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Uninsured Industrial Risks

Ongoing Research Project
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Uninsured Industrial Risks. The Limits of Current Insurance Solutions and their Causes

Ongoing Research Project

Tileman Fischer*

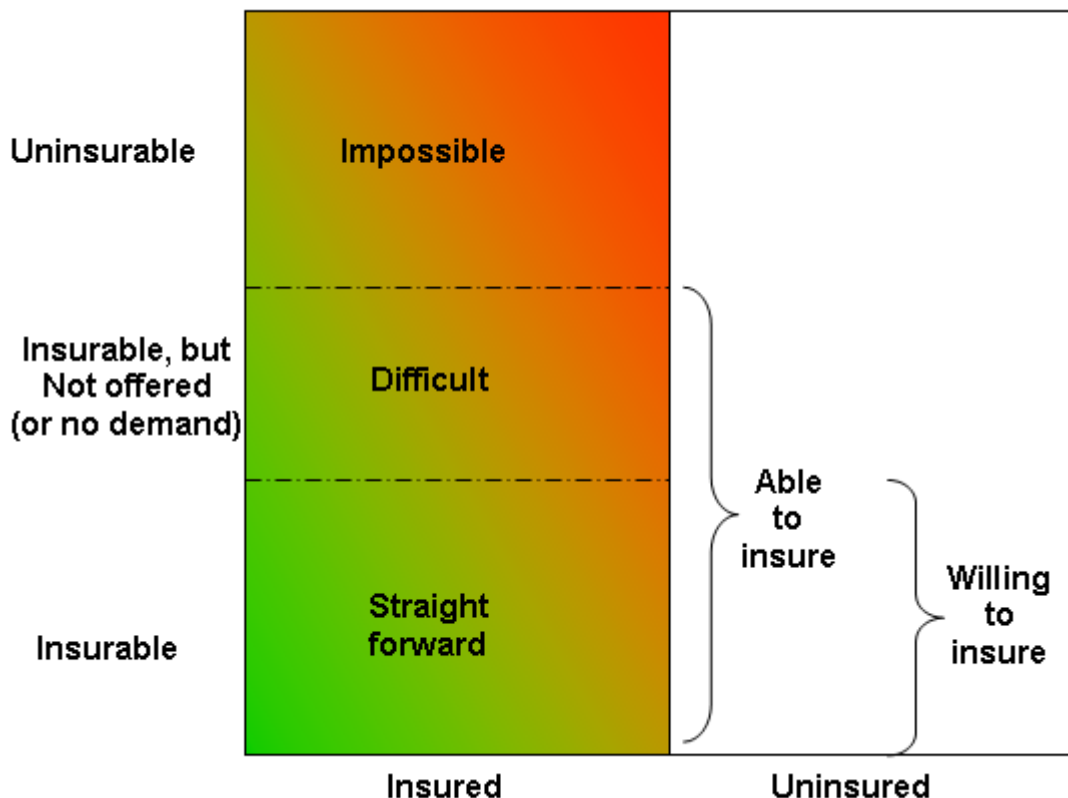
1. Introduction

1.1. The starting point and principles

It is a plain truism that a great number of industrial risks are insured, but not all of them are. This is because the whole industrial world cannot be insured at all times¹ and the individual client may decide not to transfer particular risks. It follows that not all the uninsured industrial risks are uninsurable. However, certain criteria, which traditionally help to distinguish between what is uninsurable and what is not, may not be precise enough. This is because *not* all measures to analyse and understand a seemingly “uninsurable” risk might have been exhausted to make that particular risk more predictable, measurable and manageable and consequently insurable. This is demonstrated by the next paragraph. But first a graph for clarification of terms:

* Former CEO of Allianz Re, Singapore.

¹ Fitzsimmons (2003), Berliner (1982).



by courtesy of Alan Punter

1.2. Examples of doubtful or fuzzy arguments for the uninsurability

First, uninsurability because of **lack of historical data**.

