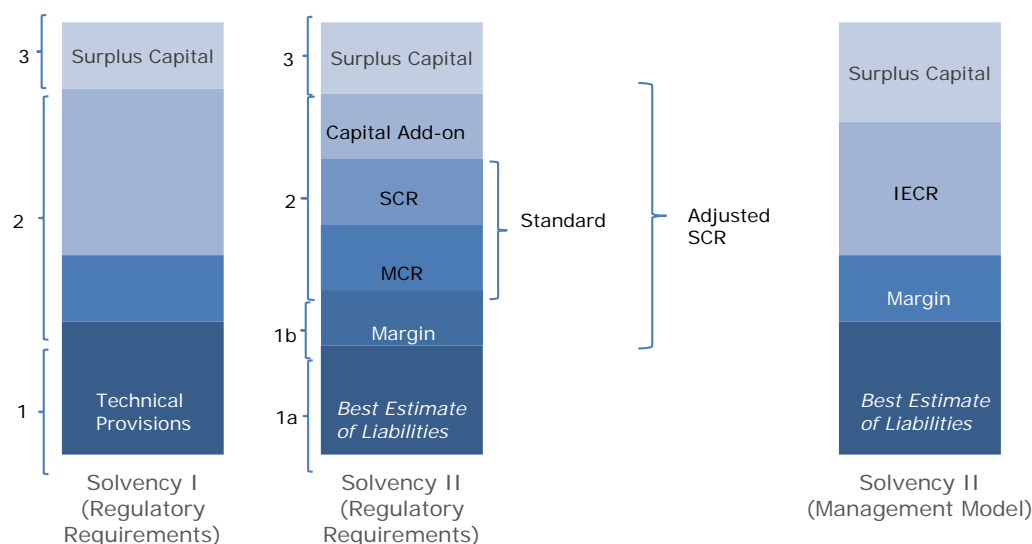
---

<sup>40</sup> For example, see Fitch Ratings, and Insurance Rating Group (2011) "Solvency II set to reshape asset allocation and capital markets", Special Report. See page 6.



the supervisory authorities. If the MCR is not covered, in a worst-case scenario, withdrawal of the license to conduct insurance business is at stake. In cases where the risk profile deviates from the initial assumptions underlying the latest SCR calculation, insurers have to recalculate and report to the supervisory authority without delay. The diagram below sets the SCR and MCR regulatory requirements in context.

**Figure 3.2: Regulatory requirements under Solvency I and Solvency II.**



<ol style="list-style-type: none"> <li>1. Technical provisions to match insurers' liabilities <ol style="list-style-type: none"> <li>a. Best estimate of liabilities</li> <li>b. Market Value Margin</li> </ol> </li> <li>2. Regulatory capital requirements</li> <li>3. Capital help in excess of regulatory capital requirements</li> </ol>	<p><b>MCR</b> – Minimum Capital Requirement, the minimum level of regulatory capital</p> <p><b>SCR</b> – Solvency Capital Requirement, the risk-based level of regulatory capital</p> <p><b>Adjusted SCR</b> – SCR level which includes any supplementary capital requirement determined through the Pillar 2 Supervisory review</p> <p><b>IECR</b> – management's internal estimate of capital need</p>
---	--

Source: KPMG (2011) "Solvency II. A closer look at the evolving process transforming the global insurance industry". See page 5.

The SCR is the level of capital which would cover unexpected losses over the following 12-months with 99.5% certainty, i.e. up to a one-in-200-year event. Insurers must assess and value their assets and liabilities and, in doing so, calculate their SCR at least once every 12 months and report their results to the supervisory authority.<sup>41</sup>

The SCR consists of: the Basic Solvency Capital Requirement; the capital requirement for operational risk; and the adjustment for the loss-absorbing capacity of technical provisions. Solvency II stipulates that insurers can calculate this capital requirement either using the standard formula or by using their own (partial or full) internal model of risk. The use of internal models would be monitored by the regulator and subject to a number of requirements that need to be satisfied before the firm can actually use its own model.

The standard formula, as set out in the EU directive, is specified as follows:

<sup>41</sup> Paragraph (63) In order to ensure that insurance and reinsurance undertakings hold eligible own funds that cover the Solvency Capital Requirement on an on-going basis, taking into account any changes in their risk profile, those undertakings should calculate the Solvency Capital Requirement at least annually, monitor it continuously and recalculate it whenever the risk profile alters significantly.



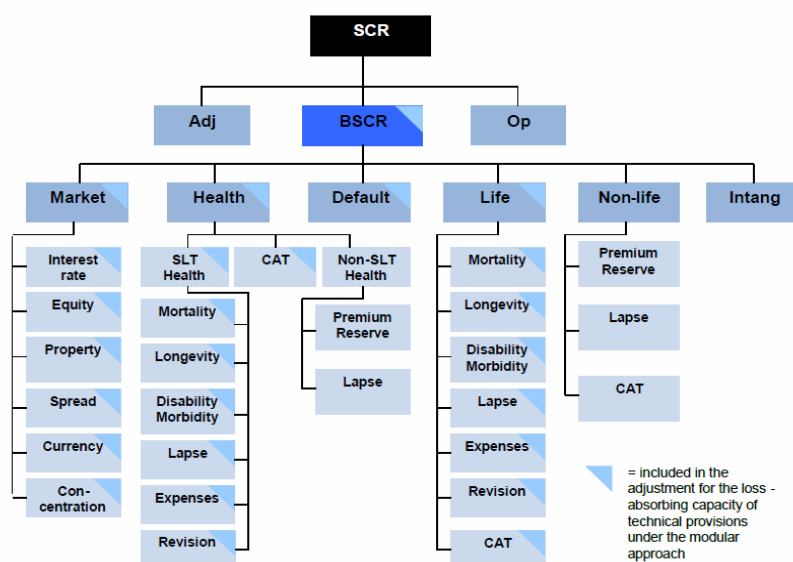
$$SCR = BSCR + Adj + SCR_{Op}$$

where SCR is the Solvency Capital Requirement; BSCR is the Basic Solvency Capital Requirement;  $Adj$  is the adjustment for the risk absorbing effects of technical provisions and deferred taxes; and  $SCR_{Op}$  is the capital requirement for operational risk. The BSCR itself is estimated by the following formula:

$$BSCR = \sqrt{\sum_{ij} Corr_{i,j} \times SCR_i \times SCR_j + SCR_{intangibles}}$$

$i$  and  $j$  refer to the various types of risk that an insurer is exposed to, while  $Corr_{i,j}$  refers to the correlation between these different types of risk. The range of risks and sub-risks covered by the formula are set out in the diagram below.

**Figure 3.3: Risks captured by the standard SCR formula in Solvency II.**



Source: European Insurance and Occupational Pensions Authority (EIOPA) (2014), "The underlying assumptions in the standard formula for the Solvency Capital Requirement calculation". See page 6.

As evident from the formula above, the calculation of the SCR also accounts for the effects of diversification on risk through the use of correlation matrices. In the case of the standard formula, linear correlations are assumed. The table below shows the correlation coefficients for the major risk categories, but there are also matrices to capture the correlation between different sub-risks within each of these major risk categories.

**Table 3.2: Correlation coefficients used in standard SCR formula in Solvency II.**

	Market	Default	Life	Health	Non-life
Market	1	0.25	0.25	0.25	0.25
Default	0.25	1	0.25	0.25	0.5
Life	0.25	0.25	1	0.25	0
Health	0.25	0.25	0.25	1	0
Non-life	0.25	0.5	0	0	1

Source: Solvency II – Directive 2009/138/EC of the European Parliament and of the Council. See Annex IV.

These correlation matrices will, in part, dictate how capital requirements change as insurers risk profiles and thus service offerings change. For example, an insurer who currently operates exclusively in non-life insurance products may find that, other things equal, their capital requirements increase less dramatically if they move into life insurance products (a correlation coefficient of 0.25), than if they were to move into offering other non-life insurance products (a correlation coefficient of 1). By similar logic, an insurer with a high default risk-premium may find it easier to switch into life insurance products (0.25) than into non-life insurance products (0.5), as, other things equal, their SCR would be expected to increase by less.

Within the broad categories reported in the table above, there exist sub-modules which give rise to different SCR requirements. The non-life risk module captures the risks arising from non-life insurance and reinsurance obligations. The different sub-modules comprising non-life are integrated in the following equation used to determine SCR for the entire non-life segment:

$$SCR_{non-life} = \sqrt{\sum_{i,j} Corr_{i,j} \times SCR_i \times SCR_j}$$

$SCR_i$  denotes the SCR for sub-module  $i$  and likewise  $SCR_j$  for sub-module  $j$ , while  $\sum_{i,j}$  means that the sum of the different terms should cover all possible combinations of  $i$  and  $j$ . In the calculation,  $SCR_i$  and  $SCR_j$  are replaced by the following:

- SCR non-life premium and reserve denotes the non-life premium and reserve risk sub-module. According to the Solvency II Regulation, this is “the risk of loss, or of adverse change in the value of insurance liabilities, resulting from fluctuations in the timing, frequency and severity of insured events, and in the timing and amount of claims”.
- SCR non-life catastrophe denotes the non-life catastrophe risk sub-module. According to the Solvency II Regulation, this is “the risk of loss, or of adverse change in the value of insurance liabilities, resulting from significant uncertainty of pricing and provisioning assumptions related to extreme or exceptional events”.

Therefore, it is important for firms to understand how the risks of new product offerings may correlate with their existing risks (in particular, in the tail of the distribution), as this will ultimately affect their SCR. If risks are too highly correlated, thus significantly increasing the SCR, then this may act as a constraint on asset switching.

As an alternative to using this standard formula, insurers may choose to use their own internal models (or partial internal models) to calculate their SCR. The expectation is that such an approach will be preferable to larger insurers who already have such models in place and can, therefore, better tailor these models to the types of risks they face. This may be of competitive advantage to larger insurers whose internal models may help estimate their required capital base more accurately than the standard formula (see below for more details).

The implications of a shift in insurance business for the SCR would depend on the precise nature of this shift. The shifting of business triggers the obligation for insurers to recalculate and report the SCR to the supervisory authority pursuant to Art. 102 of the Solvency II Directive. This necessity to recalculate the new SCR and report the changes to the supervisory authority leads to time delays and administrative costs which represent a further obstacle to shifting business. We consider now four possible scenarios for shifting business and the implications for the SCR:

- **Scenario 1: termination of contracts** – if insurers decide to abandon a certain line of business by terminating all insurance contracts, this will theoretically lead to a reduction of the capital requirements. However, depending on the type of insurance, long-term risks and incurred but not reported insured events require certain assets for open or future claims after termination of the contracts. Therefore, the SCR has to be recalculated to take into account such potential commitments to the 'old' business line.
- **Scenario 2: transfer of portfolio to another insurer** – the transfer of a portfolio to another insurer is regulated in Art. 39 of the Solvency II Directive. It requires approval by the supervisory authority if the accepting undertaking possesses the necessary eligible own funds to cover the SCR. This scenario might be more attractive to transferring insurers because it allows a complete cut-out of the old portfolio and thus will no longer tie up capital in order to meet the SCR. Transferring insurers have to notify their altered risk profiles to the supervisory authority and recalculate their SCR.
- **Scenario 3: run-off** – this is where an insurer refrains from writing new business, while maintaining their existing contracts. As a consequence, the risk profile of the undertaking changes, leading to an alteration in assumption for the calculation of the SCR. It is likely that SCR will decrease gradually each year as the portfolio shrinks over time, assuming all other factors remain stable.
- **Scenario 4: reduction of business** – insurers can simply reduce their sales and distribution activities instead of fully going into run-off, which will also lead to a reduction in business in the long run. By the same logic as for run-off, this scenario will lead to a gradual decrease in the SCR requirements. However, unlike when insurers opt for run off, the SCR alteration will become noticeable even over a longer period of time.

From the above scenario analysis, it is clear that the only way to completely cut risk, and the associated SCR, of an existing business line in one go is to transfer the portfolio to another insurer (i.e. Scenario 2). Therefore, the extent to which termination of an existing line of business frees up capital for a new line of business depends on exactly how that existing line of business is terminated.

Many commentators expected that the most significant impact of Solvency II will arise from these changes to capital requirements for investment risks.<sup>42</sup> So, in what way, do we expect these capital requirements to constrain asset switching? We posit two main concerns which we discuss in more detail in turn below:

- A move away from riskier asset classes that impose higher capital charges, which may restrict an insurer's ability to offer asset profiles that match the liabilities of certain types of insurance product.
- A move away from riskier asset classes that typically offer higher potential returns, which may damage expected profitability and thus dis-incentivise asset switching into certain insurance products.

In relation to the first bullet, capital charges are typically higher on equity, property and long-dated bonds as the prices of these instruments are more volatile, and thus are considered to be more risky. This means that insurers would need to hold a greater value of risky assets, compared to risk-free assets, for a given amount of liability. As a result, insurers may be dissuaded from holding more risky assets and instead shift towards holding asset classes with lower capital charges, such as highly rated fixed income securities or short-dated bonds.<sup>43</sup> This change in asset holdings may, in turn, limit an insurer's ability to offer insurance products which warrant a riskier asset structure given the nature of liabilities for those insurance products. This implies that an insurer's need for liability matching could be challenged.

The expected move away from riskier asset classes is corroborated by survey evidence presented in Blackrock (2012), which finds that "[t]wice as many respondents believe that Solvency II will 'severely hamper their ability to take investment risk' than those who do not. This is even more extreme among the largest insurers, with more than three times the number saying they will be restricted versus those who will not."<sup>44</sup>

In relation to the second bullet, the change in investment strategy discussed above would be expected to produce lower investment returns and could, therefore, ultimately hamper profits. This, in turn, could discourage insurers from entering new markets, if expected profitability is not sufficient to offset the additional risk exposure.

The impact of Solvency II requirements on asset switching will depend on whether or not these regulatory constraints do, in practice, bind for insurers.

In insurance, the most common use of ratings is to help determine capital requirements, although ratings are also used in other settings such as capital market access, credit and collateral management, and accessing reinsurance (the reinsurance contract can reference maintenance of a particular rating).<sup>45</sup> Indeed, calculating capital requirements and making investment decisions are not completely disconnected, as foreseen capital requirements influence the investment decisions and investment positions partly determine capital requirements.

---

<sup>42</sup> See, for example, Insurance Rating Group (2011) "Solvency II set to reshape asset allocation and capital markets" Fitch Ratings, Special Report.

<sup>43</sup> Milliman (2014) "Capital management in a Solvency II world" Research Report. See section 3.3., page 14.

<sup>44</sup> Blackrock (2012) "Balancing Risk, Return and Capital Requirements. The Effect of Solvency II on Asset Allocation and Investment Strategy", written by Economist Intelligence Unit. See page 12.

<sup>45</sup> ICF Consulting Services (2015) "Study on the Feasibility of Alternatives to Credit Ratings – Annexes to Final Report". See Annex 4.

Hörling (2013)<sup>46</sup> has investigated this issue by comparing the risk capital required under Solvency II (“regulatory capital”), with the risk capital required to maintain a credit rating of A under the Standard & Poor’s rating model (“rating capital”). His headline finding is that the capital requirements of the ratings agency are more stringent than Solvency II and, therefore, that Solvency II is not a binding constraint for insurers’ investment strategies. In particular, he finds that, for a given confidence level and the same market risks,<sup>47</sup> the ratings agency’s model requires an insurer to hold 68 per cent more capital than the Solvency II model. Even for a lower target rating of BBB, the rating model still imposes capital requirements 27 per cent higher than those imposed by the regulatory model.

Hörling attributes this, in part, to the high diversification benefits offered by the regulatory model relative to the rating model. Indeed, on the basis of individual risk types, the rating model is only imposes more restrictive capital requirements in the case of equities and alternatives and EEA sovereign debt. It is the much greater diversification benefits permitted in the regulatory model (between different types of market risk and between market risks and underwriting risks) which mean that, on an overall basis, the capital requirements of the regulatory model are less restrictive.

Overall, this suggests that the Solvency II capital requirements are unlikely to bind for the majority of insurers. This is supported by evidence from EIOPA’s fifth Quantitative Impact Study (QIS5) for Solvency II,<sup>48</sup> which found that 15 per cent of insurance companies fail to meet the Solvency Capital Requirements (SCR) and 5 per cent fail to reach the lower Minimum Capital Requirement (MCR). Committee on the Global Financial System (CGFS) concluded from EIOPA’s QIS5 results that, on average, insurance companies that responded had capital holdings equivalent to 165 per cent of the SCR.<sup>49</sup> This suggests that “rating capital” and internal capital are the key capital constraints in the insurance industry, rather than regulatory capital. On the other hand, while the majority would not find Solvency II requirements immediately binding, CGFS noted that there still exists a 15 per cent of insurers that have capital holdings less than the SCR threshold and a further 8.3 per cent that have capital holdings which are less than 25 per cent above the SCR. Together, this means that almost a quarter of insurers are likely to need to address their capital holdings in light of Solvency II, on the assumption that most would wish to maintain at least a 25 per cent buffer on the SCR given the potential for fluctuations.

The above data applies to the standard formula for the SCR. However, as discussed earlier, insurance companies are allowed to use regulator-approved internal models. Morgan Stanley and Oliver Wyman are of the view that most listed insurers will

---

<sup>46</sup> D. Hörling (2013), “Will Solvency II Market Risk Requirements Bite? The Impact of Solvency II on Insurers’ Asset Allocation”. *The Geneva Papers*, vol. 38, pp. 250-273.

<sup>47</sup> Specifically, Hörling compares the capital required for a target rating of “A”, which corresponds to a confidence level of 99.4 per cent in the S&P model with the capital required under Solvency II which has a 99.5 per cent confidence level. See page 256 in Hörling (2013), citation above.

<sup>48</sup> EIOPA Report on the fifth Quantitative Impact Study (QIS5) for Solvency II. See page 7.

<sup>49</sup> Committee on the Global Financial System (2011), “Fixed income strategies and of insurance companies and pension funds”. Bank for International Settlements. See section 3.3.4, page 29.

exercise this option.<sup>50</sup> QIS5 results showed that while capital surplus, i.e. the amount of capital held in excess of regulatory capital, would decline significantly for those using the standard formula, the capital surplus for those insurers making use of internal models would in fact increase, on average, by 6 per cent. A related statistic is that use of internal models reduces capital requirements by approximately 20 per cent. Overall, these quantitative findings suggest that insurers making use of internal models will maintain larger capital surpluses under Solvency II and so, other things being equal, may be better placed to affect short-term asset switches. In turn, as larger (group) insurers are likely to be better placed to make use of such internal models (which they may already have in place, or else would likely have the resources and data necessary to establish these models), this may suggest that under a Solvency II framework larger insurers are better placed to make short-term asset switches. Larger insurers are, of course, also likely to be benefiting from diversification effects which would also act to reduce their capital requirements.

*Pillar 2 – Own Risk and Solvency Assessment (ORSA)* – the ORSA is the entire approach of identifying, assessing, monitoring, managing and reporting current and future risks that the (re)insurer faces. Firms must analyse this risk in an Enterprise Risk Management framework which is appropriate to the complexity, nature and scale of risks faced and which should be embedded in the firm's broader governance and decision-making structure. This forward-looking analysis of risk should take into the firm's business strategy and the external environment to inform the Board of the firm's current and future solvency capital requirements. A key aim of the ORSA, therefore, is "... to embed risk awareness throughout the whole organization".<sup>51</sup> There are a number of components that must be included in the ORSA:

- Design of the ORSA – including whether a standard formula or internal model approach is used, the frequency of risk management and monitoring and its integration in wider decision-making.
- Past and present solvency requirements – including changes in the SCR and overall solvency needs from one period to the next, and changes in technical provisions<sup>52</sup>.
- Future solvency requirements – including risk and solvency projections, mid-term planning and business strategy and stress and scenario testing.
- Application to the wider firm – including the valuation of assets and liabilities, the implications for governance and decision-making and the application of the principle of proportionality.

#### National constraints

National regulation may impose specific rules that restrict asset switching, in particular:

- *Accounting treatment of surplus capital holdings.* It may be that accounting practices prevent the accumulation of capital surplus to cover a future catastrophe loss. This may be so that an insurer's accounts are a more accurate reflection of their true financial situation. In such circumstances, although an insurer could still

---

<sup>50</sup> Morgan Stanley and Oliver Wyman (2010), "Solvency 2: Quantitative & strategic impact – the tide is going out" (September 22, 2010). See page 67.

<sup>51</sup> KPMG (2013), "At the heart of Solvency II Is the ORSA". KPMG, cutting through complexity. See page 1.

<sup>52</sup> In Solvency II, insurance liabilities are referred to as technical provisions.



allocate retained earnings to a surplus capital account, this surplus could not be 'irrevocably earmark[ed]' towards covering catastrophe risk.<sup>53</sup>

- *Tax implications of surplus capital holdings.* It may be that under national tax law surplus capital holdings set aside in a given year are treated as corporate income and thus taxed as corporate income, as well as the interest income on these reserves being taxed into future years. Thus from a tax perspective, there may be limited incentive to build up surplus capital holdings; capital surplus which could otherwise have been used to drive asset switching.

That said, the Solvency II regime aims to eliminate current Member State restrictions on their insurers' investment portfolios, by limiting Member State discretion and ability to supplement Solvency II requirements. In that regard, Solvency II is seen as a 'maximum harmonising' regulatory framework, introducing a set of common requirements applicable throughout the EU. This may help to remove certain national level discrepancies and, therefore, create a more level playing across the EU, ultimately to the benefit of asset switching in insurance markets.

### **3.6.2 Spare capacity constraint**

In order to ensure that obligations associated with the liabilities can be met insurers need to hold a certain amount of assets. In the EU, the minimum asset requirement is now determined by the Solvency II Directive (as discussed in detail above). However, insurers may (and generally do) choose to hold surplus capital well in excess of these regulatory requirements. (The accumulation of excess capital (especially in soft markets) that is not paid out to shareholders may be due to capital exit costs.<sup>54</sup>) This can be seen as particularly important in the context of unconventional risk given the necessary risk capital to cover these risks.<sup>55</sup>

Adjusting the mix of assets in line with a change in liabilities should likely be easier when some spare capacity is available, i.e. when the insurer has some surplus of assets above the minimum required to cover the liabilities. This would allow to run down its existing capital surplus in the short-term when increasing its coverage, in the expectation that future profits from this insurance cover would help to rebuild the capital surplus in the longer term. This would be especially relevant in situations where the extension of insurers' operations into a new risk segment leads to a greater risk exposure and thus higher capital requirements to cover the additional risk. This effect may exacerbated if there is a high correlation between the new risks taken on and the insurer's existing risk profile.

However, if, on the other hand, insurers have most of their assets tied down to cover their liabilities, they might not be able to respond quickly and cost efficiently to a new favourable investment opportunity. One reason why insurers may restrict their surplus capital holdings is the risk that the surplus capital holdings could lead to unfriendly

---

<sup>53</sup> Jaffee, D. M. and T. Russell (1997), "Catastrophe Insurance, Capital Markets, and Uninsurable Risks". *The Journal of Risk and Insurance*, vol. 64(2), pp. 205-230. See page 209.

<sup>54</sup> Harrington, SE et al. (2013) "Insurance Price Volatility and Underwriting Cycles", *Handbook of Insurance*, ed. G. Dionne.

<sup>55</sup> Analysis by Zanjani (2002) shows that, for catastrophic risk, the necessary risk capital to ensure solvency is the major part of the price. See page 284 in: Zanjani, G. (2002), "Pricing and capital allocation in catastrophe insurance". *Journal of Financial Economics*, vol. 65(2), pp. 283-305.

take-over attempts if the insurer is a publicly-listed company.<sup>56</sup> Indeed, a study by Blanchard *et al* (1994)<sup>57</sup> found that companies that hold onto cash windfalls rather than investing them are more susceptible to takeover. However, in the case of mutual insurers, the cost of takeover is higher (as they are not publicly-listed) and, therefore, they are able to accumulate surplus cash holdings with a decreased threat of a takeover. Academic literature has actually found this to be a key rationale behind insurance companies mutualising.<sup>58</sup>

Holding capital may be costly for a number of other reasons including its treatment in the calculation of corporate income taxation, agency costs and regulatory costs.

### 3.6.3 Constraints on the ability to transfer risk

In the absence of spare internal assets, insurers would need to consider transferring existing insurance risks in order to free-up capital and thus increase their capital base. There are three ways in which they can do this:

- By reinsuring existing risks, through reinsurance providers.
- By issuing insurance-linked securities (ILS) in financial markets.
- Hybrid products which combine features of traditional (re)insurance and financial instruments.

The latter two fall under the umbrella of alternative risk transfer mechanisms, while reinsurance can be regarded as a traditional — and still more significant — means of risk transfer. Based on average EU15 cession rates for the period 1998-2007, non-life insurance companies retain about 80 per cent of the risks they take on from policyholders.<sup>59</sup> Approximately one-fifth is reinsured and only 2 per cent is transferred to financial markets through issuing ILS.<sup>60</sup> These statistics apply across non-life as a whole: given its characteristics, it is likely that reinsurance plays a role at least as significant as this in more unconventional risk segments.

Figure 3.4 below shows the main alternative risk transfer mechanisms.

---

<sup>56</sup> Jaffee, D. M. and T. Russell (1997), "Catastrophe Insurance, Capital Markets, and Uninsurable Risks". *The Journal of Risk and Insurance*, vol. 64(2), pp. 205-230. See page 212.

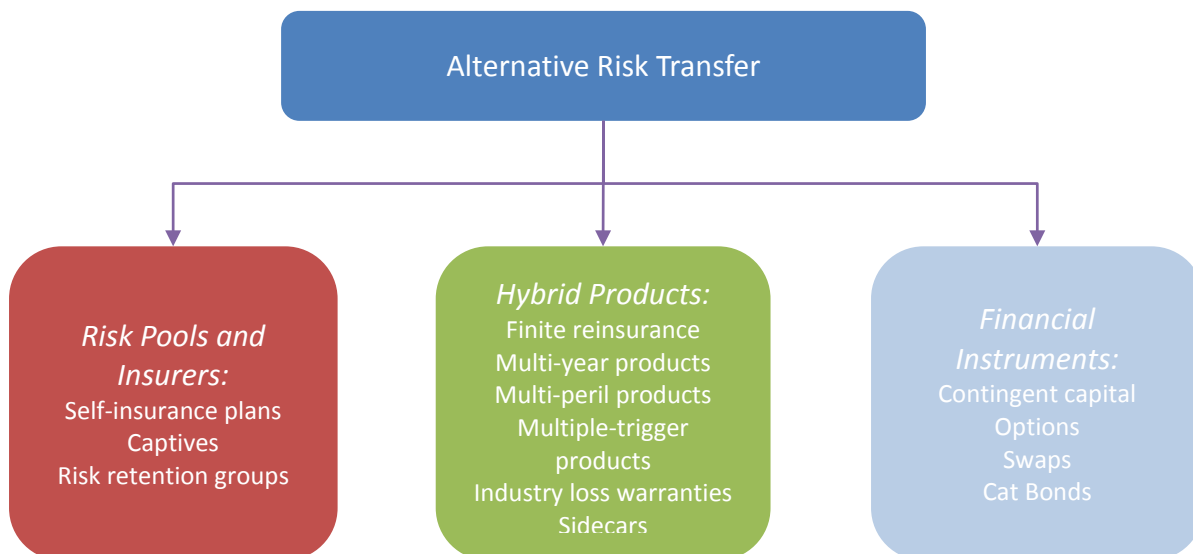
<sup>57</sup> Blanchard, O. J., Lopez-de-Silanes, F. and A. Schleifer (1994), "What Do Firms Do with Cash Windfalls?" *Journal of Financial Economics*, vol. 36, pp. 337-360. See page 358.

<sup>58</sup> See, for example, Mayers, D. and C. Smith (1986), "Ownership Structure and Control: The Mutualisation of Stock Life Insurance Companies". *Journal of Financial Economics*, Vol. 16, pp. 73-98. See page 76.

<sup>59</sup> OECD Insurance Statistics Yearbook 2009. As cited on page 23 of: Comité des Entreprises d'Assurance (CEA) (2010), "Insurance: a unique sector. Why insurers differ from banks".

<sup>60</sup> Comité des Entreprises d'Assurance (CEA) (2010), "Insurance: a unique sector. Why insurers differ from banks". See page 23.



**Figure 3.4: Alternative risk transfer mechanisms.**

Source: Cummins, J. D. and M. A. Weiss (2009), "Convergence of Insurance and Financial Markets: Hybrid and Securitised Risk-Transfer Solutions". *The Journal of Risk and Insurance*, vol. 76(3), pp. 493-545.

Asset switching may, therefore, be constrained by the extent to which these channels cannot be used effectively and in a timely manner. We consider each in turn.

#### Traditional reinsurance

Reinsurance allows insurers to cede part of the risks they are exposed to through the potential of their policyholders to make claims. Reinsurance can be either proportional, where a reinsurer takes a percentage share of each policy that an insurer underwrites, or, more typically in the non-conventional risk space, non-proportional, where the reinsurer only covers the insurer for claims made in excess of a certain amount in a given time period. Reinsurance may be particularly important to smaller insurers who have more limited geographical or business line diversification.

There are two main approaches to providing reinsurance: facultative reinsurance and treaty reinsurance. Treaty reinsurance is a pre-negotiated contract between insurer and reinsurer, whereby the primary insurer is able to cede an agreed share of all risks to the reinsurer within the given risk class(es) covered by the contract. Facultative reinsurance, on the other hand, is where separate negotiations are made between insurer and reinsurer for each insurance policy that is issued, and are commonly used to provide reinsurance cover for amounts in excess of that covered by treaty reinsurance. When a primary insurer has treaty reinsurance arrangement with a reinsurer for a given risk, we would therefore expect it to be relatively easy for the insurer to expand coverage in that risk segment as the reinsurer is obliged to cover it up to the limits set out in the treaty reinsurance contract.

However, the expansion of insurance coverage beyond the limits of an existing treaty reinsurance contract, or the expansion of coverage into new risk segments for which the insurer has no established reinsurance contract, is likely to be more difficult. In these cases, the insurer may have to make use of facultative reinsurance, or establish a new treaty reinsurance contract. Facultative reinsurance is more common in the field of non-conventional risks, as it allows the reinsurer to separately evaluate each additional risk before reinsuring it, which is considered more necessary given the uncertainty surrounding such risks. As insurers tend to make these reinsurance arrangements prior to signing the original insurance contract, a policy-by-policy approach to reinsurance may reduce the speed with which an insurer can expand its

non-conventional risk coverage. This policy-by-policy approach is also likely to be more cost intensive from a human capital perspective and may, therefore, impinge on the potential profits of expanded coverage.

The ability of an insurer to establish new treaty reinsurance contracts would depend on the appetite among reinsurers to take on the insurer's risk at a price which makes providing the additional insurance cover profitable. A reinsurer may be reluctant to do so if the risks are correlated with the reinsurer's existing risk profile, and/or are large relative to the reinsurer's own capital base. This may restrict the supply of reinsurance, and raise the price of reinsurance to prohibitively high levels from an insurer's perspective. Furthermore, if reinsurers have market power, then they may have limited incentive to take on additional risks, and may use their favourable market position to keep prices high to insurers<sup>61</sup> – thus discouraging the reinsurance route to some insurers. That said, there may be sufficient surplus capital in the reinsurance industry such that increase demand for reinsurance has limited effect on the price.<sup>62</sup> It is worth noting that, although insurers cede a significant amount of risk to the reinsurance market, they also take on additional risk in the form of counterparty risk (i.e. their exposure to the reinsurer) for which there is a capital cost under Solvency II. In fact, the counterparty risk capital requirement for an AA-rated insurer is less than half of that for an A-rated insurer. This is likely to mean that insurers target the larger, more geographically and business line diversified reinsurers who typically have better credit ratings. This could lead to further concentration in the global reinsurance market and could ultimately affect reinsurance prices. The insurer would, therefore, have to weigh up the price and capital costs of different reinsurers, and decide whether this is still a more optimal risk transfer mechanism than the alternative mechanisms we discuss below.

One of the problems of the traditional reinsurance route is that reinsurance underwriting exhibits a cyclical pattern, with *soft markets*, characterised by low prices and more extensive coverage, followed by *hard markets*, characterised by high prices and restricted coverage which tend to occur after large catastrophic loss events. This cyclicity of prices has also been found to be closely correlated across national markets, limiting insurers' ability to seek more preferable reinsurance contract terms in foreign markets. Therefore, during hard markets, it may be particularly difficult and costly for insurers to transfer risk through the reinsurance channel.

Another limitation of the traditional reinsurance route for transferring risk is that the market is fairly illiquid, which may therefore render it difficult to quickly find a buyer for a reinsurance obligation. A further concern is that non-incumbent reinsurers may be subject to adverse selection insofar as only high risk insurers would be expected to find it optimal to change reinsurance provider.<sup>63</sup> This may in turn encourage incumbent reinsurers to maintain high reinsurance premiums and thereby lead to the cross-subsidisation of high risk insurers by low risk insurers. These high reinsurance premiums may limit the attractiveness of risk transfer through traditional reinsurance.

---

<sup>61</sup> Froot, K. A. (1999), "The market for catastrophe risk: a clinical examination". *Journal of Financial Economics*, vol. 60, pp. 529-571. See section 5.2, pages 559-561.

<sup>62</sup> Morgan Stanley and Oliver Wyman (2010), "Solvency 2: Quantitative & strategic impact – the tide is going out" (September 22, 2010). See page 61.

<sup>63</sup> Finken, S., and C. Laux (2009), "Catastrophe Bonds and Reinsurance: The Competitive Effect of Information-Insensitive Triggers". *Journal of Risk and Insurance*, vol. 76, pp. 579-605. See page 581.

### Issuing ILS in financial markets

The key types of ILS are: contingent capital; catastrophe bonds; catastrophe futures and options; and catastrophe swaps. These instruments can facilitate risk management and improve the liquidity of the (re)insurance markets, as they are tradable financial instruments that can access broader pools of capital.

A key advantage of securitisation identified in the literature is that the issuing of ILS typically has lower transaction costs than reinsurance.<sup>64</sup> It is also argued that ILS can reduce counterparty risk and increase liquidity in the market for underwriting insurance risk.<sup>65</sup> Information-insensitive ILS with parametric triggers<sup>66</sup> may also be able to overcome the problem of adverse selection in the reinsurance market, discussed above.

However, these solutions may not satisfy the quick response criterion of the SSS test, if it takes time to develop these instruments and sell them on financial markets. Moreover, depending on the choice of capital market instrument, this channel may also be costly. For example, the issuance of a bespoke convertible bond may involve the need to offer quite attractive yields to investors, thereby pushing up the cost of capital for the insurer. As well as being costly in terms of the yields they offer, they may also be costly due to excessive transaction costs incurred in the trading of the more illiquid instruments, or even the cumulative costs of frequently trading liquid instruments.<sup>67</sup> The issuance of catastrophe bonds, for example, requires the establishment of a special purpose vehicle (SPV) from which the bonds are issued to raise capital, and the establishment of these SPVs brings with it legal, actuarial, accounting and administrative costs.

Raising new capital can also be costly because of the informational asymmetries between insurers and the capital market, such that external capital providers demand a higher cost of capital than actuarially justified, in order to cover the possibility that the instruments may be riskier than suggested by publicly available information.<sup>68</sup> Indeed, it has been argued that reinsurance will continue to play an important role because of the oversupply of information by financial market traders to insurance companies which renders the reinsurance route preferable.<sup>69</sup> This argument is based on the view that insurers' risk transfer route depends crucially on the cost of acquiring the information and the degree of redundancy in the information provided. They say that the latter is in turn dependent on the extent of systematic and non-systematic error components reflected in the information collected on insurance risks, with stronger emphasis on the systematic error component meaning higher redundancy of information and thus a preference for reinsurance. This argument would, however,

---

<sup>64</sup> See, for example, Cox, S. H. and R. G. Schwebach (1992), "Insurance Futures and Hedging Insurance Price Risk". *Journal of Risk and Insurance*, vol. 59, pp. 628-644. See page 635.

<sup>65</sup> Niehaus, G. and S. V. Mann (1992), "The Trading of Underwriting Risk: An Analysis of Insurance Futures Contracts and Reinsurance". *Journal of Risk and Insurance*, vol. 59, pp. 601-627. See page 602.

<sup>66</sup> A contract with a parametric trigger are those which payoff if a covered event exceeds a specified level of physical severity, e.g. if an earthquake reached a certain level on the Richter scale.

<sup>67</sup> Milliman (2014) "Capital management in a Solvency II world" Research Report. See section 2.3.5, page 7.

<sup>68</sup> Cummins, J. D. and P. Trainar (2009), "Securitization, Insurance and Reinsurance". *Journal of Risk & Insurance*, vol. 76(3), pp. 463-492. See page 471.

<sup>69</sup> Gibson, R., Habib, M. A., and A. Ziegler (2007), "Why Have Exchange-Traded Catastrophe Instruments Failed to Displace Reinsurance?" Working Paper, Swiss Finance Institute, University of Zurich, Zurich, Switzerland. See page 1.

justify an increased role for ILS in insurance markets for low-frequency, high-severity events (i.e. unconventional risks).

While reinsurance contracts tend to be indemnity-based, i.e. payoff is based on the event losses of the insurer in question, ILS are often index-linked contracts, i.e. payoff is triggered by the value of an industry index. The former contracts tend to exhibit more moral hazard risk, while the latter exhibit more basis risk.<sup>70</sup> This has led Doherty and Richter (2002) to argue that the optimal hedging strategy for insurers involves a mix of indemnity-based reinsurance contracts and index-linked financial contracts.<sup>71</sup> Moreover, a more recent empirical study found that basis risk is more pronounced for smaller insurers and, therefore, that hedging based on index-linked financial instruments is more viable for large primary insurers and reinsurers with geographically diversified reinsurers.<sup>72</sup>

In the long term, the success of ILS as a risk transfer mechanism will depend on these markets achieving a critical mass, which itself is dependent on the expectation among financial market participants that these markets will achieve a critical mass. Only with this expectation, will financial market participants deem it worthwhile to invest in the technologies (e.g. catastrophe simulation models) and personnel required to operate in these markets. Cummins and Weiss (2009) say that critical mass has been established in the catastrophe bond market, with the industry populated by a number of investment banks, other institutional investors, hedge funds and dedicated mutual funds.<sup>73</sup> However, they say that other ILS markets, for example catastrophe bond futures, options and swaps, are as yet more confined to insurers and reinsurers, although a wider market may later emerge. This market expansion should help to improve liquidity and improve the ability of insurers to transfer risk.

#### Hybrid products

Hybrid products incorporate features of both financial instruments and traditional reinsurance. The key types are: finite risk reinsurance; retrospective excess of loss covers; loss portfolio transfers; blended and multi-year, multi-line contracts; multiple-trigger products; and industry loss warranties (ILWs).<sup>74</sup> We consider the potential costs and benefits of each as risk transfer mechanisms in turn.

- **Finite risk reinsurance** – this hybrid product combines risk transfer and risk financing in a single contract. While this product transfers less underwriting risk than conventional reinsurance, the fact that they tend to cover multi-year periods means that these products transfer more credit risk, interest rate risk and foreign exchange risk to the reinsurer. The impact on overall risk exposure and thus risk-weighted capital requirements is, therefore, unclear.
- **Retrospective excess of loss covers** – this retrospective reinsurance protection applies to coverage that has already been provided, with the premium charged

---

<sup>70</sup> Basis risk is the risk that investments intended to offset each other as part of a hedging strategy do not experience price changes in entirely opposite directions, thus raising the possibility of excess gains or losses in a hedging strategy.

<sup>71</sup> Doherty, N. A. and A. Richter (2002), "Moral Hazard, Basis Risk, and Gap Insurance". *Journal of Risk and Insurance*, vol. 69, pp. 9-24. See 'Conclusions', page 22.

<sup>72</sup> Cummins, J. D., Lalonde, D., and R. D. Phillips (2004), "The Basis Risk of Index-Linked Catastrophic Loss Securities". *Journal of Financial Economics*, vol. 71, pp. 77-111. See page 92.

<sup>73</sup> Cummins, J. D. and M. A. Weiss (2009), "Convergence of Insurance and Financial Markets: Hybrid and Securitised Risk-Transfer Solutions". *The Journal of Risk and Insurance*, vol. 76(3), pp. 493-545. See page 528.

<sup>74</sup> Cummins and Weiss (2009). As above. See 'Figure 10', page 531.

based on the discounted value of the expected costs to the reinsurer. In this contract, the reinsurer bears underwriting risk, interest rate risk, credit risk and timing risk (i.e. the risk that claims are settled faster than accounted for by the discounting used to calculate premiums). This product therefore extends risk coverage significantly beyond standard insurance contracts and may thus be an attractive route to transfer risk and free up capital.