There is ample evidence that many industrial risks are insured *without sufficient risk information* and with limited or no loss experience. Consider the first satellite launch or the first offshore or biotech risks. Admittedly, the key for insurability is always the extent to which experience and know-how have been accumulated by the underwriter. But even if concrete experience with a particular new risk is limited or even null, analogies may be applied or proxies of comparable risks (data) used. The additional relevant data would have to be collected over the course of time and future cover adjusted accordingly. Thus, the risk assessment is actually done in both a prospective and retrospective manner.

This being the case, a Special Purpose Vehicle (SPV) may be created for the new risks in question, which would be fronted by an insurer acting as risk carrier and claims manager. In this SPV, similar risks of several clients may be pooled, funded or spread over a few years.

Above all, of course, price and deductible are a great challenge. Both should, at a later stage, be higher than what would have been calculated retroactively by actuaries. The price would then always have to be adjusted in the future as empirical data become available.

Second, a similar logic would apply in the context of uninsurability because of **anti-selection**, where a differential pricing, a meaningful retention, co-insurance or sub-limits as well as risk mitigation initiatives may be the way to insure the risk in question. Or in the case of perceived uninsurability because of a **lack of spread**, where co-insurers may indirectly increase the spread or the individual risk may be put in a basket of non correlating risks. Adequate price considerations and even risk swapping should or could play a role as well.

Here, the development of satellite insurance may serve as an example of how space risks became insurable. This was possible, despite the initial lack of data and the limited number of risks that could serve as a basis for applying the relevant statistical methods for insuring these risks (see Annex 1).

Third, in contrast, the traditional insurability of **gulf wind-storm risks** may be questioned following the increase in number of events and their even greater severity (as shown by “Katrina”). Whilst severity and capacity issues may be addressed by introducing adequate limits, frequency becomes more difficult to model. This issue in turn may re-start the argument of uninsurability due to the lack of experience and relevant data. However, this logic “runs the risk” of being used as an excuse or pretext only, just as discussed above (viz. lack of sufficient empirical data).

All of these examples may illustrate already at this point that the industrial insurer – like the other participants in the value chain – ought to meet the so called “challenge of relevance”. In this context, I would suggest it means, in a “can do” approach, to always identify, analyse and understand the individual client’s risk as rationally as possible to find a possible solution. The insurance industry has proved able to do that more than once. After all, the role of the insurance industry is to provide insurance cover and to spread risks whilst the question of what makes a risk insurable or uninsurable, is not only determined by “formal insurability criteria”.²

2. The industrial risks presently (generally) not insured

2.1. The two categories of uninsured risks

The uninsured industrial risks may be categorised as follows:

- *Non-traditional risks*, i.e. *intangible* and/or emerging risks such as reputational risks and other new risks such as electro-magnetic fields (EMF), etc.
- *More traditional risks* and/or *tangible* risks such as business interruption (BI) (without physical damage), terrorism, etc.

2.2. Risks of main concern to the insured

There is no standardised answer to the question of which uninsured risks concern industrial clients the most. This is because the relevance may vary between industry group or client or market, with the consequence that, for example, in Asia liability risks are not as much the focus of management as, for that matter, in the U.S.³

² Dahlström *et al.* (2003).

³ Unless the client exports to the U.S.

The key risk area these days comprises risks to the clients' earnings (balance sheet, profit and loss (P&L), share price), other than risks to their assets.⁴

Apart from this main observation, the most relevant uninsured industrial risks in general are (in ranking order):

- Entrepreneurial risks, which typically are borne by the owner/shareholder of the industrial clients. Of foremost importance here are the reputational risks (in particular for financial institutions),⁵ i.e. loss of reputation or brand damage and loss of market (share), which generally result in P&L and share price problems;
- Computer based risks, such as hacking, viruses;
- Business continuity risks, such as BI without physical damage and contingent BI;
- Special product liability risks, like tampering and recall, where special markets may exist, but cost/benefit considerations may be unattractive for the client;
- Environmental liability, for example with respect to the more stringent provisions of the new EU directive where liability will be extended to bio-diversity;⁶
- Terrorism (including political risks);⁸
- Natural Catastrophes without limits (e.g. for infrastructure companies and gulf wind storm risks);⁸
- EMF (e.g. mobile phones, power lines);
- Performance risks, professional indemnity (e.g. for auditors);⁸
- Other emerging risks like nanotechnology, which is only covered by virtue of not being excluded.