- **Loss portfolio transfers** – this is where a block of loss reserves are transferred to the reinsurer in return for a reinsurance premium which represents the present value of expected claim payments for all policies included in the transfer. As such reserves would otherwise be on the insurer's balance sheet at an undiscounted rate, this transfer allows the insurer to reduce its leverage and thus reduce its cost of capital. This should promote asset switching.
- **Blended and multi-year, multi-line products (MMPs)** – blended covers combine the more comprehensive underwriting risk provided by traditional reinsurance contracts with the broader risk-management properties of finite risk reinsurance. As they usually cover multiple years, they can insulate insurers from the reinsurance cycle. MMPs are a specific example of blended covers. By covering multiple lines of insurance in one contract, these risk transfer products may be more favourably priced (due to diversification benefits for the buyer) and are also likely to reduce transaction costs (by reducing the number of negotiations that must be undertaken). However, the blended nature of these products may create a lack of price transparency which inhibits the capacity of this market.
- **Multiple-trigger products (MTPs)** – payout under these contracts is dependent on both an insurance event trigger, e.g. a nuclear catastrophe, and a business event trigger, e.g. an increase in interest rates. This means that an insurer would not be covered against catastrophic loss in the case of favourable macroeconomic conditions, but would be in the case of unfavourable macroeconomic conditions. In other words, payout is limited to those states of the world in which it would be most needed by the insurer. The major benefit of this approach is that, by significantly limiting the states of the world in which payout is required, the insurer would be charged a considerably lower price for this contract compared to a conventional reinsurance contract.
- **Industry loss warranties (ILWs)** – this is a special case of the above, where payout is dependent on an industry-wide loss trigger (the index trigger/warranty) and the specific insurer's loss trigger (the indemnity trigger). The indemnity trigger is usually set very low, such that payout is largely dependent on the scale of industry losses. The benefit of this is that no underwriting information is required, as the seller is predominantly underwriting industry losses rather than the individual insurer's losses. These instruments are attractive to buyers because of the low indemnity retention, which may free up capital for other purposes, but this may be to some extent offset by higher basis risk exposure resulting from the index trigger/warranty. ILWs are also expected to suffer from low liquidity, lack of transparency and high frictional costs which may limit the development of this market.

Overall, therefore, it appears that these hybrid products, which combine features of ILS and conventional reinsurance, may have some beneficial risk-management properties that may allow insurers to free up capital (both more quickly and cheaply)

to support new underwriting opportunities. However, some key overarching limitations should be borne in mind:

- Some of these hybrid products are more complex (in terms of risk coverage) and opaque and, therefore, may be more difficult to securitise, which may ultimately limit the potential for market development.
- Many of these hybrid products exploit existing market imperfections and arbitrage opportunities, such that in a more efficient market setting, with little asymmetric information problems, such products would not be viable.

The table below summarises the key features of the different types of risk transfer mechanisms (reinsurance, hybrid products and financial market instruments) described above.

**Figure 3.5: Features of risk transfer products.**

Products	Credit risk	Basis risk	Moral Hazard	Transparency	Multi-year	Multi-risk	Standardisation	Liquidity	CapMkt access
Reinsurance	✓	✗	✓	Low	Rarely	Rarely	Low	Low	✗
Captives	✓	✗	✗	High	✓	✓	Low	Low	✗
<b>Hybrid products:</b>									
Finite reinsurance	✓	✗	✓	Low	Often	Rarely	Low	Low	✗
Retrospective XOL covers	✓	✗	✓	Low	Often	Rarely	Low	Low	✗
Multi-year, multi-peril products	✓	✗	✓	Low	✓	✓	Low	Low	✗
Multiple trigger products	✓	✓	✓	Low	Often	Rarely	Low	Low	✗
Industry loss warranties	F	✓	✗	High	✗	✗	Moderate	Low	✓
Sidecars	S	Minimal	Moderate	High	Often	Sometimes	Low	Low	✓
<b>Financial market instruments:</b>									
Contingent capital	F	T	T	High	✓	Often	Low	Low	✓
Futures and options	✓	✓	✗	High	✗	Rarely	High	Potential	✓
Swaps	✓	T	Low	High	Often	Varies	Moderate	Low	✗
CAT bonds: indemnity	C	✗	✓	High	✓	Varies	Moderate	Moderate	✓
CAT bonds: non-indemnity	C	✓	✗	High	✓	Varies	Moderate	Moderate	✓

T = depends on trigger.

S = depends on structure and collateral arrangements

F = depends on whether capital is prefunded or unfunded for contingent capital & whether limit is collateralised under ILWs.

C = usually minimal but depends on investment restrictions, swap counterparty arrangements, topping up rules etc.

Source: Cummins, J. D. and M. A. Weiss (2009), "Convergence of Insurance and Financial Markets: Hybrid and Securitised Risk-Transfer Solutions". *The Journal of Risk and Insurance*, vol. 76(3), pp. 493-545. See 'Figure 10', page 531.

### 3.6.4 Constraints resulting from current profile of assets

#### Liquidity

It is possible that, while the insurer might have spare capacity, the idle asset holdings might not be liquid enough to switch to some other functional area. Liquidity should not be confused solely with the ability to make a transaction on an investment; it often relates to the ability to engage in a transaction without moving the market price of an asset too much (therefore possibly violating the “not too costly” assumption of production switching).

As mentioned earlier, depending on the nature of the liabilities insurers might have different investment strategies to cover their obligations. Liabilities which are more predictable could be matched with relatively illiquid, long-term investments. However, some insurance products are exposed to less predictable claims such as property catastrophe insurance which combines a portfolio of diversified predictable claims arising from thefts, fire and other random events, together with infrequent, large and unpredictable claims from natural catastrophes such as windstorms (and possibly floods). The large and infrequent risks (such as unconventional risk) require liquid investments portfolios, (although insurance companies often buy reinsurance to cover these claims).<sup>75</sup>

The table below provides an overview of the liability characteristics of insurers' investment strategies such as the liability duration and the required liquidity. The non-life category has the shortest liability duration, in contrast to life, which requires quite *liquid assets* and a *short-term* investment strategy.

**Table 3.3 Liability characteristics define insurers' investment strategies**

Liability category	2011 liabilities (€bn)	Duration liabilities	Required liquidity	Target returns	Investment strategy
<b>Non-life</b>	890	1-5 years	Medium	No return promises	Short-term, liquid
<b>Life (insurer take investment risk)</b>	2820	>8 years	Low	Guarantees often build into products	Long-term strategies
<b>Life (policyholder takes investment risk)</b>	1670	5-8 years	High	Target benchmark fund returns	Flexible

Source: Insurance Europe (2013) “Funding the future Insurers' role as institutional investors”.

While long term investments are usually best for covering long term liabilities, they might also be a part of a short-term strategy. As argued in Insurance Europe (2013), assuming that they are reasonably liquid, they might be attractive to insurance companies “if the risk/return profile is attractive, if the risk appetite for the asset class is sufficient and if the nature of the company's liabilities allow for it.”<sup>76</sup>

<sup>75</sup> Insurance Europe (2013) “Funding the future Insurers' role as institutional investors”. See page 14.

<sup>76</sup> Insurance Europe (2013) “Funding the future Insurers' role as institutional investors”. See page 15.



The literature does not provide information on the insurers' ability to switch assets quickly. There is also a gap in the literature regarding the market for unconventional risk and the characteristics of their investment decisions.

## Risk

The riskiness of the assets by held insurers has implications for their capital requirements. There is a clearly a key trade-off between the capital costs of holding the assets and the return those assets generate.

The riskiness of underlying assets feeds into the calculation of the SCR. Based on QIS5, market risk accounts for around two-thirds of the total SCR. Equity risk, spread risk and interest rate risk were the most prominent types of market risk. The QIS5 specifications demonstrate the capital costs of holding lower quality capital. A portfolio made up of 13.3 per cent AAA-rated corporate bonds and the rest EEA government bonds would impose the same capital requirements on an insurer as a portfolio with 1.6 per cent B-rated corporate bonds (of the same duration) and the rest EEA government bonds. Given that EEA government bonds are treated as risk-free under Solvency II, this means that B-rated corporate bonds are more than eight times more costly than AAA-rated corporate bonds. Assuming a cost of capital of 6 per cent would mean that the B-rated corporate bond would need to return approximately 50 per cent more than the AAA-rated corporate bond, in order to cover the additional capital costs.

For independent insurers, equity risk comprised 42 per cent of the total market risk, spread risk 30 per cent, and interest rate risk 28 per cent. The corresponding figures for group insurers were 35 per cent, 42 per cent and 28 per cent respectively. The focus for small independent insurers wishing to free up risk capital may, therefore, be on reducing the share of equity in their portfolios. For larger group insurers the emphasis may be on reducing their exposure to lower rated corporate bonds.

Of course, in both cases, insurers would be considering the trade-off between the cost of risk capital and the rate of return, the latter of which is a particular challenge for insurers given the current low interest rate environment and especially given the need to meet guaranteed return contracts. CGFS (2011) note that while there is not currently an industry-wide move towards higher risk assets, such a move could strengthen if the low interest rate environment persists long enough to start eating into firms' capital bases.

Asset-liability management (ALM) is a concept that began in life insurance but has been increasingly adopted in non-life. It can involve quotidian re-optimisation as interest rates shift, and can also be highly complex requiring insurer-wide modelling in order to understand fully the impacts of different investment and hedging strategy choices as the insurers seek to maintain themselves near an efficient frontier in changing market conditions.<sup>77</sup>

Insurers cannot always locate sufficient investment assets to perfectly match their liabilities. This may be particularly so with longer-tail liabilities,<sup>78</sup> i.e. those that are more common in less conventional insurance risks. This can lead to adoption of alternative asset-liability management (ALM) approaches, e.g. accessing the derivative market.

Stakeholders indicated that to grow unconventional risk coverage there could be a matching, gradual switch towards longer-dated bonds to match longer-tailed profile of

---

<sup>77</sup> Brehm, P and Venter, G (2008) "Asset–Liability Management for Nonlife Insurers".

<sup>78</sup> Milliman (2014) "Capital Management in a Solvency II world: a non-life perspective". See section 4.1, page 11.



risks. Medium and longer dated assets carry higher capital charge under Solvency II, i.e. increasing unconventional exposure is expensive — therefore should expect a less responsive industry to a sudden price increase in an unconventional risk than in a more conventional risk area.

### 3.6.5 Constraints resulting from current profile of liabilities

An insurer's capital allocation approach would rely on modelling around a given risk measure (such as Expected Shortfall, or Tail Value at Risk). Such capital allocation aims to generate an accurate picture of the marginal cost of risk, acting as an input to the pricing process.<sup>79</sup> An insurer assesses unconventional risk and determines how much to underwrite, and how to design the policy (which can provide incentives to the insured to mitigate risk, and also affect potential losses). It will allocate capital such that it can absorb expected losses and remain viable and solvent.<sup>80</sup> Regulatory capital requirements aim to increase insurers' incentives to manage catastrophe risk properly. Solvency II contains a catastrophe risk sub-module.

#### Risk

An insurer's ability to enter — or further increase its operations in — a given risk segment would also depend on the *correlation between risk of the given segment and its total existing underwriting portfolio*. If the risk of the new segment is positively correlated with the risk of the existing underwriting portfolio, then by extending its operation the insurer would be effectively increasing its overall business risk. This would therefore result in additional costs for the insurer, in the form of higher capital requirements. If the insurer is already holding a large surplus of capital above the regulatory capital requirement, then this increased risk exposure may be of less concern however. If, in contrast, the new risk segment is uncorrelated or negatively correlated with the existing portfolio the insurer's ability to enter a new risk segment is greatly increased as this would result in more effective risk diversification.

Morgan Stanley and Oliver Wyman provide examples of the diversification benefit provided by operating in multiple lines of non-life insurance.<sup>81</sup> They find, for example, that Solvency II capital requirements as a percentage of premiums are approximately 45 per cent for an insurer offering motor insurance alone, but approximately 37 per cent for an insurer providing motor and damages cover. Of course, that is not to say that additional business lines will always provide diversification benefits — indeed their research went on to show that the addition of third-party liability insurance to motor and damages insurance would marginally increase Solvency II capital requirements (whereas the addition of assistance insurance to that package would reduce to regulatory capital requirements to below 30 per cent of premiums).

One of the ways which insurers may, in part, help to reduce the regulatory capital requirements imposed by their profile of liabilities is by adapting their corporate structure. Solvency II specifies that each legal entity within an insurance group needs to meet the SCR independent of diversification benefits from other insurers in the group, but that in the Group SCR diversification benefits between the different

---

<sup>79</sup> Bauer, D and G. H. Zanjani (2013) "Capital Allocation and its Discontents", pp. 863-880, Handbook of Insurance, ed. G. Dionne.

<sup>80</sup> Klein, R. W. and S. Wang (2009) "Catastrophe Risk Financing in the USA and the EU: a comparison of alternative regulatory approaches" The Journal of Risk and Insurance, vol. 76(3), pp. 607-637. See page 614.

<sup>81</sup> Morgan Stanley and Oliver Wyman (2010), "Solvency 2: Quantitative & strategic impact – the tide is going out" (September 22, 2010). See point 3, page 18.

insurers can be accounted for. Therefore, given the intragroup diversification benefits that are likely to accrue, the group SCR would be expected to be lower than the sum of the individual SCRs. Thus, insurance groups may look to optimise their capital structure by minimising the difference between the sums of individual SCRs and the group-wide SCR.

Morgan Stanley and Oliver Wyman posit three possible ways of achieving this optimal group capital structure: by merging subsidiaries into one legal entity; by introducing leverage into the Group's capital structure; and by internal reinsurance. The first option would be very effective in allowing all diversification benefits to be taken into account in the SCR calculation and, therefore, free up surplus capital for switching production. However, it is a one-time solution only, which is time and cost intensive and may pose other operational concerns. The latter two options can be undertaken on a much more short-term basis, such as if one insurer within the group intended to free up capital in order to increase its exposure in an existing insurance area or to enter a new insurance area. By ceding risk to a reinsurance company within the wider Group, an individual insurer would free up some capital allowing it to take on additional liabilities (albeit some risk would remain in the form of counterparty risk, given the ceding of risk to the reinsurer). The introduction of leverage to the Group's capital structure works by the Group using its non-tier capital to invest in the equity of one of the legal entities of the group, thus creating Tier 1 capital at the level of the individual legal entity. In other words, this is a way of raising Tier 1 capital at the individual level (e.g. to allow it to take on additional insurance liabilities) by leveraging cheaper non-tier capital at the group level.

### **3.6.6 Constraints imposed by cooperative structures**

Cooperative schemes are beneficial to switching to the extent that they allow insurance undertakings to enter markets which may not be rational to enter in isolation, either from a financial perspective or due to a lack of information. The latter may be particularly valid for those insurers who are 'followers' in coinsurance agreements, who may not have the relevant information to quantify the risks accurately themselves and, therefore, can instead rely on the premiums calculated by the leaders.

An insurer may have difficulty in switching assets if they have difficulty in exiting, or freeing up assets, from cooperative schemes for which they are already a member, or if they have difficulty in joining new cooperative schemes.

In terms of freeing up assets from existing cooperative schemes, insurers may face the following issues:

- The cooperative scheme may have a fixed contractual term during which members may be committed to providing assets into a central fund supporting the scheme.
- There may be restrictions on who can terminate the contract and when it can be terminated, and there may also be long notice periods for insurers wishing to exit a pool. The E&Y report said that, in general, pools have a 12-month notice period. This could, therefore, be seen as a barrier to the timely switching of assets.

However, the extent to which these issues may limit insurer asset switching are of course limited, as insurers do not exclusively hold their assets in cooperation schemes. Nevertheless, these issues may be of significance if an insurer desires to switch a sufficiently large volume of assets, and/or if an insurer's other assets are tied up for various reasons.

In terms of the ability to join new cooperative schemes, E&Y provide some examples on the admission requirements for new members of the surveyed pools in different

Member States. They conclude that the requirements tend to be specific to the statutory arrangement of the pool or more general requirements such as financial solidity and reputation. The examples of entry requirements indicate that the following factors might impede asset switching and/or coverage of new risks:

- Limits on the capital that can be invested in the pool relative to insurer's capital. This might prevent firms from investing a larger proportion of their assets in the pool, even if such an investment were optimal given other assets and liabilities.
- Minimum period of time for participation in the pool. This locks the assets in the pool for a specified period of time and might prevent firms from exiting at the time optimal for their organisations. This may dissuade insurers from entering the pool, if they feel that it will tie up their assets for too long.
- Requirements regarding geographical coverage. This might prevent firms active in other countries to invest in a particular pool. This is the case in many European nuclear coinsurance pools. If these are national regulatory requirements then this would be an insurmountable barrier to non-domestic insurers.
- Requirements regarding business relationships and sectors in which entrants are active (e.g. entrants might be required to be active in the sectors of the prevalent activity of the pools). This might prevent firms from other sectors to invest in such pools.
- Requirement regarding reputation. This might prevent new firms from entering some markets.
- There may be restrictions on the amount of assets that insurers can hold which are exposed to certain types of risks. Therefore, if prospective insurers are unable to get these assets off their book in a timely manner, it may act as a barrier to quickly joining a cooperative scheme.

Of course, another potential barrier to entry would be if the pools were artificially lowering premiums to keep other insurers out of the market. However, we have found no evidence which supports such a claim. On the contrary, there is evidence to suggest that prices in some cases are artificially high, and perhaps significantly above actuarially fair values.

### **3.6.7 Human capital constraints**

As well as the harder constraints on capital holdings discussed so far, human capital constraints can also be material in the context of unconventional risks. Switching production into a new risk space, requires the (re)insurer to have the right people in place:

- Legal, i.e. people who understand the legal context for this risk type.
- Technical, i.e. people who understand the technical environment for this type of risk.
- Actuarial, i.e. people who are able to price coverage for this risk type.
- Distributional, i.e. people that are able to understand and sell such products.<sup>82</sup>

---

<sup>82</sup> Not only may insurers lack this knowledge, but so too may the brokers. Biener et al (2015) say that one of the key limiting factors for cyber insurance is that most brokers do not fully understand the products and, therefore, are not able to sell them. See: Biener, C., Eling, M.,

- Underwriting, i.e. people who can assess applications and decide whether to accept.

While this human capital may be comparatively fairly available in areas of conventional risk, e.g. insurance for motor risk, this is less likely to be true in the unconventional risk space, where the risk is less well understood and assessable, and the legal and technical environments are less well established and continuing to evolve. The high level interviews suggested that the most significant constraint in this regard would be having the actuarial skills to price unconventional risks accurately, particularly given the limited data available for these types of risk. Although these constraints may, to some extent, be mitigated by information sharing through cooperative structures, as discussed in Section 3.5.5 above, we have come to the view (based on evidence from the high level interviews) that human capital may impose a material constraint specific to the unconventional risk space.

### 3.7 Conclusions

The ability to switch assets quickly depends, among other things, on the asset allocation of an insurer and their asset management plans. The investment strategies vary depending on the products the insurer supply, but unconventional risks generally require more liquid assets (i.e. long-date bonds) or reinsurance schemes. The immediacy of changes would then depend on the insurers' optimisation process and on the frequency with which their optimisation plans can be revised. Insurers' investment strategies are re-optimised frequently.

Apart from the capital constraints there might be regulatory and contractual constraints to the supply of insurance in new risk categories. Unconventional risks are normally covered by insurance cooperation schemes that are subject to contractual mechanisms between members. The contract may exhibit features that constrain entry and exit into the cooperation scheme, as well as a member's ability to insure other new risk due to regulatory requirements.

Asset switching is one of the factors considered when assessing the significance of SSS as part of a broader market definition exercise. At a theoretical level, the "nearly universal" requirement that is considered important to establish SSS may be challenged in the context of unconventional risk insurance. This is mainly the case due to the limited number of insurers that can be logically expected to serve as leaders in potential cooperative arrangements. At the same time, the fact that a leader position is required could also confound one of the main requirements, namely, that most producers hold a similar market position in the various product markets; the presence of leaders makes this *de facto* difficult.

Through amalgamating our review of literature and available data sources into a conceptual framework we have reached the following set of high level conclusions regarding asset switching that are explored further in our subsequent empirical analysis.

- Insurers must engage in a dynamic process of matching their profile of assets with their profile of liabilities, striking a trade-off between risk and return. Most of the assets on an insurer's balance sheet are financial assets, predominantly corporate and government bonds and equities, although the importance of intangible assets

---

and J. H. Wirfs (2015), "Insurability of Cyber Risk: An Empirical Analysis". Working Papers on Finance No. 2015/3, Institute of Insurance Economics (I.VW-HSG). See 4.2.3 (9), page 20.

(e.g. know-how) or investments in relatively illiquid assets (e.g. infrastructure) on firm strategy should not be ignored.