2.3. Top 10 risks for U.K. clients

As a sort of reality check, the above general summary of the most relevant uninsured industrial risks may be compared with the result of a survey on dominant risk issues conducted among U.K. industrial companies.⁷ This survey shows that within the top 10 risks facing U.K. corporations, insurers provide in just over 50 per cent of the cases any meaningful sort of cover.

Top 10 risks facing U.K. companies, in 2005, according to the survey:

- Loss of reputation;
- Business interruption;
- Failure to change;
- Product liability / tampering;
- Impact of legislation / regulation;
- Physical damage;
- Employee accidents;
- Terrorism;
- Corporate governance;
- Professional indemnity.

⁴ Sigma (2005).

⁵ Schwamm (2005).

⁶ Generally these only have limited cover, if any.

⁷ AON Survey (2005).

3. What are the reasons for these industrial risks presently not being insured?

There are two key reasons:

- *First*, because of a conscious decision (or rather a lack of demand) by the clients
- *Second*, because of a lack of insurance solutions.

3.1. Lack of demand

Why would clients decide against insuring key risks to their business? There are various reasons:

- because of risk retention by the client, for example due to a strong balance sheet the risk is borne by the client (e.g. Hoffmann La Roche and BP), when not insuring product liability;
- because of price or cost/benefit imbalance from the client's viewpoint, e.g. in the case of product recall (e.g. automobile industry, Daimler Chrysler), tampering, terrorism or patent infringement;
- because of lack of awareness, i.e. the client may not be aware of the risk or underestimates it, for example in relation to terrorism, directors and officers liability (D&O) mainly referring to the wide scope of liability, supplier's risk in relation to the (end) producer (for example, just-in-time delivery issues);
- because of asymmetrical information, i.e. the client being well aware of his risk profile, with the consequence that the "good" risks are retained, the bad are transferred;
- because of availability of other, non-insurance solutions, i.e. solutions offered by for example banks for foreign exchange/interest rate fluctuations (hedging)
- because of risks that are core to the client's business, for example oil price risk for the oil industry being the key value generator, this risk is therefore not being transferred (the opportunities are greater than the risks);
- special case: ransom demand following a kidnapping. This risk is normally not regarded as uninsurable. The client may decide to retain or transfer it. But in case of a transfer a silence clause would conceal the existence of the cover.

3.2. Lack of insurance solution

The other reason why these industrial risks are presently (generally) not insured is because of a shortfall of adequate solutions, options, alternatives, etc. In short, despite the fact that the insurance industry is used to, and very skilled in, dealing with uncertainties and events taking place in the future, the industry has not (yet) developed mechanisms or knowledge to manage or absorb some of these new or emerging risks as well as some of the more tangible or traditional risks. The following table illustrates this, by showing the main areas where no or very few insurable solutions are available:

- Entrepreneurial risks, brand damage, loss of reputation (accidental and gradual);
- Share prices collapse;
- Research and development (R&D) failures / R&D deficits;
- Performance guarantees/warranties;
- Business Interruption without physical damage (contingent BI);

- Terrorism, political risks, war;
- Computer crime;
- Product liability extension for cost of removing/repairing the defective part/source, without a third party being affected;
- Multi-line-, multi-year covers;
- Natural catastrophes (shortage of capacity);
- EMF, transmission and distribution;
- Clean Development Mechanism (CDM) projects;
- Unavailability of coverage because of legal reasons (flood insurance in the Netherlands at the time) or moral issues (public policy), for example: liability risks beyond gross negligence (Ford Pinto case), product liability risks for land mines, punitive damages, speculative business risks (not being compatible with the concept of insurance).

4. The common characteristics

Irrespective of whether these uninsured industrial risks are not covered because of *lack of demand/request* made or *lack of solution* offered, they have common characteristics. Identifying these characteristics helps to get a better grasp for the reasons why there are “road blocks” and obstacles to covering these risks.

There are both internal factors, i.e. those related to the nature of the risks, and external factors.

4.1. The internal factors

The predominant one is the difficulty to rationally understand and evaluate the individual risk. In short, the common denominator is *high uncertainty* with the resulting challenge to quantify the risks. The challenge here is to assess the frequency and severity, define the trigger and measure loss or damage.⁸ The other notable challenge is that there is no reliable mechanism to price the risk adequately. This applies for example to the risks in the areas of nanotechnology and EMF, where the above uncertainties are particularly manifold. These risks are often more defined by the impact they have, than by the cause of the loss.

4.2. The external factors

The key external factors, which these uninsured risks have in common, are:

- there is no clear industry position of the insurance industry (e.g. around the so-called entrepreneurial risks, such as prototype and R&D risks); and
- there may be no clear demand and/or awareness by the clients (e.g. initially in the case of D&O and now, for that matter, with suppliers' risks and terrorism).

To make things worse, capacity and reinsurance protection may not be sufficiently available, for example. in the case of natural catastrophe (Nat Cat) risks and terrorism.

⁸ Bartscherer (2006).

In general, however, there is no adequate or satisfying dialogue between clients and insurers taking place on these risks to overcome the present uncertainties with the aim of finding workable solutions in due time.

5. The different perceptions

As regards the obstacles or “road blocks” that prevent these uninsured risks from being covered, the perceptions of the three parties concerned differ, i.e. the perception of the client differs from that of the insurer and that of the broker, and so on.

5.1. The client’s perception

The client may not want to cover his risk due to overconfidence in his own risk management abilities and activities, i.e. his own technical solutions, or he may not even be aware of an individual risk. Furthermore, the client tends to claim that the insurer offers traditional products only, but no tailor-made solutions to his individual risk profile. This could explain the potential preference of industrial clients for banks in respect of credit risks or fidelity. Or the client may argue that the insurer lacks the necessary degree of understanding of the client’s business, which may be the case, for example, with biotechnology or (some) product liability risks. The perception of a cost/benefit imbalance may be the main reason, as well as ignoring the simple logic that the greater the degree of uncertainty (as with emerging risks), the higher the potential premium should be.

Overall, clients may regard insurers as not innovative and not entrepreneurial enough in dealing with new risks, and as not recognising trends and issues early enough to offer workable solutions. And they believe that insurers think too much about “post loss” or “after the event” consequences, instead of assisting clients with securing the continuity and success of their operation.

5.2. The insurer’s perception

Insurers may be afraid of the phenomenon of “asymmetric information”, effectively leading to a “non-alignment” of interests. That is to say, only bad risks are being transferred and insurers may perceive anti-selection as a fact of life (see above). Furthermore, there is a widespread view amongst insurers that reputational risks, loss of market, lack of innovation, etc. should stay with the clients, and that the *clients’* shareholders should be exposed to these risks (*not the insurers’*). The logic behind this is that industrial companies do and must make mistakes, but at *their* own risk. Insurers cannot provide cover to guarantee the clients’ profits (for example in the Reliance case or potentially in the British Aerospace case). Additionally, insurers may argue that clients often see risk transfer too much as a cost factor, and not as an added value or as substitution of capital.

Finally, there could be a basic worry on the side of the insurers: would the analysts or rating agencies look favourably at innovative initiatives to cover (some of) these presently uninsured risks? Would they give credit to the growth (and profit) potential or would they focus on the possible (additional) stress on the balance sheet and give a “penalty”?