- Solvency II has introduced risk-based capital requirements. However, on balance, the literature suggests that such capital requirements would, in the majority of cases, not be binding, and that ratings capital and internal capital are more material constraints. The expectation is that the majority of large insurers will use regulator-approved internal models, under which their regulatory capital requirements may actually fall due to diversification benefits. However, ORSA (Pillar II of Solvency II) may impact on insurers' abilities to respond quickly to product market opportunities.
- Holding surplus capital in excess of regulatory requirements should make asset switching easier, as firms can run down existing capital surplus in the short-term to increase insurance cover, with the expectation that future profits from this insurance cover will help rebuild the capital surplus in the long-run. However, holding too much surplus capital can be costly.
- Reinsurance can be an effective way to free-up capital but one of the problems of the traditional reinsurance route is that reinsurance underwriting exhibits a cyclical pattern, with soft markets, characterised by low prices and more extensive coverage, followed by hard markets, characterised by high prices and restricted coverage which tend to occur after large catastrophic loss events. This cyclicity of prices has also been found to be closely correlated across national markets, limiting insurers' ability to seek more preferable reinsurance contract terms in foreign markets. Therefore, during hard markets, it may be particularly difficult and costly for insurers to transfer risk through the reinsurance channel.
- ILS may serve as a viable alternative to reinsurance. It may help insurers avoid the adverse selection problem in the reinsurance market and reduce counterparty risk, but insurers may have to offer quite attractive yields due to the uncertainty faced by potential investors. There is some evidence to suggest that ILS is better suited to low-frequency, high-severity events (i.e. unconventional risks), and that it may be a more viable route for large insurers. However, while ILS are present for catastrophe risks, they are yet to achieve a critical mass in other risk areas.
- Hybrid product, which combine features of ILS and conventional reinsurance, offer some beneficial risk-management properties. However, their complexity and opaqueness may limit market development, and the literature suggests that in a more efficient market setting such products would not be viable.
- The liquidity and risk of an insurer's current profile of assets and liabilities has important implications for asset switching. Our estimates show how significantly more costly it can be, in terms of capital requirements, to hold higher risk (lower quality) assets. Of course, insurers face a trade-off between risk and return, but a move towards riskier assets could strengthen if persistence of the low interest rate environment starts to eat into firms' capital bases. In terms of liabilities, diversification effects can have a significant impact on an insurer's capital constraints, and the literature suggests that insurance groups may adapt their corporate structure to maximise such benefits.
- Cooperative structures are commonplace in unconventional risk insurance and are beneficial to switching to the extent that they allow insurers to enter markets which may not be rational to enter in isolation. However, initial evidence suggests

that cooperative structures may inhibit switching to the extent that their terms and conditions of membership inhibit exiting, or freeing up of assets, from schemes for which an insurer is already a member, or make it more difficult to join other schemes. We have found no evidence to suggest that schemes are artificially lowering premiums to keep other insurers out of the market.

- High-level discussions with academic experts suggest that human capital constraints can be material in the case of unconventional risks, due to a scarcity of human resources capable of understanding and assessing these risks (in particular, actuarial skills for pricing risk). While information sharing through cooperative structures may help to mitigate this, we still believe it could be a material constraint to switching.

## 4 Analysis of scope of insurer's ability to switch assets

### 4.1 Introduction

In this chapter, we discuss how insurers can switch assets with a view of changing their production of different insurance products as a response to changing prices and patterns of demand. This is focused upon providing cover for non-life, large and unconventional risks — and the role that asset switching can play.

We also describe those regulatory requirements or managerial constraints, (e.g. in functional production areas such as actuarial, underwriting, and claims-handling) that could constrain insurers' ability to effect appreciable shifts of capacity in the short term between insurance products under commercially viable conditions.

We also discuss what sets of products would show similar production characteristics and identify sources of available data for calculating the market shares of these sets.

We begin by discussing the distinction that can be made between conventional and unconventional non-life risks.

### 4.2 Distinguishing conventional and unconventional non-life risks

It is common for unconventional risks to be covered by cooperation schemes. For such risks, a single insurer and delegated underwriting procedures in the open market may fail (or be unwilling) to provide appropriate coverage. This is to a large extent due to:

- The losses arising in case of event occurrence being too large to be absorbed on a stand-alone basis ("capacity constraint"); and
- The presence of significant margins of error (e.g. due to lack of relevant historical data, or the lack of people to use whatever data are available to make a suitable commercial assessment) when assessing the implications of the risk and/or of its probability of occurrence ("assessment constraint").

We have discussed at 2.1 what dimensions make a risk more or less unconventional. Drawing from academic literature and observed market practices, we have identified as unconventional those risks related to:

- Cyber risk;
- Natural catastrophe;
- Nuclear incidents;
- Terrorism; and
- Ecological damage, e.g. due to an industrial accident or explosion.

However, the unconventionality of the above risks should not be perceived as static. Rather, there is a more dynamic interplay as, for instance, a risk that is generally not perceived as unconventional could suddenly become so in the event of an abrupt change in its characteristics (e.g. rapid rise in the average size of claims). This is particularly the case for cyber risk as, originally, risks related to cyber security were primarily placed within the broader "business continuity" risk category. However, the aggravated uncertainty over the operational and monetary implications of cyber breaches have resulted in increased interest in treating such cyber risk as a discrete product. This transition has progressed further in the USA than in the EU, where such a shift remains nascent.

A similar effect may be observable in some parts of the natural catastrophe market, where climate change may be increasing unconventionality (e.g. by increasing reliance on models and lessening reliance on historic data).

Similarly, some risks are broad in scope. This is particularly the case for risks related to natural catastrophes. Flood risk is more unconventional and difficult to insure in the Netherlands, say, than in most other countries — or, indeed, other forms of natural catastrophe risk (e.g. windstorm) within the Netherlands.

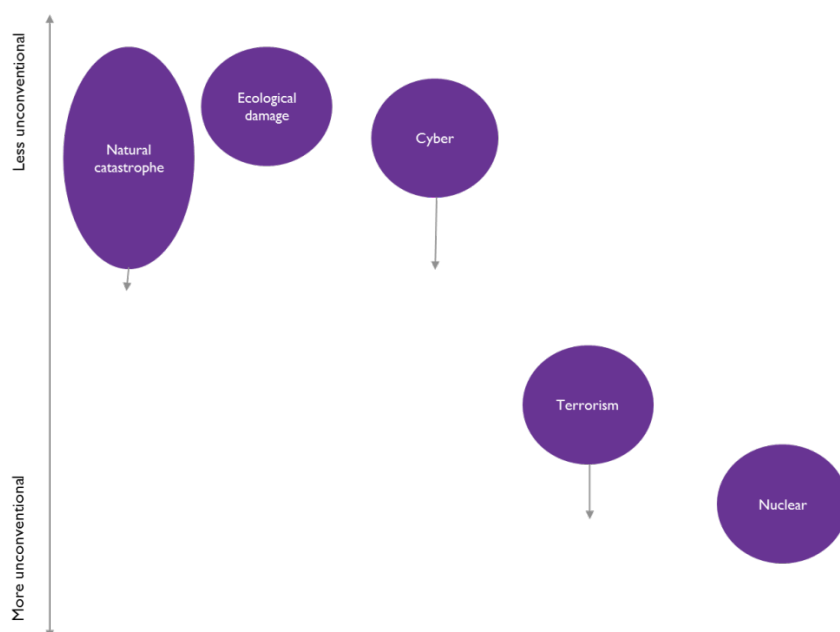
The aggregation of retail policies can generate large exposures to unconventional risk. A property policy may incorporate a natural catastrophe element (e.g. against windstorm damage) that is mixed in with other elements.

The availability of mitigating measures could also be relevant. Whilst the nature of the mitigation varies between the different unconventional risk categories, the overall effects are very subtle without clear agreement as to which risk category benefits more or less.

Lastly, for risks such as those related to terrorism, there can be a cyclical element related to the immediate past (e.g. terrorism cover was harder to arrange immediately subsequent to 9/11 than several years later).

The dividing line between conventional and unconventional risks can shift based on the market and actuarial dynamics. This is depicted in a simplified way below. The length of the arrows indicates the direction of travel. (NB: The relative size of the bubbles is not an indication of market size).

**Figure 4.1: Mapping of insurance risks**



Source: Europe Economics research.

### 4.3 Production similarities

Whilst non-life insurance products share some similar production characteristics, such as the actuarial assessment of risk and capital-allocation, other dimensions, such as distribution, vary significantly — as, indeed, do the nature of the risks being insured themselves, as we have discussed above.



The unconventional insurance types we have described above are largely commercial products. This means that distribution would be largely through (or at least involving) the larger commercial insurance brokers. Natural catastrophe is a partial exception in that flood and storm risk may well be incorporated into retail property insurance policies.

In the paragraphs below we discuss how insurers would consider the allocation of capital to different insurance products, and what could constrain such decision-making. The section on non-capital constraints also describes how actuarial and underwriting skills are not wholly transferable between risk categories. This may be worsened in unconventional areas due to weaker data and less available risk models (due to being less well understood). Experience of applying these skills in the appropriate context may be in finite supply across all of non-life, but particularly so in unconventional areas. Acquiring such skills in 6–12 months looks only achievable by acquiring at least some senior individuals from other market participants.

In the following two sections we explore the extent to which capital and non-capital constraints can be binding for insurers' asset switching. These two categories of constraints can be linked to the two overarching types of constraints that motivate the formation cooperative (re)insurance arrangements, i.e. the capacity and assessment constraints.

Insurers' capacity reflects their ability to absorb losses that arise due to events occurring through their capital holdings. In the context of unconventional risk, where cooperative schemes are present, the capacity concern is somewhat mitigated as the responsibility to cover large losses is distributed across pool members. Nevertheless, as insurers take on a number of risks in their books, capital requirements governed by regulatory practice and insurers' own optimisation approaches, become crucial in determining their overall capacity to take on additional risk.

On the other hand, non-capital constraints relate to the ability of insurers to assess the implications associated with the risks that they provide coverage for. These constraints relate to the human capital or technological expertise that an insurer would rely upon in order to underwrite a risk.

#### **4.4 Capital constraints**

In this section we consider the constraints that insurers face with respect to their capital (re)allocation as a determinant of their ability to switch assets; capital constraints form part of the capacity constraint that insurers face when underwriting unconventional risks.

The insurance industry's supply ultimately depends on the amount of insurer capital. We have described previously (see in particular 3.5.1–3.5.2) how minimum capital levels in non-life insurance are determined through Solvency II and through market expectations (i.e. the level of capital expected by credit rating agencies so that an insurer can achieve a particular rating within the investment grade).

Regulators are not comfortable with insurers holding 100 per cent of the minimum capital requirement. A range of 120-150 per cent of the minimum is expected by regulators. In fact, insurers will usually hold more (much more) surplus capital than that, e.g. setting internal thresholds — including at the unit level — to account for

volatility in claims, and even more so to satisfy credit rating agencies.<sup>83</sup> The latter prefer more granular, short-dated risks (i.e. extremely conventional ones).

Any asset switching resulting in increasing production or switching production capacity to a particular risk area needs to be commercially attractive. Such viability means the price captures the marginal cost of capital (i.e. pricing must compensate for the additional allocation of risk capital), incremental operational costs, and remuneration for any counterparty risks. If the price provides adequate compensation then insurers' responsiveness to an increase in demand depends on their surplus capital, the liquidity of such surplus capital, the diversification that the new risk exposure can offer them and their risk appetite. The liquidity of surplus capital is decided by the insurers' annual business planning process which determines the allocation of assets held in excess of the regulatory minimum requirements. The 'Own Risk and Solvency Assessment' (ORSA) (part of Solvency II)<sup>84</sup> couples capital requirements to business planning. This is an annual planning process setting a production target for each of the firm's business units which is monitored by the regulator.

In the section below we explore the key dimensions along which capital constraints can affect an insurer's capacity to switch assets. These are:

- The availability of surplus capital.
- Regulatory considerations.
- The insurer's existing portfolio of risks.
- The role of cooperative agreements.
- The capacity of an insurer to generate additional capital.

#### **4.4.1 The availability of surplus capital**

The availability of surplus capital refers both to the existence of surplus capital above regulatory requirements in an insurer's books but also to the immediacy with which surplus capital can be switched to other uses. In the paragraphs below we provide an assessment of whether tapping into surplus capital is a realistic option when considering alternative methods of switching assets.

One possible motivation for asset switching is to increase production. In such cases, as the additional business is added to the insurer's books, its capital requirements would increase. This means that, given a finite amount of risk capital, solvency ratios would deteriorate, at least in the short term. But, as seen above, capital held is greater than the minimum required, so there is scope — in terms of Solvency II — to eat into this in the short-term. This is also true, albeit to a substantially reduced extent, in terms of the surplus over and above "rating capital" (an insurer dipping below certain capital-holding levels such that its credit rating was downgraded would likely require an unfeasibly attractive commercial opportunity to make sense). A key condition for insurers to be able to access their surplus capital, however, in their attempt to switch assets would be for the capital to be held in liquid forms. Moreover,

---

<sup>83</sup> D. Hörung (2013), "Will Solvency II Market Risk Requirements Bite? The Impact of Solvency II on Insurers' Asset Allocation". *The Geneva Papers*, vol. 38, pp. 250-273. See pages 270-271.

<sup>84</sup> See Section 3.5.1 for details on ORSA.

even if capital is indeed held in liquid forms, the annual planning process would need to allow for intra-year revisions at a frequency that allows the insurer to benefit from the arising opportunity in a timely manner.

If asset switching occurs in order to take on additional business that is commercially viable, i.e. it is expected by the insurer to be profitable, then in time this will feed into increased capital in the future (i.e. through the recycling of profit). In a business area with annual premiums, this could be relatively soon. Where contractual lengths were beyond one year or the nature of the risk area made profitability less immediately apparent then this would take longer. Therefore, when asset switching takes place for opportunities that are expected to be profitable faster, then eating into surplus capital can be a more viable option compared to opportunities that are expected to pay off further into the future.

We next turn on the availability of surplus risk capital. The extent of surplus capital against regulatory-driven requirements in the non-life sector is quite substantial. We have used data from EIOPA's Statistical Annexes to estimate that the available capital across the non-life sector in the EU was about 400 per cent of the required solvency margin.<sup>85</sup> In absolute terms, the difference between the capital held and the regulatory requirement was in excess of €200 billion. Whilst these results pre-date the implementation of Solvency II, as we noted at 3.5.1, this need not reduce the overall surplus against regulatory requirement.

This is all suggestive of significant capital being available to switch into particular production areas to exploit commercial opportunities. However, as we have noted already, regulatory capital requirements under Solvency II need not be a binding constraint.<sup>86</sup> Insurers are holding capital significantly above requirement to meet market expectations and their own judgements around funding costs (i.e. rating capital), solvency and dealing with large losses, i.e. only a small part of this surplus capital (if any) would be available — even on a short-term basis — for increasing (profitable) insurance production.

In terms of investment assets, stakeholders indicated that growth in unconventional risk coverage would be matched by gradual switching towards longer-dated bonds to match longer-tailed profile of risks. Medium and longer dated assets carry higher capital charge under Solvency II, i.e. increasing unconventional exposure is expensive — therefore should expect less responsive industry to a sudden price increase in an unconventional risk than in a more conventional one. In addition, insurers cannot always locate sufficient investment assets to perfectly match their liabilities. This may be particularly so with longer-duration assets (i.e. those required to match longer-tail liabilities, or those that are more common in less conventional insurance risks).

---

<sup>85</sup> This analysis is based upon Table 9 in EIOPA's statistical release. The data mostly relate to the year ended 2014. Absent 2014 data, we have used 2013 data for the non-life sector in Bulgaria, Cyprus and the Netherlands, and 2012 data for Slovakia. There is significant variation between national industries however. The capital held by non-life insurers in Denmark, Latvia and Romania was below 200 per cent of the required solvency margin — indeed, in Romania the EIOPA data indicate that the available solvency margin was only 78 per cent of the requirement in 2014. The profit achieved on all the capital on the balance sheet was 2–2.5 per cent.

<sup>86</sup> See the findings of EIOPA's fifth Quantitative Impact Study (QIS5) presented in Section 3.5.1.

#### **4.4.2 Regulatory considerations**

In addition to surplus capital considerations, Solvency II is the source of a further constraint. The adoption of Solvency II means that an insurer reports quarterly on their different production lines. One of the templates to submit includes total premiums written. In addition to that, regulators also have their own ways of monitoring the market. Moreover, regular meetings with the local competent authority are a normal feature of insurance markets (e.g. in the UK), and these would include the discussion of material transactions and business progress. Significant increases of volume would need to be disclosed in these meetings, particularly if these deviate from those incorporated in the annual business plan. It was clear from the stakeholder engagement that similar sessions at which such strategy changes might be discussed also regularly took place with Credit Rating Agencies — and that both were taken seriously by insurers.

If the area was new, then the insurer would need an additional licence (requiring a comprehensive business plan), and to allocate a minimum level of capital (Solvency II). This means the business opportunity needs to be of a minimum size in order to make the required asset switching commercially attractive. The local competent authority would be very concerned if an insurer had a strategic plan that involved covering risks that it was not expert in (we return to this point in the discussion of non-capital constraints below).

This process need not be a binding constraint upon the scale of any increase or switch in production and the associated asset switching. However supervisors do monitor the accumulation of exposure to particular risks in an insurer. Similarly Lloyd's market in the UK will monitor the build-up in exposure to particular unconventional risks within a particular underwriting syndicate, e.g. nuclear, and can decide to impose aggregation limits. An insurer or syndicate already near such a limit has less scope to increase production in that risk and asset switching would therefore be less relevant for them.

Even so there is no hard and fast rule for the scale of any diversified, general insurer's exposure to unconventional risk. That said, some stakeholders had the view that an insurer would be unlikely to allocate more than 10–20 per cent of available risk capital to such exposures.

Lastly, in some unconventional risks, at least in specific jurisdictions, participation is mandatory, i.e. any consequent increase in capital commitment would need to be handled by the insurer. If an insurer's existing exposure to unconventional risks was largely in this form, this could reduce the flexibility — or rather raise the threshold of commercial appeal — of asset switching in relation to non-mandatory unconventional risks.

#### **4.4.3 Existing portfolio of risks**

The scale and composition of an insurer's other business can also impact upon asset switching. First, the share of the relevant risk area in an insurer's broader business matters. Where the initial allocation of an insurer's capital to the particular risk area is relatively small compared to its total available capital, then switching assets in order to scale up its production will be less constrained. For general insurers and most Lloyd's market syndicates, i.e. the main part of the insurance industry, this is the expected starting condition when one is considering the flexibility with which production of any given non-conventional risk could be increased. (There are of course

also monoline insurers, but we are not aware of a monoline in unconventional insurance, or even some category within that grouping of risks).

Second, we need to consider the composition of other risks insured, as discussed in Section 3.5.5 of our conceptual framework. A further related consideration is the relationship between the perceived nature of the risks in the area being grown (and for which asset switching is required) and the nature of the risks in other business areas. The presence of a positive diversification effect should increase risk capacity relative to its absence and would make asset switching easier. Capital charges for each line of business would be subject to a covariance adjustment that are drawn from the expected independence (or otherwise) of a particular risk from the insurers' other product lines. The extent of such diversification gains achievable through switching to unconventional risks (whether from other unconventional or conventional products) is unclear, but given the nature of such risks it is likely very low. This would contribute to the marginal impact of switching production into unconventional risk areas being higher than towards conventional risks.

#### **4.4.4 The role of cooperative agreements**

The above discussion largely focuses upon capital constraints from a single insurer perspective. All else being equal, sharing risks should increase overall risk capacity. We now describe how the determination of risk capacity would be affected by participation through a cooperative agreement.

- The nature of liability. Joint liability will be relatively restrictive of capacity compared to several liability. Joint liability is less common.
- The geographical boundaries of the risks being covered by the cooperative agreement. An international agreement enables greater diversification possibilities versus a national one, e.g. within a given risk, an international pool would be less restrictive of risk capital than a national pool. The local implementation of Solvency II could also play a role here.
- The nature of the risks covered in the cooperative agreement, e.g. single risk or comprehensive.

#### **4.4.5 The capacity of an insurer to generate additional capital**

The capacity of an insurer to generate additional capital is important in determining their ability to switch assets. Freeing up capital or raising new capital reduces the dependence of the insurer's planning process on switching between their existing financial assets which might even be in illiquid forms.

Internal resources, i.e. the ongoing profit-generation of the firm, is one potential source of such capital. Analysis of EIOPA returns indicates that the net profit achieved on overall insurance industry assets is quite low, at about two per cent per annum. Whilst the business opportunity would need to be exceptional for an insurer to set aside other potential uses of this profit, even two per cent of the balance sheets of the EU's insurers, assuming it is available in cash, represents a significant fraction of the required solvency margin in non-life — and about 10 per cent of the industry's available risk capital.

If, as a continuation of this thought experiment, stated in the previous section, we take unconventional risks to, on average, represent no more than 10–20 per cent of a firm's exposures then this is suggestive of internal capital generation being potentially

able to play a meaningful role in increasing the capital allocated to such risks over the course of a six-twelve month period. On the other hand, this would be less likely were the capital requirements to be (a) immediate, and (b) lumpy (i.e. large for each particular risk taken on).

Another way in which to increase the capital available to increase production would be to use re-insurance markets to remove some existing risk off its balance sheet. This would come at the cost of paying the reinsurer but would result in capital being released. Insurers usually interact with a panel of reinsurers who know them well and who also know the market. The existence of such established relationships means that such a process could take place relatively quickly.