5.3. The broker's perception

Brokers tend to be of the opinion that insurers lack the “entrepreneurial spirit”, the business acumen when taking risks and that they are inclined to put too much emphasis on replacement and repair. Insurers are perceived by brokers as more “thinking after the event”, but not focused on business continuity on the clients' side, and overall regard insurers as not innovative enough, for example as regards emerging risks. In this respect, brokers and clients think very much alike, as they also do when claiming that insurers tend “to look too much in the rear mirror”. After all brokers are not risk-takers. Consequently they have the habit—or rather a tendency—to present each and every risk in the best possible light. And conversely they are “not amused” if the risk in question cannot be placed in the market.

6. Reflection on the different perspectives

Although the perceptions of the three key parties participating in the value chain differ with respect to the potential impediments that prevent these uninsured risks from being covered, and although this does not come as a surprise, the relevant question remains: how are the differences between, mainly, insurers and clients to be reconciled? How can the gap be bridged? Before turning to concrete suggestions for a strategy to overcome the “road blocks”, a few general observations and thoughts are necessary.

6.1. A brief evaluation

Insurers – when risk-taking – are generally not thinking in investment terms. They do not make a risk-related “discounted cash flow calculation”. That is to say, they are normally not used to approaching new products and to responding to emerging risks with investment considerations in mind, where the learning curve or data collection phase would serve as the investment phase (to build up a portfolio in an insurable manner). Furthermore, they prefer not to insure “prototypes”. They feel uncomfortable when they do not have enough information and knowledge about, and familiarity with, a particular risk. They consider it at least not prudent - or rather unprofessional - to accept risks, when there is no quantitative analysis available and no pricing mechanism at hand.⁹ Thus, in case of a new or emerging risk, an insurer rarely wants to be the first to move.

However, should the scope of the industrial insurer only be limited to risks which are measurable and insurable according to traditional insurability criteria? What about their socio-economic responsibility for managing (business) risks and thus making them insurable?¹⁰ Is the industrial insurers' future and their right to exist not linked to their willingness and ability to meet the changed requirements of the public as regards the technological and economical development? Must insurers not be more open to these issues, more innovative in this respect?

Clients focus largely on costs, when thinking of insurance, not on the value of the reduced dependence on internal capital. They may suppress the logic that a risk is about uncertainties, which may have a destructive impact, no matter whether they

⁹ Bernstein (1996).

¹⁰ Dahlström *et al.* (2003).

bear the risk themselves or transfer it to the insurer. Without a specific knowledge and proper evaluation and modelling techniques, insuring these risks may be dangerous and a gamble on the insurer's side, and more a question of luck than insurance. Clients have to review their habit of thinking in terms of cost only and apply a more realistic approach.

Insurers themselves may have "conditioned" clients in this way. On the other hand, clients may underestimate their (contractual) obligation to prevent or mitigate losses.

6.2. The different attitudes

Insurers are generally reluctant to invest in new developments, by first paying potential claims, before achieving an adequate return (e.g. in case of a new product, where demand should be big in future). This could be much less "risky" for the insurer, as the experience gained with the new product or solution in the course of time reduces the uncertainty, thus the volatility and potentially the capital strain.¹¹

Clients could have the tendency to (only) insure when and where (and for what) risk cover is cheaply available, for example as in the case of a new patent infringement cover.

Clients may transfer only "bad" or "difficult" risks, or buy only unbundled services, where they think insurers can contribute (BP case in the early 90s).

Clients often underestimate the risks that they principally would want to insure or include, but only for free (e.g. terrorism) or for an inadequate price (e.g. D&O, product recall).

The attitude of the insurers and the clients should change.

7. Possible strategies to overcome the "road blocks"

7.1. General measures and "mind-set" issues

Insurers ought to better demonstrate their competence not only in risk transfer techniques but also in understanding their clients' business, which is a precondition for providing individual insurance solutions. Furthermore, insurers should offer partial solutions rather than no solution at all, for example by building in deductibles, adequate caps and perhaps selective exclusions. *Clients*, on the other hand, should strive to better identify, assess and prioritise (and mitigate) their own risks and regard risk transfer as added value. The design of tailor-made insurance solutions is a two-way track and not only the task of the insurer. Additionally, *clients* have to accept that a secure risk transfer not only provides safety, but also capital relief, i.e. frees otherwise locked-up capital for entrepreneurial activities and therefore has its price. *Both parties*, however, may at times approach insurance, as if it had been invented today: how would they interact (differently)? Would they for example want some of the principles, which insurance is founded on, to be challenged or modified, such as

¹¹ Liedtke (2003).