From the narrow objective of releasing additional capital, it need not be the new business that is reinsured — the reinsurance can be accessed for whichever of an insurer's business areas would result in the highest cost-effectiveness.

Reinsurance is not costless and the price of reinsurance can be volatile, i.e. the cost of reinsurance could increase proportionately more than any change in primary market premiums. This could even mean that the commercial attractiveness of the new business could be affected, at least on a business as usual basis. Equally, a change in appetite within the reinsurance sector such that it wished to restrict (the growth in) its exposure to a particular risk area could also mean that an insurer would need to retain more of the additional business — and this would need to be reflected in the capital allocated to the risk area in question.

Reinsurance plays a broader role, it is important in terms of risk management, i.e. the transfer of some insured risks away from the insurer's own balance sheet (indeed, it is the most important mechanism for this). The reinsurance market is finely attuned to the detection of moral hazard. Increasing production in the primary market could be interpreted as a signal of growing moral hazard upstream of the reinsurers. This could result in the price of reinsurance changing or in a reluctance to write additional reinsurance business. This is seen as more likely in the non-conventional area, where historic data and risk modelling are less developed.

In any event, reinsurers will track their exposures to particular risks. Cooperative agreements, e.g. pools, by isolating a risk, make this more explicit. Renewal is typically on an annual basis (even Cat Bonds can incorporate an annual review). Amongst the unconventional risks, reinsurance is most straight-forward in Natural Catastrophe as there is model availability and data. Even so, this is not a homogenous category — e.g. flood risk in the Netherlands would be less straight-forward to reinsure than flood risk in a country where the exposure can be more narrowly defined. Similarly, in ecological damage/large industrial risk, reinsurance is readily achievable.

When insurers observe a trend in a market that they would like to participate in they would first approach reinsurers to see if they can write the additional risk that insurers wish to take. As far as reinsurance brokers are concerned, their role in this process is to generate support, where needed, and to enable the primary market. In instances where customers buy above the market, brokers would layer the excess capacity; a key tool for them to do that is to use credit ratings to assess insurers.

However, it is important not to overplay the potential role of reinsurance in generating additional capital. As discussed in Section 3.5.3, we noted that, given the cyclical nature of the reinsurance market, there may be certain periods (i.e. hard markets



characterised by limited reinsurance cover and high reinsurance prices) during which reinsurance is not a viable means of generating additional capital.

Alternative Risk Transfer (ART) is a further form of risk-sharing with the potential to generate additional capital. At present, as we explain in the previous chapter, ART is typically only available in natural catastrophe where risk modelling is more advanced, although there have also been instances of its use in terrorism cover (related to past FIFA World Cups). Whilst there is interest (e.g. from investors) in ART in other risk areas, and this is being explored, at present this remains latent.

The capacity to raise new capital by an insurer would depend on the type of capital and market conditions. In terms of the length of the process, i.e. excluding periods of severe market turmoil, debt issuance would take not less than 2–3 months. Equity issuance would take longer, but should normally be achievable within 4–6 months. Again, capital-raising is not free, i.e. transactions costs are involved. Capital raising costs may be particularly high (and the process more difficult and protracted) in the aftermath of a catastrophic event.<sup>87</sup> Once raised, capital is available for use across the business (i.e. it is fungible in this sense).

There are only limited implications stemming from switching production and any revisions to the profile of investment assets (e.g. switching from conventional to unconventional risks could prompt shifts in investment towards longer-life bonds), as set out in Section 3.5.4. This does not seem likely to be a binding constraint.

#### **4.5 Non-capital constraints**

An increase in production by an insurer could also face non-capital constraints as intangible asset switching would need to take place. However, the resulting impacts of these constraints would be conditional on the insurer's existing knowledge and experience of the risk area in question. These considerations relate to the overarching assessment constraint that is characteristic of unconventional risk insurance and which generates non-typical requirements for insurers that are active in the area.

Insurers do not insure everything. There is a relevant distinction between switching production into an area of existing knowledge and one where the insurer has no prior experience. If the organisational capacity is already there (e.g. if it is in an already covered risk area), then this becomes much more straightforward than if it is a new area, where some form of educative process would be necessary.

Actuarial and underwriting skills are important components of an insurance business. Buying-in resources is achievable, e.g. hiring a firm of consultant actuaries who know the market, requesting advice from risk-modelling firms or partnering with re-insurance firms are all ways of complementing internal resources. Even so, there are some functions that firms would wish to have in-house, e.g. the leader of the in-house pricing team, and these individuals can be scarce, e.g. in cyber (where the business area is still somewhat nascent, at least in Europe) and in other areas (e.g. nuclear, terrorism).

Whilst risk models are available, e.g. through the likes of RMS, but insurers still require the understanding to operationalise these. If this is taken to be equivalent to

---

<sup>87</sup> Daniel Bauer, R. D. Phillips and G. H. Zanjani (2013) "Financial Pricing of Insurance", "Handbook of Insurance", Second Edition, ed. G. Dionne.

the set of potential pool leaders, then this can become a highly restricted group, with only 3–4 potential leaders in some risk areas.

Other skills may also be relevant, e.g. legal and IT skills in Cyber, but these are less likely to be binding constraints.

More generally, a lack of commoditisation is a feature of large parts of the insurance market, certainly in the unconventional risk area, and this could act as a constraint to scaling up. For example in pricing, a well-defined conventional risk can be priced ‘automatically’ (albeit with significant upfront investment, and ongoing adjustment and fine-tuning by an insurer’s pricing team). Unconventional risks are more stubbornly manual (this would also apply to claims management, where whilst the volume of claims need not be high, the complexity likely is).

The local competent authority could also be very concerned if an insurer had a strategic plan that involved covering risks that it was not expert in. In the UK, for example, the Prudential Regulator Authority (the PRA) has instigated a ‘senior insurer managers’ (SIM) regime. In this, an individual must be designated as responsible for a given risk area and its pricing, i.e. in case of new risks, it would be very clear which manager is primarily accountable for this type of risk. A new business area would require the identification of someone to take appropriate responsibility. Therefore these forms of non-capital constraint can be seen as being underpinned by, but not wholly dependent upon, regulatory constraints.

Increased willingness amongst customers to pay more for insurance might also act as a negative signal to insurers. This could be interpreted as an indication of moral hazard or that the insurer’s modelling of the risks and expectations of likely and maximum losses are faulty (or at least out of line with other market participants). This is more likely to have a braking effect where the risk in question is unconventional in nature, i.e. where data are less available and the modelling of risk more subjective.

Post-sale constraints would largely relate to claims-handling capabilities. Substantial increases in the scale of production could generate concerns about the ability to service customers.

#### **4.6 Conclusions on asset switching**

We have discussed above what forms of constraints could limit the switching of assets (such as in support of insurers increasing production). In summary:

- For asset switching to be commercially viable, the price must exceed the marginal costs, where the latter consists of the costs of allocating additional risk capital, the incremental operational costs and remuneration for any counterparty risks. If commercially viable, then an insurer’s responsiveness depends on the amount of surplus capital and its liquidity, what the additional risk exposure implies in terms of diversification and the insurer’s own risk appetite.
- In terms of the availability of surplus capital, we find that regulatory capital constraints are unlikely to be a binding constraint on asset switching. However, insurers’ capital holdings with respect to meeting market expectations and insurers’ own judgements on funding costs, solvency and dealing with large losses are likely to be a more significant constraint on asset switching – even on a short-term basis.



- In terms of other regulatory considerations, there are reporting and business planning requirements which may hinder asset switching, although they are unlikely to be binding. We find that requirements for licences and minimum additional capital requirements in new product areas may render small scale asset switches commercially unattractive. In addition, some insurers' (or syndicates) asset switching may be limited where they face risk aggregation limits, or where mandatory participation in one unconventional risk limits capital availability for non-mandatory unconventional risks.
- In terms of the existing portfolio of risks, where the initial share of an insurer's total capital in a particular risk area is low, then the ability to switch assets is less constrained. In addition, we find that, given the nature of unconventional risks, the potential for positive diversification effects reducing capital requirements is likely very low.
- In terms of the role of cooperative agreements, sharing risks should help increase risk capacity, although this increase would depend on the precise nature of the cooperative agreement, in particular: the nature of liability; the geographical coverage; and the nature of risks covered.
- In terms of the ability of an insurer to generate additional capital, ongoing profit generation may be able to provide a meaningful source of additional capital, providing that capital requirements are not too immediate or lumpy. Reinsurance may provide a quick way of raising additional capital due to pre-existing relationships with reinsurers, although volatility of reinsurance premiums and coverage (e.g. due to moral hazard) may limit its attractiveness at certain times. ART is only readily available in natural catastrophe risk and, as yet, will have no material role in other areas of unconventional risk.
- In terms of non-capital constraints, their significance would be dependent on the insurer's existing knowledge and experience of the risk area in question. This is particularly pertinent in the field of unconventional risk, given that relevant expertise, especially in actuarial and underwriting skills, can be particularly scarce and given the greater lack of commoditisation.

We now set our conclusions on the ability of insurers to switch assets in specific risk areas.

The timeframe over which to consider such switching is clearly an important variable. A useful benchmark is offered by the OFT's guideline on market definition (adopted by the UK's Competition and Markets Authority (CMA)) notes with respect to DSS that:

*"As a rough rule of thumb, if substitution would take **longer than one year**, the products to which customers eventually switched would not be included in the same market as the focal product. Products to which customers would switch within a year without incurring significant switching costs are more likely to be included in the relevant market. However, the relevant time period in which to assess switching behaviour may be significantly shorter than one year: for example, in industries where transactions are made very frequently. A case by case analysis of switching is therefore appropriate."*

In our consideration of the ability of insurers to switch assets (so as to increase production in a particular risk area) we focus on a period of six–12 months. At the upper end of this range, this would mean that an insurer would be likely to have its annual planning process (including discussions with the local competent authority) and have scope to begin the execution of the plan within such a period.

Our work implies that there is scope to, at least, switch assets (with a view of increasing production) to a small–moderate extent in all types of non-life insurance in the short term (say 6–12 months). There is likely greater scope for the switching of assets to increase production in the ‘more conventional’ of the unconventional risks, i.e. Natural Catastrophe, Large Ecological/ Industrial risks, and Professional Liability, and less in Terrorism/ Nuclear.

Switching assets, to increase production of an unconventional insurance product, by a more appreciable degree within a six-12 month period does not look achievable. Cyber could be a temporary exception because of the emergent nature of that market, i.e. insurers have a low starting point and demand could increase rapidly. Cyber is qualitatively different, in that is relatively new (at least as a discrete product in Europe) and is subject to considerable current interest to develop further. If it can be put on a viable footing by the industry (i.e. terms and pricing that work for the industry and an increasing number of customers) then, given its current small scale, greater proportionate increases could be achievable.

Even in the case of a conventional risk, where the risk is particularly well known, the availability of data is good and adequate risk models are widely available, there are limits to the switching of assets/increases in insurance production that are viable. At some level, dependent on the product and the insurer, significant capital availability and logistical issues (e.g. in terms of building claims management capacity) would arise — and be a cause of supervisory concern because of the consequent reduction in surplus capital.

Where an insurer was not already covering a particular risk area, switching assets (in order to increase production) would face further constraints. For business reasons, underpinned by regulatory practice, entry to a new unconventional risk area (or indeed a novel conventional one) would require the insurer to incur some sunk costs (e.g. around capability-building, licence acquisition and discussions with the local supervisor). We are not able to comment on the significance of these in the abstract (i.e. absent the specifics of the commercial appeal of a particular area). Market entry can be substantial. For example, in the emergent risk area of cyber insurance, there may be 50–60 insurers who have entered this market and are now offering cyber as a standalone product worldwide.<sup>88</sup> (Not all of these may be active in the EU, at least as yet).

#### **4.7 Sources and proxies of market share data**

Market shares in non-life insurance are generally thought of in terms of premiums. If the market of interest is all non-life insurance considered in aggregate, then national and even international time series data are readily available, e.g. through EIOPA. Market share and calculated concentration ratios are available at a national level at this granularity (and could be constructed at an EU-level).

On the other hand, if the market is non-conventional insurance, or rather an individual sub-set of that, e.g. Cyber, then this makes the calculation of market size much more difficult. This is partly because data are not always available in the public domain, as we describe more fully below. It is also because of definitional issues. Whilst the insurance industry has a reasonably clear concept of what nuclear liability insurance is, the boundaries around cyber risk, for example, are less well-defined at present and

---

<sup>88</sup> M. Eling and J. H. Wirfs (2016) "Cyber Risk: Too Big to Insure? Risk Transfer Options for a Mercurial Risk Class". Institute of Insurance Economics, University of St. Gallen, in collaboration with Swiss Re. See 'Table 7', page 21.

indeed subject to considerable current debate within the industry, and hence likely to evolve further.

Focusing upon premiums, we now consider the likely availability of suitable data for calculating market sizes and market shares in non-conventional insurance. We begin with data in the public domain:

- The Third Non-life Directive (Directive 92/49/EEC) defines the reporting requirements for non-life insurance. EIOPA produces annual statistical summaries based upon returns made by national supervisors, which are in turn the aggregation of the reports individual insurers are obliged to produce.<sup>89</sup> Various insurance risks are detailed (e.g. 'Marine, Aviation and Transport') – however, unconventional risks are not a specific category. Premiums may largely be subsumed within categories such as property (e.g. nuclear, storm and explosions are specifically referred to in the First Non-life Directive 73/239/EEC as being within this group) and general liability non-life insurance. Concentration ratios are not typically tracked outside of non-life in aggregate.
- Industry-wide sources are no more helpful, indeed as an e.g. the GDV's Statistical Annual explicitly excludes nuclear insurance from its analysis,<sup>90</sup> and does not provide additional granularity beyond that in the Third Non-life Directive.
- Data on certain pools, e.g. those that are state-mandated, can be available in the public domain. These data tend to be national and are somewhat piecemeal.<sup>91</sup>

We now turn to non-public domain data. These data are not simply private domain (e.g. available upon suitable payment terms being reached), but rather could be viewed as confidential.

- Market participants. Several stakeholders indicated that brokers, specifically the largest insurance and reinsurance brokers should individually have a broad (but not necessarily comprehensive) perspective. These data are used for business development and in the provision of advice to existing clients. The brokers are not acting as vendors of such data, i.e. they consider its internal value to be above what could be achieved externally. In particular, brokers might consider such data as a source of bargaining power on behalf of their clients. Similarly, the larger reinsurers should have a perspective on premiums in the primary market – but, like the brokers, lack the incentive to share without being obliged to do so. Individual insurers (at least the larger) would also seek information on market size and share. It looks likely that accessing satisfactory information from these sources might require some degree of compulsion, and may also need to access multiple sources.

---

<sup>89</sup> See: <https://eiopa.europa.eu/financial-stability-crisis-prevention/financial-stability/statistics>.

<sup>90</sup> It is not clear, however, whether the difference between EIOPA's data and that reported by GDV is simply nuclear-related insurance premiums. Other categories do not exactly match up, presumably in part because not all insurers active in Germany need be members of the GDV.

<sup>91</sup> See, for example, pages 88-89 in: "M. Gretener (2011) Die Versicherung von Elementarschäden durch die privaten Sachversicherer in der Schweiz". Available at: [http://www.svv.ch/sites/default/files/document/file/die\\_versicherung\\_von\\_elementarschaeden\\_durch\\_die\\_privaten\\_sachversicherer\\_in\\_der\\_schweiz.pdf](http://www.svv.ch/sites/default/files/document/file/die_versicherung_von_elementarschaeden_durch_die_privaten_sachversicherer_in_der_schweiz.pdf).

- Supervisors. National supervisors take an interest in the business being written by the local insurance industry. As Solvency II becomes operational, supervisors would be able to monitor the development of market sizes and also market shares within this through various tools. The ORSA, described previously, means that supervisors could construct the aggregate market position and individual company shares in particular risks, as these evolve over time. Similarly, prudential reporting under Solvency II means that supervisors would have access to data on how much capital is allocated to Cat module within the SCR. This began in mid-April 2016, i.e. these data have only just started to be reported upon. EIOPA would potentially be in a position to construct EU level datasets.

Given the difficulties identified above, it is also worthwhile to consider whether potential proxies, either for market shares in insurance or reinsurance, would be available. The most viable proxy would seem to be estimates of market size, i.e. from academics and market experts. For example, the cyber market in Europe is estimated at about €200 million in premium income,<sup>92</sup> perhaps less than a tenth the scale of that sector in the USA. However, alternate estimates exist — a stakeholder estimated the cyber sector to be much smaller than this (maybe 20–33 per cent of these levels), although still showing the same discrepancy in scale between the USA and the EU.

---

<sup>92</sup> M. Eling and J. H. Wirfs (2016) "Cyber Risk: Too Big to Insure? Risk Transfer Options for a Mercurial Risk Class". Institute of Insurance Economics, University of St. Gallen, in collaboration with Swiss Re. Referring to a talk from Advisen at 2015 Cyber Risk Insights Conference. See estimate of US\$224.2million (approx. €200million) on page 21.

## 5 Appendix: Stakeholder engagement

The appendix contains the following:

- A description of the stakeholder engagement process (Section 5.1 below).
- A list of questions asked in our interviews with academics, (re)insurers and brokers (Sections 5.2 to 5.4).

Stakeholder engagement formed a key part of this study. The purpose of the stakeholder engagement was to probe further into those areas identified through desk-based research, as well as to uncover other relevant issues that did not emerge through the desk-based research.

There were two key preparatory stages undertaken prior to conducting the interviews, which were:

- Selection of relevant stakeholders for interview.
- Development of questionnaire to support stakeholder engagement.

We discuss what our strategy was for each in turn.

### 5.1 Selection of relevant stakeholders for interview

This process aimed to identify and select relevant stakeholders within three key categories, namely:

- Academic experts.
- (Re)insurers.
- Brokers.

We decided to exclude commercial buyers of insurance from our stakeholder engagement process, as we are of the view that the insight they would have been able to provide relative to (re)insurers and brokers would have been very limited. Instead, we used the interviews with brokers to help understand the demand-side of the market, as we expected their expertise to be far more insightful than that of commercial buyers (who generally only access insurance companies through brokers anyway).

**Academic experts** – the choice of relevant academic experts was guided by the conceptual framework developed through desk-based research. In particular, we used the asset switching constraints identified in this conceptual framework to identify relevant areas to seek expertise in, including: insurance regulation (in particular, Solvency II); insurance asset allocation (or asset allocation more broadly); alternative risk transfer; and co-insurance and cooperation schemes.

**(Re)insurers and brokers** – in selecting relevant industry stakeholders, we tried to ensure, as far as practically possible, a balanced representation of stakeholders within each category in terms of where they operate, their size and the types of risk cover they sell or broker.

### 5.2 Development of questionnaire to support stakeholder engagement

The content of the questionnaire was dependent on the type of stakeholder being interviewed. In total, we interviewed two academic experts, six (re)insurers, and two brokers. We set out the approach we adopted for each type of stakeholder in turn.

#### 5.2.1.1 *Academic experts*

The focus of the interviews with academic experts was to understand in more detail the constraints on which they can provide expert advice. In particular, we wanted to understand the applicability of these constraints to asset switching in the context of unconventional risks. We also wished to understand, if possible, the key drivers of these constraints and what implications this has for the significance of these constraints for different market participants.

The questions to academic experts were qualitative in nature and aimed to further develop our understanding of the constraints to asset switching identified in the conceptual framework. We include the questions that we asked academic experts in the appendices.

#### 5.2.1.2 *(Re)insurers*

We used these interviews to discuss to what extent the various managerial/commercial constraints and/or regulatory/risk capital requirements limit capacity shifts and what impact these limits might have on the market. Moreover, in cases where shifts of capacity are possible, we wanted to understand whether such shifts would be commercially viable.

Our focus was primarily on those firms with pre-existing exposure to at least some unconventional risk.

In terms of relevant personnel at these (re)insurers, we focused on targeting those executives responsible for planning capacity, and also sought input from finance and risk managers.

**Profiling** – the objective of the first stage of the questionnaire was to profile the respondents in more detail.

We wished to understand which areas of unconventional risk the (re)insurer currently operates in and, for those areas in which they are not currently involved, whether they have any intention of moving into that unconventional risk space. This was to help us understand whether there were any particular nuances for certain types of unconventional risk.

**Constraints on asset switching** – we asked each respondent to discuss the significance of the various constraints to asset switching identified through our desk-based research (as well as asking whether they experience any other constraints that we have not yet accounted for):

- Regulatory constraints.
- Spare capacity constraints.
- Constraints on the ability to transfer risk.
- Constraints imposed by current asset profiles.
- Constraints imposed by cooperative structures.

The focus was on understanding the relative significance of these constraints to different (re)insurers, and thus establishing whether these constraints differ for different typologies of (re)insurance companies as well as different types of unconventional risk. Respondents were also asked about the significance of non-capital constraints in providing different types of insurance products, including, the significance of these constraints relative to the asset switching constraints (described above).

**Scenario analysis** – the objective of the scenario analysis was to understand the extent to which there is SSS between different insurance products, in particular when (re)insurance companies are switching to the coverage of unconventional risk. The scenario analysis involved a series of questions to ascertain the extent to which a (re)insurance company can switch assets into a new insurance product area. The focus was on understanding the viability of this switch in terms of:

- Timescale – what would be the timescale involved from the point of identifying an opportunity in another insurance product market (e.g. because the company believes they could outcompete incumbent pricing) to the point of having switched assets and being fully operational in the new market.
- Cost – what costs would be incurred on both a one-off and ongoing basis by switching assets. Here, the respondent would be asked to consider the whole range of potential costs involved, including the upfront regulatory, accounting, tax etc. costs and ongoing costs, e.g. the cost of capital.
- Commercial attractiveness – would the opportunity have the correct risk and expected profit characteristics to represent a viable commercial venture.

Stakeholders were asked to consider the viability (as defined by the above three factors) of different size asset switches, specifically:

- The viability of switching 5 per cent of assets into this (new) product area.
- The viability of switching 10 per cent of assets into this (new) product area.
- The viability of switching 25 per cent of assets into this (new) product area.

This helped us to understand the scale of asset switching that different (re)insurers could viably undertake. For this scenario analysis, insurers were asked to consider different real-world examples of unconventional risk, namely:

- Nuclear risk.
- Extreme industrial risk, including chemical releases and explosions.
- Natural catastrophe risk, including flood, earthquake, hurricane and fire risk.
- Cyber risk.

The interviews therefore allowed us to explore the production characteristics of the different types of unconventional risk and the implications for capacity switching.

We include the questions that we asked (re)insurers in the appendices. While we kept to a largely consistent interview structure to ensure comparability of responses, we also allowed respondents to expand in areas where they had more expertise / information to provide.

#### **5.2.1.3 Brokers**

These interviews captured relevant information on the demand-side (as we did not interview commercial buyers for the reasons set out at the start of this section). The approach largely mirrored the (re)insurer questionnaire, but sought responses from the broker's perspective. The purpose was to reconcile the information provided by (re)insurers on the supply-side of the market with the information provided by brokers on the demand-side and, in doing so, identify any inconsistencies.

We asked brokers to consider what constraints they think (re)insurers face, based on their past experience of interacting with (re)insurers. We also asked brokers to

undertake the scenario analysis, in the same way as that described for (re)insurers above. We include the questions that we asked brokers in the appendices.

### 5.3 Questions directed to academics

#### Regulatory constraints

1. What regulatory constraints may (re)insurers face in asset switching?
2. What regulatory constraints are imposed on asset switching by Solvency II?
3. Are there any national regulatory constraints (that persist in spite of Solvency II)?

#### Risk transfer constraints

4. What channels of risk transfer are available to (re)insurers?
5. What are the relative benefits of these different risk transfer mechanisms (in terms of the time, costs etc. involved in transferring a given amount of risk?)
  - a. Are some risk transfer products better at transferring certain types of risks than other products (not just the unconventional insurance risks, but also market risks which the (re)insurer is exposed to)?
6. What may restrict a (re)insurer's ability to access these different risk transfer mechanisms?
7. How does the viability of different risk transfer channels vary by the type of unconventional risk?
8. How do you believe the current low-interest rate environment impacts? Are you aware of new, yield-seeking capital sources looking at unconventional risk (e.g. in ART)?

#### Cooperation scheme constraints

9. What type of cooperation schemes exist in the unconventional risk space?
  - a. Are different types of cooperation schemes found for different types of unconventional risk?
10. How do the requirements of these cooperation schemes differ (including the entry (and exit) requirements imposed on (prospective) members)?
11. How may these requirements affect a (re)insurer's ability to switch assets into (or out of) a cooperation scheme of which they are already a member?
12. How may these requirements affect a (re)insurer's ability to switch assets into a cooperation scheme of which they are not already a member?

#### Non-capital constraints

13. What other constraints are (re)insurers likely to face that may limit their ability to appreciably switch production in the short term (including financial, actuarial, legal, underwriting, etc.)?
14. Are these constraints underpinned by any regulatory constraints and, if so, to what extent?

### 5.4 Questions directed to (re)insurers

#### Profiling

1. Please can you identify the areas of unconventional risk in which you participate?



2. Please can you identify the areas of unconventional risk in which you have participated in the past? Where you have stopped covering a particular area of unconventional risk, please explain why.
3. Please can you identify the areas of unconventional risk in which you considered participating in the past but decided not to do so?
4. For those unconventional risks for which you do not currently provide cover, do you have any intentions of moving into this risk space?

#### Asset switching constraints

5. What **regulatory constraints** do you face in asset switching?
  - a. (If not mentioned in response to the above, prompt by asking whether Solvency II regulation constrains asset switching and, if so, which specific aspects of Solvency II).
6. Do you hold **surplus capital** above that stipulated by regulation that could allow you to cover new risk exposures in the short term?
  - a. If so, how much spare capital do you hold? How much new risk exposure could you take on with this surplus capital?
  - b. How, if at all, does the current low-interest rate environment impact on this?
7. What methods do you use to **transfer existing risk exposure**? (Reinsurance, financial instruments, hybrid products).
  - a. What are the relative costs and benefits of the different risk transfer mechanisms? (In particular, in terms of time and costs involved for a given amount of risk transfer).
  - b. Do you face any particular barriers in accessing these risk transfer channels?
8. Could you please describe your **current asset profile**, in terms of the relative proportions of different types of assets you hold? (Cash, equity, bonds etc.)
  - a. How does your current asset profile affect your liquidity?
  - b. How does your current asset profile affect your risk diversification?
9. Can you describe any **cooperation schemes** that you participate in in these unconventional risk markets?
  - a. What requirements do these cooperation schemes place on you? Do these requirements constrain asset switching and, if so, how?
  - b. For those areas of unconventional risk in which you do not currently provide coverage, does the existing of cooperation schemes constrain your ability to switch assets into this risk area? If so, how?

#### Non-capital constraints

10. Do you face any other constraints that limit your ability to appreciably switch production in the short term? Please consider this with regard to different functional areas of your business, including financial, actuarial, legal, underwriting, etc.
  - a. Do you face any human capital constraints (e.g. actuarial or underwriting experts)?

- b. How do limitations in claims, actuarial data impact on decision-making (e.g. in expanding cover to a new risk area)?
11. Are these constraints underpinned by any regulatory constraints and, if so, to what extent?

Scenario analysis

12. For each area of unconventional risk that you operate in, please can you describe the viability of increasing production by the percentages set out in the table below (say in response to a small relative price increase in that risk area)? Viability should be considered in terms of timescale, costs, commercial attractiveness and major constraints.

E.g. cyber risk	Increase production by...		
	5%	10%	25%
Timescale			
Costs			
Commercial attractiveness			
Major constraints			

In the table above please list all relevant capital and non-capital constraints, describe how these would bind in these circumstances, and, if possible, rank them in order of importance (or, otherwise, indicate which the most significant constraint is).

13. Based on your above analysis, please can you rank the viability of asset switching across the different types of unconventional risk in which you operate?

## 5.5 Questions directed to brokers

### Profiling

1. Please can you identify the areas of unconventional risk in which you participate?
2. For those unconventional risk areas in which you do not currently participate, do you have any intentions of moving into this risk space?

### Asset switching constraints

3. What do you perceive to be the **regulatory constraints** faced by (re)insurers in asset switching?
  - a. What do you perceive to be the main constraints imposed by Solvency II regulation on (re)insurer asset switching?
4. From your knowledge of the industry, are you aware of whether (re)insurers tend to hold **surplus capital** above that stipulated by regulation that could allow them to cover new risk exposures in the short term?
  - a. If so, how much spare capital do they hold? How much new risk exposure could they take on with this surplus capital?
  - b. How do you believe the current low-interest rate environment impacts? Are you aware of new, yield-seeking capital sources looking at unconventional risk (e.g. in ART)?
5. What methods do you observe (re)insurers using to **transfer existing risk exposure**? (Reinsurance, financial instruments, hybrid products).
  - a. How popular are these different risk transfer channels to (re)insurers from your experiences, and how has their popularity varied and/or developed over time?
  - b. What do you perceive to be the relative costs and benefits of the different risk transfer mechanisms to (re)insurers? (In particular, in terms of time and costs involved for a given amount of risk transfer).
  - c. Do you consider there to be any barriers to accessing these risk transfer channels that may exclude certain types of (re) insurer and/or certain types of risk?
6. From your experience, what would a standard **asset profile** look like for a (re)insurer, in terms of the relative proportions of different types of assets they hold? (Cash, equity, bonds etc.)
  - a. In your view, how does this asset profile affect the (re)insurer's liquidity and risk diversification, and hence their ability to take on new risks?
7. Can you describe any **cooperation schemes** that you have developed/interacted with in your role as a broker?
  - a. What requirements do these cooperation schemes place on (re)insurers and in what way may these requirements constrain asset switching? (Both in terms of a (re)insurer who is not party to the cooperation scheme and in terms of a (re)insurer who is party to the scheme).

### Scenario analysis

8. For each area of unconventional risk that you operate in, please can you describe (to the best of your knowledge) the viability of a (re)insurer increasing production by the percentages set out in the table below (say in response to a

small relative price increase in that risk area)? Viability should be considered in terms of timescale, costs, commercial attractiveness and major constraints.

E.g. cyber risk	Increase production by...		
	5%	10%	25%
Timescale			
Costs			
Commercial attractiveness			
Major constraints			

In the table above please list all relevant constraints describe how these would bind in these circumstances, and, if possible, rank them in order of importance (or, otherwise, indicate which the most significant constraint is).

9. Based on your above analysis, please can you rank the viability of asset switching by (re)insurers across the different types of unconventional risk in which you operate?

## 6 Appendix: Legal analysis

### 6.1 Consideration of SSS in the decisions of authorities

If SSS is considered in the decisions of authorities, it is incorporated either in the identification of market participants in order to calculate market shares or – more often – in the definition of the relevant market.

In the following, CMS-Hasche Sigle (hereafter in this appendix, we) has analysed decisions from authorities in the area of insurance in order to determine the authorities' actual practice on SSS. This is not a comprehensive review of case law. We selected illustrative decisions showing how SSS is applied, if it is applied. As there are not many relevant recent decisions (i.e. concerning the market definition or the calculation of market shares in the area of insurance), we selected decisions from several years to be reviewed to get a broader and more complete picture of the authorities' consideration of the SSS and added a chronological broader list with more cases analysed, but not described in detail here. Also older decisions were selected in order to ascertain the internal consistency of the Commission's or the authorities' decision-making on SSS, also with the goal of giving an overview of the possible development.

#### 6.1.1 European Commission

##### 1996: Commission Decision COMP/M.813 – Allianz/Hermes

This case concerned the acquisition of Hermes Kredit Versicherungs-AG by way of purchase of shares. The Commission accepted that this transaction did not adversely affect competition and declared the transaction compatible with the common market.

The Commission identified within the market in question, the credit insurance market, six distinct relevant product markets, the market for trade credit insurance, for export credit insurance, capital goods credit insurance, consumer credit insurance, fidelity insurance business/computer abuse and suretyship/guarantee insurance. These distinctions were established on the basis of DSS criteria.

According to the parties, the *del credere* insurance (including trade credit insurance, export credit insurance and capital goods credit insurance) is exchangeable with factoring, "which in some Member States, especially in the UK, but increasingly also in Germany, performs essential functions of credit insurance."

Although the Commission's investigations have shown that a certain degree of substitutability in the market is assumed, this seems to be limited, at least in Germany.

Based on SSS, however, the Commission concluded that – despite the fact that not all credit insurance suppliers operated in each segment and that there were specialisations – as there were similarities among the insured risks and as all insurance companies could operate in each segment, it was possible in this case to consider the overall market for credit insurance.

Beyond these considerations on the nature of the relevant product market, the Commission's decision was also based on the definition of the relevant geographic market. The Commission acknowledged that insurance markets were becoming more open to intra-community competition, but it still considered the market to be national, since there were still several differences regarding the established market structures,

the need for adequate distribution channels, the attitude of the consumers and differing national systems of regulatory supervision.

In the area of *del credere* insurance, exporting companies with international customer relationships are the typical customers, according to the parties. This requires that the insurers have knowledge of the customers' international contractual partners, which also strengthens the trend towards the internationalization of the work of insurers. Market entry had apparently taken place to date primarily via national branches however. For the purposes of this decision, therefore, national markets could continue to be assumed, from the perspective of the Commission.

#### 1998: Commission Decision COMP/M.1142 – Commercial Union/General Accident

The case concerned the acquisition of General Accident by Commercial Union. Both are companies based in the UK. In the UK there were three markets affected by the transaction, namely travel insurance, commercial property insurance, and fidelity guarantee insurance. The transaction was declared compatible with the common market as it would not create or strengthen a dominant position.

SSS did not play any role in this case regarding the definition of the relevant market.

Still, the Commission considered SSS when analysing the dominant position. The Commission considered that there were strong competitors in these markets, so the transaction did not give rise to serious competition concerns. Moreover, this conclusion was confirmed by the analysis of the SSS. The Commission found no significant barriers to entry into the relevant markets.

Indeed it stated that: "(...) there would seem to be some degree of supply-side substitutability in the insurance sector. Insurance companies with expertise in one or more product lines are able normally to reapply those skills to enter other product areas. This ability is underpinned by the fact that insurance products require a common set of skills in terms of, *inter alia*, risk assessment, administration (including IT systems) and claims management.

Again, the Non-Life Directive, which came into force on 1 July 1994, completed the legislative structure for the dismantling of the prudential and regulatory barriers to cross-border trade in the Non-Life sector. There is increasing evidence of greater cross-border trade both by acquisition and direct representation. Within the Community as a whole, the UK may be regarded as a more open market.

Furthermore, distribution networks are undergoing a significant degree of change in the form of direct telephone selling by underwriters, and marketing by banks and even supermarkets."

#### 1998: Commission Decision COMP/M.1307 – Marsh & McLennon/Sedgwick

This case concerned a transaction whereby Marsh & McLennon Companies Inc. acquired control of the whole of Sedgwick Group plc by way of purchase of the Sedgwick's entire share capital. The parties' activities overlap in the areas of insurance and reinsurance distribution and human resources consulting. The transaction was considered compatible with the common market.

The relevant product market was considered by the Commission to be the market for insurance broking and, within this market, the sector of consumer broking, broking for commercial clients and, in particular broking, for large corporate clients. The final

definition of the relevant market, however, was left open, as serious doubts as to the compatibility with the common market could be excluded under any aspect.

In this case, the parties claimed that the insurance distribution market should not be segmented further on the basis of the distribution channels (brokers and other insurance distributors), the type of product (the risk insured and the insurance cover provided) or client size (individuals, small/medium-sized and large clients), putting forward the following arguments relying on SSS and DSS:

- A range of providers compete to distribute insurance cover to end customers and can therefore be considered as operating in the same market, i.e. brokers such as the parties, other types of intermediary such as insurance agents and banks, tied agents of insurers and insurers writing direct.
- All these providers are contesting the same customers and competing to supply the same product, i.e. insurance cover.
- Customers throughout Europe are prepared to look to underwriters dealing directly, brokers or others to provide the cover they require, and are prepared to switch between different types of provider where they believe they will get better value for money elsewhere.
- Coverage by direct writers is being increasingly facilitated by new computer and electronic communication technology which makes it easier to deal with clients directly, and allows clients to select the best deal themselves. Also, various banks and other financial institutions are distributing all lines of insurance to personal and commercial customers.

The Commission's analysis regarding the relevant product market was grounded on both DSS and SSS arguments.

It stated that from a demand-side perspective corporate customers distinguish between the kind of services they can procure from a broker and from direct dealing insurers or insurance agents and based its decision on the following observations:

- Brokers act in the client's interest while underwriters are seen to act in their own profit interest, therefore brokers' services are requested where independent advice is needed
- The range of services (especially large) corporate customers seek from brokers goes beyond the actual placement of insurance cover (may include identification/assessment of risk, independent risk management advice, security rating of insurers, insurance market intelligence, independent actuarial services and claims support). Underwriters dealing direct or insurance agents are not able to provide these services to the same degree and cannot therefore fully substitute brokers.

The Commission, however, acknowledged that "other intermediaries are becoming increasingly viable competitors for traditional insurance brokers. Certain merchant banks already maintain insurance consultancy and underwriting operations. There are indications that accounting firms are recruiting insurance brokers in order to be able to compete in the provision of risk management consultancy and services. Therefore, corporate customers might increasingly be able to substitute brokers' services, as described above, with those of other intermediaries."

The Commission also considered that from a supply-side perspective brokers (in contrast to other distributors) have a more complete range of skills to advise comprehensively on the best products across the whole insurance market and to provide services ancillary to broking.

And yet, despite the abovementioned DSS and SSS observations, the Commission decided not to define a single product market for insurance distribution but a distinct market for the distribution through brokers without further explanation.

In the same way, the Commission defined a distinct market for Retirement and Employee Benefits consulting (as part of the human resources consulting) since according to the Commission, consulting in this area requires specific sets of skills, qualifications and technical resources (especially actuarial competence).

#### 1998: Commission Decision COMP/M.1082 – Allianz/AGF

The proposed concentration involved the acquisition by Allianz AG (Allianz) of sole control over Assurances Générales de France (AGF). The present concentration in particular affects one segment of the credit insurance market, namely the *del credere* insurance in some Member States, in particular Italy, Belgium and UK.

In contrary to the Allianz/Hermes decision (see COMP/M.813 – Allianz/Hermes) the Commission considered the *del credere* insurance to be a distinct product market.

SSS played an important role in this case. While according to the Commission's analysis from a demand-side perspective, the *del credere* insurance products could be said to cover similar risks, namely the risks of insolvency and non-performance of contracting partners and all three segments of *del credere* are similar in scope, from a supply-side perspective it could "be observed that the majority of credit insurers offer combined policies in particular for domestic and export credit insurance and, moreover, premiums are calculated in a similar way."

The decision was also based on enquiries involving a representative number of competitors and clients of the parties, which emphasised the Commission's observation that the characteristics of *del credere* differ from those of other credit insurance products like consumer credit insurance which only addresses banks and financial institutions:

- "The requirements that apply to the *del credere* business differ significantly from the other credit insurance business, since in *del credere* both the risk of losses and profit margins are higher than in other segments of credit insurance and general insurance.
- While the latter can be based on developments calculated according to certain statistical principles, *del credere* requires the evaluation of a huge number of different isolated risks as well as special credit management facilities combined with a profound knowledge of markets concerned.
- Each policy holder has to be scrutinised accordingly. Information on the client's market can easily be purchased from specialised databases. The interpretation and consequent exploitation of those informations nevertheless require a specialised data-processing system. The development of such systems from scratch is very time consuming and can take 8-10 years. Different market informations have to be evaluated and risks must be selected."



In conclusion, the Commission considered the market entrance costs for the entry in the *del credere* market high. Heavy investments, the appropriate know-how and sufficient human resources were needed in order to start activities in this sector.

1999: Commission Decision OJ No. C 357, 09/12/1999 P. 0006 – 0006, Celex No. 31999J0021 – Skandia/Storebrand/Pohjola

This case concerned an agreement whereby Försäkringsaktiebolaget Skandia, Storebrand ASA and Pohjola-Yhtyiä Vakuntus Oyi created a full function joint venture in Sweden (FFJV).

Although the supply-side analysis showed that the conditions required to insure different types of risk are very similar, which suggests that many different types on non-life insurance should be included in the same product market definition, the Commission considered each different type of non-life insurance product a distinct product market.

Therefore, in this decision, the Commission has examined the shares of the notifying parties by taking each non-life product separately notwithstanding the possibility that the product markets may in fact be broader. This has been done on the basis that if such an analysis does not reveal a problem, then nor will an analysis based on broader product market definitions. Accordingly, the Commission argued that it was not necessary in this decision to adopt a definitive position as to the precise product markets at issue.

1999: Commission Decision OJ 1999 No. L 125/12 – P & I Clubs II

The case concerned two agreements within the International Group of P & I, the International Pooling Agreement and der International Group Agreement. The P & I Clubs are mutual non-profit-making associations that provide Protection & Indemnity insurance to their members, the ship owners. The P & I insurance covers contractual and third-party liability and has been traditionally insured by ship owner mutual associations. The insurance covers different types of risk: injury or death of crew, passengers and others; collision damage to vessels; other damage to third-party property (such as harbour equipment); pollution; cargo and other (such as expenses of wreck removal). Most P & I insurers provide all these types of cover under a single contract. The members of the P & I Clubs have activities that overlap in the field of direct marine insurance. The agreements were declared compatible with the common market and with the EEA Agreement with exception of the rules concerning costs for tankers.