“indemnity” or “insurable interest” (As clients principally have their *economic* interest in mind)?¹²

Against this backdrop, *both parties* have to look for safety as the desired result, i.e. seek to prevent damage or loss, cooperate to secure continuity and promote the success of the clients’ operation, i.e. working on pre-loss objectives. *Insurers* have to meet the “market” needs, i.e. those of the businesses and society, and apply their capabilities to respond to the demands of a globalized world of risks. They have to anticipate longer-term trends and resulting market demands in time to react in a value-adding manner and not create a “culture of exclusion” (only based on the traditional principles of insurance). *Clients*, in turn, must accept that there are limits.

7. 2. The way ahead

Whilst insurers will continue to manage relationships intensively with clients and strengthen the dialogue with them on traditional and non-traditional risks and insurance solutions, a robust platform for information sharing should be created. With respect to most of the uninsured and emerging risks this means foremost:

First, that the two parties have to work and research together to collect the relevant information for reducing the uncertainties (see above) and turn these risks of high uncertainty into measurable and manageable risks.

Second, that the two parties will thus create a new risk transfer market for these hitherto uninsured risks.

The dialogue between clients and insurers should lead to a real risk partnership. As regards the more complex emerging risks like nanotechnology or pandemics, as well as pollution and climate change risks, professional and academic experts should get involved and – as the need arises - governments too.

To manage new and emerging risks is not only the task of the private sector alone. Certainly, an insurance industry-wide action or consultative process would have to take place within the framework of the competition or anti-trust laws.

In this context, a somewhat provocative point: what if the insurance industry does not develop answers and does not provide solutions to these challenges? Would someone else do it? Is there a real threat of substitution? Could this be acceptable for the industry? Would this be compatible with their role? Certainly not.

Finally, such an “innovative and partnership approach” could look all the more realistic, because, if innovative insurance solutions based on a robust strategy and implemented on a plausible and growth generating business plan were to move more into the focus of industrial insurers, it is to be anticipated that the investor community and analysts would support and honour this.

¹² Insurable interest vs. economic interest (the latter being of greater importance to the industrial clients), viz. Annex 2, Sumitomo/Dell case.

7.3. Particular measures

Defining these measures should be the objective of a separate study. However, as a start, insurers should review criteria and “killer arguments” for the “uninsurability” of industrial risks (such as lack of historical data, anti-selection, etc. As said, they could apply analogies and additional risk assessment tools (for example brand value calculation measures and improved modelling techniques for natural hazards, such as the new flood risk tools for the German market) and create and test scenarios to better quantify risks and thus make them manageable. All must include stringent accumulation control techniques and, again, require a close dialogue with the industrial clients and above all, the willingness to accept these (new) risks that the insured cannot manage themselves.

Otherwise, pool solutions may be introduced, such as:

- aviation (Luftpool, Germany);
- pharmaceutical (Pharmapool, Germany);
- terrorism (SASRIA, South Africa; Pool Re, England; Earthquake Indonesia);
- natural catastrophes (Consortio, Spain; Nat Cat, France);
- nuclear pool (Kernkraftwerkspool, Germany).

This option may be a solution for other risks (to enlarge the risk community); additionally more Cat Bonds for securitizing for example natural hazards could be issued, where the Nat Cat risks are transferred to the capital markets by means of issuing financial securities.

Furthermore, as the case may be, cross-class packaged covers or even multi-year contracts with adequate exclusions, time excesses, policy limits, etc. may be provided again. And finite risk contracts, including real risk transfer or – in general – contracts, which satisfy the clients’ protection needs and likewise his accounting and cash-flow requirements may be utilised more widely. Through these measures, even extreme risks such as nuclear power stations could be (partially) insured by the private sector. However, as said, the actual designing of general solutions and/or the defining of a framework for dealing with these uninsured risks in future is a subject for further research.