The Commission concluded that within the market for direct marine insurance there were distinct markets for P & I insurance and P & I reinsurance up to a cover around USD 2 billion (EUR 1.8 billion) and P & I reinsurance for levels higher than around USD 2 billion. When analysing the relevant product market the Commission considered the demand-side as well as the supply-side perspective.

The Commission explained in the P & I Clubs II decision that from a demand-side perspective hull and P & I insurance can be clearly divided into two different product markets. They cover different needs and have traditionally been considered separately by ship owners: the latter obtain hull insurance from commercial insurers but create mutual associations in order to share their P & I risks.

P & I insurance, also seen from the demand-side, could be theoretically divided into very specific segments, according to the type of vessels insured (tankers, fishing-

vessels, dry-cargoes, etc.), the type of cover (property damage, pollution, crew injury, etc.) or even the level of this cover (unlimited, limited to a certain level, etc.). In fact, non-standardised insurance, like this one, is a tailor-made product adapted to the characteristics of the insured.

Furthermore, direct hull and P & I insurance must be distinguished from marine reinsurance. The demand for each type of insurance is different: in the first two cases the demand comes from ship owners while in the third one comes from professional insurers. Marine reinsurance is normally provided by specialist reinsurers. In some cases, however, it can also be provided by P & I insurers. In fact, the P & I Clubs offer reinsurance to small independent P & I mutuals.

SSS was discussed at length and was focused on whether the conditions on which P & I insurance is offered are similar to those for other types of insurance and whether, therefore, other insurers could start to provide P & I insurance at short notice. The Commission concluded that entry barriers were high due to the two most relevant barriers.

First, P & I insurance requires technical knowledge on P & I risks and large networks of representatives in the most important world harbours that may solve efficiently P & I claims and a sophisticated claims handling unit that other insurance companies cannot develop in a short period of time.

Second, there are very large economies of scale in the provision of high levels of P & I insurance. The Commission stated that "in the field of P & I insurance, the minimum scale required to offer cover is high in relation to the whole market dimension. In other words, economies of scale represent important barriers to entry."

Thus, the Commission concluded that the combination of these two barriers restrain most non-life insurance companies as well as specialist reinsurers from operating in the P & I insurance markets. Only marine hull insurers, could probably develop their expertise and claims facilities in order to cover P & I risks more easily than other types of insurer. For lower levels of P & I cover, where economies of scale are small, they could operate in the market.

The Commission also considered potential entry by new competitors regarding the market of reinsurance to P & I direct insurance and concluded economies of scale to be the main barrier to entry. "Regulatory or technical barriers do not play a significant role. In consequence, not only are the P & I Clubs able to provide reinsurance to other P & I insurers, but also marine reinsurers which are able to reach a minimum dimension can provide it. In practice, marine reinsurers provide reinsurance for low levels of cover to independent P & I mutual as well as reinsurance to the P & I Clubs up to EUR 1,8 billion (USD 2 billion). Reinsurance for higher levels of cover can only be provided at present by the P & I Clubs."

#### [2003: Commission Decision COMP/M.3035 – Berkshire Hathaway/Converium/Gaum/JV](#)

The case concerned a transaction whereby Northern States Agency, Inc (belonging to Berkshire Hathaway group) and Converium AG acquired joint control of Global Aerospace Underwriting Managers Limited (Gaum), which is a supplier of underwriting and management services to insurance and reinsurance companies. Its main client is the Global Pool but it also serves third parties, which are active mainly in the aerospace risk sector. The Commission concluded that the transaction is compatible with the common market.

The Commission identified three distinct product markets, the market for underwriting and management, for provision of insurance and for provision of reinsurance. This distinction was established on the basis of DSS and SSS criteria.

The Commission decided that, although many insurance and reinsurance companies do not resort to external suppliers of these services, underwriting and managing services represent a market distinct from the provision of insurance or reinsurance, as especially many pools of insurers or reinsurers resort to external suppliers since the members of these pools do not want to rely on the expertise of one of them.

In this regard the Commission considered it as irrelevant, whether the services are provided to insurance or reinsurance companies, as the services do not differ depending on whether they are provided to insurers or reinsurers. Also the provision of underwriting services and the provision of management services constitute one single product market, as these services are strongly complementary from both the suppliers' and the customers' point of view. In addition the parties argue that all suppliers could offer both categories of services and that customers are always seeking suppliers that can deliver the two categories of services. Underwriting and management services are usually supplied as part of the same package.

The Commission also considered whether there was a distinct product market for the provision of the services to the insurers/reinsurers active in the aerospace field because of the specific characteristics due to the particular nature and size of the risks it covers and the therefore required specific expertise and skills in this field. Yet, without additional explanations regarding the terms "particular nature" and "particular size of the risks" the Commission left the final decision on the definition open, as the transaction did not raise any competition concerns even on the narrower market definition.

Regarding the market for provision of insurance the Commission's investigation has revealed that the aerospace insurance has specific features due to the particular nature and size of the risks it covers, so it could be regarded as a distinct product market within the broader insurance sector. Again the Commission failed to go into greater detail regarding the particular nature and size of the risks.

The aerospace insurance sector itself could possibly be further subdivided into a number of separate markets comprising each of a particular type of risk, such as airline, products/airports, General Aviation, hull, war/terrorism, satellite/space, etc. Solely from the demand side there is no substitution for the insured between the different categories of policy offered. However, the Commission considered rather a single market for aerospace risks, since "the respondents to the Commission's investigation have clearly indicated that there exists within the broad category 'aerospace risks' a high supply side substitutability," yet left the final definition open in the end.

The same reasoning was applied regarding the market for provision of reinsurance. The parties alleged that while some reinsurers may specialize in particular types of covers, there was a single market for the provision of reinsurance and the market should not be further divided, as any reinsurer could readily and swiftly offer reinsurance coverage for any type of risks.

The Commission's investigation has largely confirmed this view. In particular, many respondents have explained that the barriers to enter a new risk are quite low because:

- The approval which is rarely required to offer reinsurance cover for a new type of risk is easy to obtain.
- No specific additional distribution channels are needed since cover for a new type of risk could always be sold via brokers.
- Relevant expertise could be acquired by recruitment relatively easily and rapidly.

However, due to the particular size and nature of aerospace risk it may be regarded as a distinct product market within the broader (non-life) reinsurance sector. Ultimately, the Commission left the final decision open, as the transaction did not raise any competition concerns.

#### 2011: Commission Decision COMP/M.6053 – CVC/Apollo/Brit Insurance

The case concerned a transaction whereby CVC Capital Partners SICAV-FIS S.A. (CVC) and Apollo Management L.P. (Apollo) acquire joint control of Brit Insurance. The Commission declared the transaction compatible with the common market.

In this case the Commission considered the aspects of DSS or SSS only briefly within the market for provision of non-life insurance and left any final decision on the relevant product market open.

The Commission stated that in previous decisions, it was noted that the different kind of risks covered by non-life insurance have different characteristics, purposes, and premiums to be paid and, therefore, are not substitutable from the customer's perspective.

Yet, it did acknowledge previous market investigations, which "confirmed that on the supply side, insurance of different types or risks is quite similar as a majority of insurance companies are active in several types of risks, suggesting some degree of substitutability."

#### 2012: Commission Decision COMP/M.6521 – Talanx International/Meiji Yasuda Life Insurance/Warta

The case concerned a transaction whereby Talanx International AG and Meijia Yasuda Life Insurance Company acquire joint control of Towarzystwo Ubezpieczeń i Reasekuracji Warta S.A. (Warta), with exceptions of its subsidiaries Powszechne Towarzystwo Emerytalne WARTA S.A. and KBC Towarzystwo Funduszy Inwestycyjnych S.A. The companies' activities overlap among others in the distribution of motor vehicle insurance, MAT insurance and cargo insurance. The Commission concluded that the opposed transaction would not create a dominant position on the market and therefore was compatible with the common market.

As regards motor vehicle insurance, the Commission discussed whether or not SSS might result in a single market in Poland across both classes of motor insurance at issue, i.e. Class 3 – Overland vehicle hull insurance (casco), excluding rail-way, and Class 10 – Motor vehicle third party liability (TPL) insurance, and also at whether a distinction between insurance of large vehicles (such as buses, trucks and off-road vehicles), on the one hand, and automobile and/or small commercial vehicle insurance, on the other hand.

Although the market investigation was, according to the Commission, inconclusive as to whether a distinction should be made between TPL and hull insurance, it found evidence that there was a single market for both TPL and hull insurance at least for

automobiles (including two-wheeled vehicles) and small commercial vehicles due to SSS and bundling of products.

The Commission based its decision on the following observations:

- While certain customers demanded hull insurance in addition to liability insurance, in the vast majority of cases they purchased these two types of insurance from the same provider (in relation, at least, to automobiles and small commercial vehicles).
- Almost all providers offered both types of insurance and that there were no barriers for a provider of one type also to enter the other segment.
- While TPL insurance is provided on terms defined in relevant legislation, there is a greater scope for differentiation of product and service offering in relation to hull insurance.
- Both types of insurance were addressed to the same customers and, if both were purchased, they were often purchased together at the same time. It was typically more advantageous to do so from the same provider than from different providers, although the latter was also theoretically possible and occasionally encountered.

While the parties claimed that no segmentation should be made between insurance of large vehicles and automobile and/or small commercial vehicle insurance, since this "segmentation would not correspond to the commercial practice and normally there would be no distinction between the two groups in either the business organization, the distribution channels or the legal requirements", the Commission's investigations indicated that a distinction might indeed be appropriate because:

- The insurance of large vehicles typically concerns fleets of vehicles rather than single vehicles, and both TPL and hull insurances are individually priced based on claims history and the nature of the activity carried out.
- This type of insurance is often obtained by customers through brokers and requires specialized risk assessment.
- By contrast, automobile insurance is a more commoditised product with much less determination of individual risk.

Regarding the MAT insurance market the Commission analysed whether the market should be further segmented according to the means of transport (like it was done in COMP/M.5010 – Berkshire Hathaway/Munich Re/Gaum), yet decided that the market definition for the purposes of the present case could be left open since, regardless of the exact market definition, the proposed transaction did not raise serious doubts as to its compatibility with the internal market.

The Commission conducted a market investigation as regards SSS, however, it was inconclusive. The observations were as follows:

- Certain segments (such as rail) could be viewed as relatively specialized and characterized by a small number of buyers and providers of insurance.
- However, in other cases the distinction between means of transport and between hull and liability insurance appeared less important than a distinction based on the size of the risk.
- Often the size of the risk was also correlated with the geographical scope of the market, such that, for instance in the marine segment, smaller pleasure vessels,

fishing vessels etc. had access to a market defined along national lines, whilst larger vessels could access international markets for insurance. In such cases, whilst there might be fewer domestic providers active in the market, this was usually compensated for by the possibility to purchase internationally.

The Commission investigated further whether, within the cargo insurance market, it was possible to identify any relevant segmentation taking into account the means of transport, the type of cargo, and the place of origin or destination. In that case, the market investigation revealed that a distinction could be made based on size of risks and also between international and domestic shipments.

The Commission's investigation suggested "that, for smaller risks, there were a number of providers of cargo insurance and low barriers to entry. In these instances, the type of cargo and the means of transport were not significant factors impeding SSS. Such smaller risks included most purely national shipments. Nonetheless, both international and national shipments of dangerous or perishable cargo and cargo posing a risk to human health or the environment could rely on access to a much smaller pool of insurers able to correctly assess the specialized nature of these risks and with the financial standing to honour claims both for cargo loss but especially for third party and public prejudice."

The investigation also showed that "there were (...) fewer providers of this type of insurance to Polish customers active internationally. For this reason a distinction could also be drawn between international and national shipments."

Ultimately, the Commission explained that the market definition for the purposes of the present case could be left open since, regardless of the exact market definition, the proposed transaction did not raise serious doubts as to its compatibility with the internal market.

## Conclusions

The analysis of the previous cases (as well as many others not reported here) shows that, although the Commission's definition of the relevant market is based mainly upon demand-side considerations, the aspect of SSS has gained more importance. Yet, it can still seem to be rather "an after-thought" (see Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control" *National Economic Research Associate*, Report for DG Enterprises, page 55; also Bishop/Walker, *The Economics of EC Competition Law*, 3<sup>rd</sup> ed. 2010, paras 4 – 012, 121). If a decision takes SSS as a basis and defines the market accordingly, this seems to be done, as a rule, in order to prevent an inappropriate decision, as a kind of corrective.

When deciding about the permissibility of a cooperation under competition law, it may lead to very different results depending on whether a narrower or – taking into account the SSS, if necessary – a broader market was defined.

The Commission does not always apply SSS in each and every case. In some cases SSS was examined in detail (see for example COMP/M.6521 – Talanx International/Meiji Yasuda Life Insurance/Warta), while in others it is not (see COMP/M.6743 – Talanx International/Meiji Yasuda Life Insurance Company/HDI Poland) because the Commission did not deem it relevant, i.e. the level of assessment is case-by-case.



Thus the definition of the relevant market will mainly depend on the very nature of the case under investigation. The precedent value of previous cases is therefore bound to be limited.

In most cases, however, the decision about SSS is left open. This procedure may suggest that in practice, the question of the relevant market and of SSS can be answered only with considerable difficulties. The court or the authority often already lacks the information necessary for assessment (see also Padilla (2001) "The role of supply-side substitution in the definition of the relevant market in merger control", *National Economic Research Associate*, Report for DG Enterprises, pp. 3f., 17ff.; Bishop/Walker, *The Economics of EC Competition Law*, 3<sup>rd</sup> ed. 2010, paras 4 – 012, 121) to the effect that the decision is based on other reasons if legally possible. Alternately, the Commission's decisions may generally leave the market definition open as it was not crucial to the decision.

### **6.1.2 United Kingdom**

The UK Merger Assessment Guidelines published jointly by the Office of Fair Trading (OFT) and the Competition Commission (CC) in 2010, and adopted by the Competition and Markets Authority (CMA) establish when and how SSS will be used to define markets. According to the UK Merger Assessment Guidelines:

"The boundaries of the relevant product market are generally determined by reference to demand-side substitution alone. However, there are circumstances where the Authorities may aggregate several narrow relevant markets into one broader one on the basis of considerations about the response of suppliers to changes in prices. They may do so when:

- production assets can be used by firms to supply a range of different products that are not demand-side substitutes, and the firms have the ability and incentive quickly (generally within a year) to shift capacity between these different products depending on demand for each; and
- the same firms compete to supply these different products and the conditions of competition between the firms are the same for each product; in this case aggregating the supply of these products and analysing them as one market does not affect the Authorities' decision on the competitive effect of the merger." (UK Merger Assessment Guidelines, para 5.2.17).

The UK Merger Assessment Guidelines then mention bidding markets as an example where such SSS may be appropriate: "Aggregating a range of contracts where the same set of firms would have been credible bidders can provide more useful information about the competitive constraints on each firm than is available from focusing on just one bespoke."

These guidelines downplay the role of SSS, as compared to one of the earlier versions, which stated that SSS would be included in the market definition when "it is clear that substitution would take place quickly and easily." (Office of Fair Trading, "Market Definition in the UK Competition Policy," OFT Research Paper, March 1999).

Although there is similarity regarding the approach in both the Commission and the UK guidance on the use of SSS in market definition, the UK guidelines provide for stricter requirements concerning its relevance for market definition.

#### **2010: OFT Case ME/4424/10 – HSBC/MMC**

The case concerned the acquisition of HSBC Insurance Brokers Limited (HIBL) by MMC UK Group Limited (MMC), as part of the Marsh and McLennan Companies Inc. MMC

provides risk and insurance, investment management, consulting and brokerage services globally and HIBL supplies insurance and reinsurance brokerage services globally. The parties have overlapping activities in the supply of primary insurance, reinsurance and retrocessional brokerage services globally.

The OFT considered the impact of the merger on the supply by brokers of insurance distribution, reinsurance distribution and retrocessional reinsurance separately in this case. Although the OFT decided that the transaction is compatible with the common market, since the parties' market share was likely to lessen the competition and given that the merger did not cause competition concerns even on this narrow basis, the OFT has not sought to analyse this market further or to conclude on the exact scope of the relevant product market.

However, the OFT did consider whether the reinsurance distribution market should be segmented according to the way reinsurance is distributed, either by intermediaries or by direct distribution like it was done by the Commission in the Marsh & McLennon/Segdwick decision (see COMP/M.1307 – Marsh & McLennon/Segdwick), yet decided that, as the merger did not cause competition concerns even on this narrow basis, it would not be necessary to conclude on the issue of whether the market should be further segmented. However, the OFT based its analysis on the reinsurance distribution via intermediaries (brokers) excluding direct sales to insurers as neither party is active in direct distribution of reinsurance policies.

Further the OFT discussed the possibility to further divide the markets for non-life insurance and reinsurance distribution according to the type of risk that is covered by the insurance (for example accident and health, aerospace, education, casualty and professional lines, energy, marine, motor and property) and decided to examine "the impact of the merger on insurance, reinsurance and retrocessional reinsurance distribution for all types of risks without delineating the market according to the type of risk insured and reinsured".

This decision was based mainly on SSS criteria. The parties in this case argued that there is sufficient SSS. "In particular, the parties argued that the skills required for insurance distribution are generally not specific to particular risk categories and a distributor of a specific category of risk could easily and readily switch to providing another category."

Although the OFT acknowledged that there was no DSS between each category, the OFT concluded that "brokers who specialize in certain areas are able to switch with relative ease between types of risk." The OFT also referred to the Commission's Berkshire Hathaway/Converium/Gaum/JV decision (see COMP/M.3035 – Berkshire Hathaway/Converium/Gaum/JV), which had accepted that there is a degree of SSS between the different types of risks.

### **6.1.3 Germany**

The definition of the relevant market is determined using the same principles as the Commission to the effect that the consideration of aspects of SSS is in line with the procedure of the Commission.

2007/2008: [German Federal Cartel Office](#); [German Higher Regional Court Düsseldorf](#); [German Federal Court – Auditor's Third-Party Liability](#)

Finally, the Federal Cartel Office recently made a comprehensive market definition in a decision relating to the liability of chartered accounts/auditors. The case concerned an agreement whereby four insurers amalgamated to form a permanent insurance pool (*Versicherungsstelle* Wiesbaden) to operate provide professional indemnity insurance (PI insurance) in the form of co-insurance for auditors, accounting firms, sworn



auditors and bookkeeping companies as well as tax consultants, tax consultancy firms, tax advisers and mutual auditing associations engaged in Germany and abroad.

In that decision, the Office did emphasise the great significance of the substitutability of offers or SSS with reference to the Commission, because the DSS of an insurance contract is "theoretically nil". However, the Federal Cartel Office dealt with SSS in this specific objective market definition comparatively briefly only in the fifth of a total of six sections and denied it with only few viable arguments:

- The Office stated that the risk of accountants/auditors was more difficult to calculate than the risks of lawyers, notaries and tax advisers.
- The Office further stated that the extension of the corporate portfolio of PI insurance for lawyers, notaries and tax advisers to PI insurance for auditors/chartered accountants required considerable financial expense and time be shared because highly specialised staff would have to be built up. However the Commission did not define what kind of knowledge was needed for the insurance for lawyers, notaries and tax advisers that was not needed for the insurance for auditors/chartered accountants or why this knowledge could not be easily acquired by the insurer.

In consequence it assumed that a separate market exists for professional indemnity insurance for chartered accountants and sworn auditors. The resulting large market shares of the parties led to a lack of exemption capability of the anti-competitive conduct of the parties and thus to the prohibition.

After the parties filed an appeal, the Düsseldorf Higher Regional Court overruled the decision. The determining factor was the assumption of a common market for professional indemnity insurance for all professions providing legal, economic and tax advice based on the principles of SSS. The decisive criteria for the assessment of the SSS were the sufficient similarity of the risks to be assured and the lack of the need for greater adjustments to the insurer's previous distribution system.

The court stated that in the factually relevant areas, at the minimum also the PI insurance products for the other so-called "RWS professions" (offering legal, business and tax advice) i.e. for tax consultants, notaries and lawyer, are to be included in the factually relevant market. The Court based its decision on the following arguments:

From a demand-side perspective a distinction could be made between the relevant professional groups concerned.

- All kinds of professional indemnity insurance have in common that they protect policyholders against liability claims of third parties arising from the policyholder's acting in performance of the professional occupation.
- What is exchangeable, from a policyholder's point of view, however, is only insurance with the same risk description tailored specifically to the policyholder's professional occupation.
- The reason for this is that the risk descriptions of individual kinds of PI insurance differ depending on the profession of the policyholder because the coverage is supposed to be adapted to the respective profession.
- In this respect, there are differences within the group of professional legal, business and tax advisers.