8. Final Considerations

8.1. Regulator’s role in this process

As this paper is about uninsured risks and the question of how to modify and improve our response to these and emerging risk scenarios, the further question arises of what is or may be the regulator’s contribution.

In short the answer is: basically none. The regulator should come in only if and when the individual issue becomes a matter of public concern, for example if failure to provide a particular insurance solution is going to negatively impact the health of the financial system or the public at large in another way (e.g. pandemics). In contrast, industrial insurance is all about individual coverage, where the regulator should above all not call for general insurance actions / solutions.

In the future, however, the required accounting standards could encourage (even force) clients to disclose their risks and be more transparent about their prospective risk management measurements with regard to their business risks. This may increase the client's awareness of this risk, further the dialogue with his insurer and lead to the development of new insurance products and solutions for risks presently being uninsured. A reality check proves that stock exchange-listed corporations already must have in place a testified (by auditors) risk management system as regards their operational risks and capital adequacy (see KONTRAG, SOX, Basel II and other regulations). Finally, regulators may define / clarify the treatment of risk transfer affected by securitization.

8.2. Other players and stakeholders

Industrial clients may look for other partners to overcome the "road blocks".

Apart from trying to manage their risks as much as possible themselves, clients may look for advice from brokers and work with (risk engineering) consultants (e.g. Oliver Wyman), to minimise their loss potential and manage their vulnerability. In addition, they may turn to:

- management consultants (e.g. McKinsey), to reduce business strategy risks;
- audit companies and / or finance consultants to understand and manage financial risks and their balance sheets;
- investment banks for issues relating to their overall financial performance and to improve their capital efficiency, mainly through getting access to the capital markets to explore new and alternative risk financing solutions (e.g. securitization).

If investment banks, however, get a real grasp of the risks presently being uninsured and increasingly facilitate the usage of the capital markets for risk finance solutions, then this development could affect and reduce the role of the industrial insurers (risks may become a tradable asset). Furthermore, just passing on the risks to the capital markets could gradually result in a loss of risk competence on the industrial insurers' side. This would affect their core competence. Thus, in short, the increased transfer of insurance risks to capital markets to improve capital efficiency in the short-term and / or the profitability of the insurer, may have a "downside" for the insurance industry and may come at a price (i.e. increases risk of substitution).

8.3. Relevance to clients and the public

What would be the relevance for industrial clients, the economy and the society, if these risks were not insured?

The relevance on the clients' side would be:

- potentially, an increased volatility of corporate results;
- a requirement for greater corporate reserves / capital;
- a reduced level of investment in research & development;
- a lack of funds for "rebuilding" after loss or damage.

The disadvantages for the economy and society as a whole could be:

- a lack of growth;
- a lack of productivity and competitiveness;
- reduced revenues and income (GDP).

8.4. Relevance to the insurance industry

Insurers should face these issues and develop strong relationships with their industrial clients, understand their requirements at all times and as a consequence utilise their knowledge to provide adequate solutions through traditional risk transfer or by means of non-traditional risk financing concepts. They should correspond and live up to their role as enabler. They should mitigate the financial consequences following a loss or damage and facilitate the continuation of the client's operation. They should be mindful of their function to insure and to spread risks, but also to promote and to contribute to (technological) innovation by applying risk management mechanisms to new and emerging risks. They could potentially increase their efforts to influence or even "force" (governmental or private) actions to reduce obvious risks (for example weather or earthquake risk accumulation: Gulf of Mexico, North Sea, Tokyo Bay; or influence building codes, etc.) and thus assume a leading role in managing risks affecting the economy and society as a whole. This is and will be regarded by the public as part of their socio-economic responsibility anyway. This logic is even more valid in present times, when the risk landscape is changing and the world is increasingly characterised by "interconnectivity" (Internet) and "systemic" complexity (pandemics).