- Although identical General Insurance Terms and Conditions for all professional legal, business and tax advisers exist, they are supplemented by Special Terms and Conditions for Insurance for each individual profession however. The Special Terms and Conditions of Insurance contain different risk descriptions tailored to the respective branch of profession.

However, from a supply-side perspective there is only one specific product market for – at least – PI insurance products for so-called RWS professions.

For PI insurance in the group of professional legal, business and tax advisers, contrary to the statements of the office, SSS exists because it is possible, at economically reasonable costs and at short notice, to extend the corporate portfolio of PI insurance for lawyers, notaries and tax consultants by including auditors/sworn auditors, just as it is possible to extend PI insurance for auditors/sworn auditors by including lawyers, notaries and tax consultants because:

- From the insurer's point of view, the risks to be insured of lawyers, notaries, tax consultants and chartered accountants/sworn auditors are sufficiently similar.
- Experience with the frequency and level of claims of a certain group of risks makes it possible to draw a conclusion about the frequency and level of claims in the same group. Either a calculation basis then exists already at that point or can quite easily be established.
- In addition, concerning the content arrangement of the terms and conditions of insurance, the sale, contract conclusion and claims handling as well as the knowledge of the employees required for this are comparable.
- It is typical of insuring so-called RWS professions that statutory compulsory insurance is involved in each case, with regard to which numerous statutory requirements must be met to the effect that the insurer's scope to sort out the details is generally narrower than with regard to other professional groups.
- Furthermore, the product range of the insurance companies operating in the sector of PI insurance for so-called RWS clearly suggests that from the insurers' perspective the risks to be insured are similar.
- Furthermore, no significant difference in the risk assessment/risk calculation can be seen between the risk to be insured in relation to chartered accountants/auditors and the risks in relation to tax advisers, lawyers and notaries.

The determination of the Federal Cartel Office to justify the lack of SSS that the tendency for claims incurred, but not reported that is generally applicable in relation to all professional legal, business and tax advisers was extraordinarily high with regard to auditors/chartered accountants compared to the other professional legal, business and tax advisers is opposed by the Office's own investigation results.

Nor can the Federal Cartel Office's view that the extension of the corporate portfolio of PI insurance for lawyers, notaries and tax advisers to PI insurance for auditors/chartered accountants required considerable financial expense and time be shared because highly specialised staff would have to be built up:

- Employees of the insurance company who have already been working in the PI insurance sector previously can be employed for the underwriting and claims

handling of PI insurance for auditors/chartered accountants at short notice and without considerable financial expense.

- As already detailed, contract processing and claims handling requires a rather equal level of know-how on the part of the insurer in relation to all professional legal, business and tax advisers.
- Added to this are the already demonstrated parallels between the IP insurance of the individual so-called RWS professions, notably concerning the content arrangement of the insurance terms, distribution and processing of contracts.
- In addition, it is not obvious that relevantly qualified employees in the job market are not available and therefore not able to be employed in the short term.

Nor, ultimately, according to the Federal Cartel Office, do existing market structure-related market access restrictions for the area of PI insurance for chartered accountants/auditors argue against SSS of the PI insurers within the area of PI insurance for chartered accountants/auditors.

- It is already doubtful whether barriers to market entry in this connection have to be taken into account at all.
- Market entry conditions and thus the existence of barriers to market entry are of decisive importance for potential competition.
- However, in terms of market definition, potential competition is precisely not adduced. This is an argument in favour of the scenario that the market entry conditions that are decisive for competition in terms of flexibility of product adaptation to be reviewed for market definition do not have to be taken into account.
- Ultimately, this can be left undetermined because the asserted barriers to market entry do not exist.

#### **6.1.4 United States**

The segmentation of the insurance market is based on the horizontal merger guidelines of the U.S. Department of Justice and the Federal Trade Commission (issued 19 August 2010).

According to these guidelines market definition plays two roles when the authorities identify a potential competitive concern with a horizontal merger. First, market definition helps specify the line of commerce and section of the country in which the competitive concern arises. In any merger enforcement action, the authorities will normally identify one, or more than one, relevant market in which the merger may substantially lessen competition. Second, market definition allows the authorities to identify market participants and measure market shares and market concentration. The measurement of market shares and market concentration is not an end in itself, but is useful to the extent it illuminates the merger's likely competitive effects.

The guidelines state that the authorities' analysis need not start with market definition. Some of the analytical tools used by the authorities to assess competitive effects do not rely on market definition, although evaluation of competitive alternatives available to customers is always necessary at some point in the analysis.

Market definition focuses solely on demand substitution factors, i.e., on consumers' ability and willingness to substitute away from one product to another in response to a

price increase (SSNIP test) or a corresponding non-price change such as a reduction in product quality or service (see for example United States District Court for the Southern district of New York, 11 May 2010, U.S. Dist. LEXIS 60196; 2010-1 Trade Cas. (CCH) P77,053; United States Court of Appeals for the eighth circuit, 29 December 2009, 591 F.3d 591, 2009 U.S. App. LEXIS 28498, 2009-2 Trade Cas. (CCH) P76,849; United States Court of Appeals for the fifth circuit, 25 July 1996, 89 F.3d 233, 1996 U.S. App. LEXIS 18446, 1996-2 Trade Cas. (CCH) P71,500).

In the decision of the United States District Court for the Northern District of Texas (Dallas division) of 3 August 1999 (Civil Action No.: 3-99CV1398-H), the Court stated on these grounds that the consumer views different health plans as distinct products. Not only do these plans in fact differ by cost and benefit configuration, they are perceived as different by purchasers; neither employers nor employees view PPO (preferred provider organization) plans as adequate substitutes for HMO (health maintenance organization) plans. According to the Court's examination other health plans, along with many brokers and consultants, agree, noting the difference in networks, benefits, regulatory requirements, administrative systems, medical management requirements, and costs of HMO plans as opposed to PPO plans. Indeed, enrollees who leave an HMO disproportionately select another HMO, not a PPO, for their next health care benefit plan. Analyses demonstrate that the elasticity of demand for HMO plans is sufficiently low that a small but significant price increase for all HMO plans would be profitable because consumers would not shift to PPO in sufficient numbers to render such an increase unprofitable. Therefore the Court concluded that HMO plans constitute the relevant product for analysis of the proposed transaction.

In general, SSS will not be reflected in the definition of the relevant product market with one exception. According to the horizontal merger guidelines (19 August 2010, footnote 8) the authorities may use an aggregate description of markets, "if this type of supply side substitution is nearly universal among the firms selling one or more of a group of products." Similar as the UK guidance on the use of SSS in market definition, the US guidelines provide a slightly different emphasis and tighter conditions regarding its relevance for market definition compared to the approach of the Commission and Germany.

In 1995 the United States Court of Appeals for the seventh circuit (65 F.3d 1406, 1995 U.S. App. LEXIS 26339, 1995-2 Trade Cas. (CCH) P71,120) therefore based the definition of a market on the substitutability on the supply-side as well as on the demand-side. Even if two products are completely different from the consumer's standpoint, if they are made by the same producers an increase in the price of one that is not cost-justified will induce producers to shift production from the other product to this one in order to increase their profits by selling at a supra-competitive price.

The scope of geographic markets depends on various factors such as language, regulation, tariff and non-tariff trade barriers, custom and familiarity, reputation and service availability. The authorities normally define geographic markets based on the locations of suppliers, but in other cases may define the market based on the locations of customers.

In the decision of the United States District Court for the Northern District of Texas (Dallas division) of 3 August 1999 (Civil Action No.: 3-99CV1398-H), the Court concluded that the health plan providers usually establish provider networks in the areas where employees live and work and that they compete on the basis of these

local provider networks. The relevant geographic markets in which HMO plans compete are thus generally no larger than the local areas within which HMO enrollees demand access to providers. More specifically, a small but significant increase in the price of HMO plans would not induce a sufficient number of customers to switch to health plans outside of these regions to make such a price increase unprofitable. For this reason, the Court focused on Metropolitan Statistical Areas in and around Houston and Dallas as the relevant geographic markets.

However, the responsive actions of suppliers can be important in competitive analysis and are considered when identifying the market participants, calculating the market shares and analysing the competitive effects, especially as firms that would rapidly and easily enter the market in response to a SSNIP are market participants and may be assigned market shares.

The United States Court of Appeals for the seventh circuit stated already in its decision of 4 March 1986 (784 F.2d 1325, 1986 U.S. App. LEXIS 22737, 1986-1 Trade Cas. (CCH)) that the lower the barriers to entry into a market, and the shorter the lags of new entry, the less power existing firms have. When supply is highly elastic, existing market share does not signify power.

In the decision of the United States District Court for the Northern District of Texas (Dallas division) of 3 August 1999 (Civil Action No.: 3-99CV1398-H), the Court concluded that, regarding HMO plans in Houston or Dallas it is unlikely that either new entry or expansion by competitors could counteract a post-merger price increase. Effective new entry for a HMO plan in Houston or Dallas typically takes two to three years and costs app. \$50 million. In such an environment, de novo entry is unlikely to defeat a price increase over the short term. Furthermore, companies currently offering PPO plans are unlikely to shift their resources to provide HMO plans in Houston or Dallas in the event of a small but significant price increase. A number of managed care providers have stated during interviews that this kind of shift would be difficult, expensive, and time-consuming and that they would not enter the HMO markets even if the prices were raised by a small but significant amount.

In conclusion, according to the US Horizontal Merger Guidelines, SSS should in general be considered once the market has been defined in the calculation of market shares. Although in theory the aspect of SSS is therefore not considered at the market definition stage (with the named exception), in practice, the US authorities appear to adopt a policy similar with European market, however, it seems with less stress on the SSS.

#### **6.1.5 Conclusions**

The analysis shows there is not a consistent application of the principle of SSS across Europe and the US. It is true, however, that the practice of the European Commission and German authorities and courts recognize in general that the demand-driven approach can lead to defining markets too narrowly. For this reason, on a case-by-case basis, SSS has also sometimes been taken into consideration (either additionally to the demand-side approach, or instead of it). As a rule, authorities and courts seem to apply SSS whenever needed to come to a reasonable and practical conclusion and result. In this sense, the application is rather result-oriented.

The practice and rulings in the UK and US seem to be more strictly focused on the demand-driven definition of market and takes into account SSS only in exceptional cases. However, it is evident from the analysis that all cases initially place emphasis

on the demand-driven definition. A brief summary of the application of SSS by the European Commission, Germany, the UK and the US is provided below.

In the past the European Commission defined a relevant market by regarding each class of insured risks as a separate market. The analysis of relevant cases shows that the Commission defined the relevant market on the basis of demand-side considerations. However, the Commission has moved away from this practice, especially in cases involving non-life insurance, with consideration of SSS gaining more importance. Even so, the consideration of SSS is on a case-by-case basis. In practical terms, the Commission has generally left the market definition open where it was not crucial to the decision.

Germany uses principles in line with the procedure of the Commission. The court decision of the German Higher Regional Court of Düsseldorf on auditor's third-party liability (*Versicherungsstelle* Wiesbaden) illustrates the limits of a demand-driven definition when it comes to certain specific insurance products. If the insurance product is designed to be offered to a specific class of professionals, a demand-driven definition of the market is not entirely convincing and there is need to consider SSS. As an example, a law firm could never reasonably be insured under an insurance contract designed specifically for tax advisers. In this particular case, however, it was argued that insurers might nevertheless be able to adapt their products to other clients or classes of clients.

The UK has Merger Assessment Guidelines that establish when and how SSS will be used to define markets. In the UK Merger Assessment Guidelines, SSS is used as an additional criterion to define a market when: (1) production assets can be used by firms to supply a range of different products that are not demand side substitutes, and the firms have the ability and incentive quickly to shift capacity between these different products; and (2) the same firms compete to supply these different products and the conditions of competition between the firms are the same for each product.<sup>93</sup>

The United States segments the insurance market based on the horizontal merger guidelines established by the U.S. Department of Justice and the Federal Trade Commission.<sup>94</sup> The guidelines provide that an analysis needs to start with a market definition, where the market definition solely focuses on DSS factors. In general, the SSS condition is not reflected in the market definition. However, the horizontal merger guidelines provide an exception: the authorities may use an aggregate description of markets, "if this type of supply side substitution is nearly universal among firms selling one or more of a group of products".<sup>95</sup> Thus, somewhat similar to the UK guidance, the US guidelines provide a slightly different emphasis and stricter conditions regarding SSS relevance for market definition than the approach of the Commission and Germany.

---

<sup>93</sup> Office of Fair Trading (2010) "Merger Assessment Guidelines". CC2 (Revised), a joint publication of the Competition Commission and the Office of Fair Trading. See paragraph 5.2.17, page 33.

<sup>94</sup> US Department of Justice and the Federal Trade Commission (2010) "Horizontal Merger Guidelines".

<sup>95</sup> US Department of Justice and the Federal Trade Commission (2010) "Horizontal Merger Guidelines". See section 5.1, page 16.



Across all jurisdictions, there are instances where SSS can be applied, but also many cases where it has not been. This suggests a cautious approach to the application of SSS is appropriate.

## 6.2 List of Legal Decisions Analysed

### 6.2.1 European Case Law

<b>Commission 20.12.1989</b>	Official Journal 1990 Nr. L 15/25 – <i>"Concordato Incendio"</i>	No consideration of SSS.
<b>Commission 21.11.1990</b>	COMP/M.018 – <i>"AG/AMEV"</i>	No consideration of SSS in market definition, however considerations on entry.
<b>Commission 11.11.1991</b>	COMP/M.141 – <i>"UAP/Transatlantic/Sun Life"</i>	No consideration of SSS in product market definition, but indication that supply-side aspects might be relevant in the geographic market definition.
<b>Commission 14.01.1992</b>	COMP/M.183 – <i>"Schweizer Rück/Elvia"</i>	No consideration of SSS.
<b>Commission 27.04.1992</b>	COMP/M207 – <i>"EUREKO"</i>	No consideration of SSS.
<b>Commission 04.12.1992</b>	Official Journal 1993 No. L 4/26 – <i>"Lloyd's Underwriters"</i>	No consideration of SSS.
<b>Commission 02.04.1993</b>	COMP/M.286 <i>"Zürich/MMI"</i>	No consideration of SSS.
<b>Commission 28.05.1993</b>	COMP/M.344 <i>"Codan/Hafnia"</i>	No consideration of SSS.
<b>Commission 25.06.1993</b>	COMP/M.349 – <i>"Aegon/Scottish Equitable"</i>	No consideration of SSS.
<b>Commission 27.05.1994</b>	COMP/M.433 – <i>"ERC/NRG Victory"</i>	No consideration of SSS.
<b>Commission 29.08.1994</b>	COMP/M.465 – <i>"GE/CIGI"</i>	No consideration of SSS.
<b>Commission</b>	COMP/M.498 –	No consideration of SSS.

<b>12.09.1994</b>	<i>"Commercial Union/Groupe Victoire"</i>	
<b>Commission 12.01.1995</b>	COMP/M.520 – <i>"Direct Line/Bankinter"</i>	Short statement regarding SSS: SSS was taken into account but market definition was left open in the end.
<b>Commission 14.03.1995</b>	COMP/M.518 – <i>"Winterthur/Schweizer Rück"</i>	No consideration of SSS.
<b>Commission 03.04.1995</b>	COMP/M.539 – <i>"Allianz/Elvia/Lloyd Adriatico"</i>	No consideration of SSS.
<b>Commission 27.09.1996</b>	Case No IV/M.813 – <i>"Allianz / Hermes"</i>	More detailed analyses of SSS.
<b>Commission 11.11.1996</b>	COMP/M.812 – <i>"Allianz/Vereinte"</i>	No consideration of SSS.
<b>Commission 15.10.1997</b>	COMP/M.985 – <i>"Credit Suisse/Winterthur"</i>	No consideration of SSS.
<b>Commission 14.04.1998</b>	Case No IV/M.1144 – <i>"Winterthur/AR AG"</i>	No consideration of SSS.
<b>Commission 06.05.1998</b>	Case No IV/M.1142 – <i>"Commercial Union/General Accident"</i>	No consideration of SSS in market definition, however considerations on entry.
<b>Commission 08.05.1998</b>	COMP/M.1082 – <i>"Allianz/AGF"</i>	Detailed analysis of SSS.
<b>Commission 23.10.1998</b>	COMP/M.1307 – <i>"Marsh &amp; McLennan/Segdwick"</i>	Detailed analysis of SSS.
<b>Commission 12.04.1999</b>	Official Journal 1999 No. L 125/12 – <i>"P &amp; I Clubs II"</i>	Detailed analysis of SSS.



<b>Commission 17.08.1999</b>	OJ 1999 No. C 357, 09/12/1999 P. 0006 – 0006, Celex No. 31999J0021 – <i>"Skandia/Store brand/Pohjola"</i>	Short statement regarding SSS: SSS was taken into account but market definition was left open in the end.
<b>Commission 11.12.2001</b>	COMP/M.2602 – <i>"Gerling/NCM"</i>	More detailed analyses of SSS.
<b>Commission 28.03.2003</b>	COMP/M.3035 – <i>"Berkshire Hathaway/Convergence/Gaum/JV"</i>	Detailed analysis of SSS.
<b>Commission 05.04.2006</b>	COMP/M.4055 – <i>"Talanx/Gerling"</i>	Detailed analysis of SSS.
<b>Commission 03.12.2007</b>	COMP/M.4701 – <i>"Generali/PPF Insurance Business"</i>	Short statement regarding SSS: SSS was acknowledged but market definition was left open in the end
<b>German Higher Regional Court Düsseldorf 27.09.2007 17.09.2008</b>	OLG Düsseldorf, IV- Kart 11/07 – <i>"Auditor's Third-Party Liability"</i>	Detailed analysis of SSS.
<b>Commission 17.07.2008</b>	COMP/M.5075 – Vienna Insurance Group/EBV	Short statement regarding SSS: SSS was acknowledged but market definition was left open in the end
<b>Bulgarian Commission for protection of competition 2008</b>	CPC Decision No. 567/2008 – <i>"Association of Bulgarian Insurance Companies"</i>	No consideration of SSS.
<b>OFT UK 25.03.2010</b>	ME/4424/10 – <i>"HSBC/MMC"</i>	More detailed analysis of SSS.
<b>Commission 23.07.2012</b>	COMP/M.6649 – <i>"Allianz/Insurance Portfolio and Brokerage"</i>	Short statement regarding SSS: SSS was acknowledged but market definition was left open in the end.

	<i>Services of Gan Eurocourtage"</i>	
<b>Commission 09.11.2012</b>	COMP/M.6694 – <i>"Helvetia/Certain Parts of Gan Eurocourtage's Transport and Marine Insurance Portfolio"</i>	Short statement regarding SSS: SSS was acknowledged but market definition was left open in the end.
<b>Commission 19.11.2012</b>	COMP/M.6743 – <i>"Talanx International/Meiji Yasuda Life Insurance Company/HDI Poland"</i>	No consideration of SSS.
<b>Commission 29.04.2013</b>	COMP/M.6848 – <i>"Aegon/Santander/Santander Vida/Santander Generales"</i>	Short statement regarding SSS: SSS was acknowledged but market definition was left open in the end.

#### 6.2.2 US Case Law

<b>United States Court of Appeals for the seventh circuit</b>	784 F.2d 1325; 1986 U.S. App. LEXIS 22737; 1986-1 Trade Cas. (CCH)	Consideration of SSS within market entry.
<b>March 4, 1986</b>		
<b>United States Court of Appeals for the seventh circuit</b>	65 F.3d 1406; 1995 U.S. App. LEXIS 26339; 1995-2 Trade Cas. (CCH) P71,120	Consideration of SSS.
<b>September 18, 1995 (decided)</b>		
<b>United States</b>	89 F.3d 233; 1996 U.S.	No consideration of SSS.

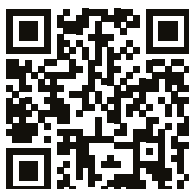
<b>Court of Appeals for the fifth circuit</b> <b>July 25, 1996</b>	App. LEXIS 18446; 1996-2 Trade Cas. (CCH) P71,500	
<b>United States District Court for the Northern District of Texas (Dallas division)</b> <b>August 3, 1999</b>	Civil Action No.: 3-99CV1398-H	Consideration of SSS within market entry.
<b>United States Court of Appeals for the eighth circuit</b> <b>December 29, 2009 (filed)</b>	591 F.3d 591; 2009 U.S. App. LEXIS 28498; 2009-2 Trade Cas. (CCH) P76,849	No consideration of SSS.
<b>United States District Court for the Southern district of New York</b> <b>May 11, 2010</b>	2010 U.S. Dist. LEXIS 60196; 2010-1 Trade Cas. (CCH) P77,053	No consideration of SSS.

---



other  
publications  
and subscriptions

<http://ec.europa.eu/competition/publications>



Publications Office

KD-02-16-917-EN-N  
doi 10.2763/036576