Annex 1 – Satellite Insurance

In 1965 COMSAT was the first private spacecraft company ever to ask for satellite insurance for its first satellite, the Early Bird. The coverage then available included only third-party liability and material damage to the satellite *prior* to the “lift off”, i. e. during the pre-launch phase only. This certainly was a new risk for the insurance industry at the time. Insurance protection was offered, despite a total lack of experience for assessing such a risk adequately.

In the course of time the insurance industry undertook to insure risks, which were also linked to the other phases of the “life” of a satellite, e.g. the launch phase. In 1968 COMSAT for the first time ever obtained insurance protection for losses occurring during the launch and positioning phases, where the cover included seven Intelsat Three launches in two launching series. The logic behind the structure of the cover was that the insured had to accept to retain the loss from one launch failure per series. And, as it happened, only one launch failure occurred per series, thus saving the insurance industry from paying for any loss at all.

The key terms and conditions for the first launchings were, in short:

- cover against failure, total loss only;
- rate of 15 per cent, deductible two initial failures;
- co-insurance by the insured of 25 per cent (minimum).

Against this backdrop and with additional experience gained, it was to be expected that the industry was prepared, as early as 1975, to offer insurance cover for losses occurring in the operating phase through an in-orbit insurance. This insurance was designed as an all risks cover, but also included a malfunction of the satellite, resulting in a very broad cover. This very broad cover was of utmost importance to the clients, as there is very little to be done to repair an ill-fated satellite whilst in orbit.

Over time, clients showed an interest in obtaining insurance protection for even more or rather additional risks, such as transponder insurance, warranty insurance (purchase vs. manufacturer), loss of revenue insurance and – last but not least – third party liability insurance (during the three phases: pre-launch, launch, in orbit.)

Overall, there were quite a number of challenges the insurance industry was confronted with right from the beginning, when starting to offer insurance solutions for satellites. These challenges were:

1. the small number of risks (20-40 launches per annum);
2. the wide range of insured values;
3. the different technological specifications;
4. the high risk of a total loss.

This meant that the insurance industry was not only lacking the empirical knowledge and relevant data to insure the satellite risks, but that the “law of large numbers” was also not working. The number of similar risks was just too small in the traditional sense to properly calculate adequate premium rates. In this context it may be of interest that Munich Re at a very early stage of space risks insurance already

suggested¹³ the average premium for satellite launches should be at least 15 per cent.

Regrettably, the premiums paid by the insured were by far (generally) not as high as that. No claims bonuses and other reductions further impacted negatively on the overall insurance results, which only turned somewhat to the better in the mid-90s. However, this development has proved two things:

- satellites can be insured;
- but only if the insurance basics are followed, such as the calculation of a risk related premium that finally should allow the building up of reserves, which take the relevant uncertainties and fluctuations into account.

This example testifies to the fact that the insurance industry was willing and able at the time to meet the “challenge of relevance”, i.e. the special needs of the clients despite all the prevailing uncertainties and lack of data and experience.

¹³ Munich Re(2006).

Annex 2 – The Sumitomo/Dell Case

The basic story behind the Sumitomo/Dell case is that Dell wanted to buy the same Property Damage (PD)/ Business Interruption (BI) cover for the Sumitomo Memory Chip factory in Niihama, Japan, as the Sumitomo parent company. The logic is that Dell's (economic) interest in the uninterrupted operation of the Sumitomo factory is very similar to the (insurable) interest of Sumitomo. This is because Dell buys the Sumitomo Chips for its computers on the just-in-time concept. Dell's inventory turns over in only five days on average meaning that a continued supply of memory chips by Sumitomo (at the agreed price) is crucial for Dell's production of computers. In short:

Dell does not have an *insurable* interest in the traditional sense to take up PD/BI insurance for the Sumitomo factory, but certainly has a vital *economic* interest to do so. This implies the question of whether this "restriction" for Dell corresponds with today's economic realities. Probably not.

Thus, one of the traditional principles, on which insurance is founded, i.e. that of an insurable interest as the precondition to buy an insurance cover, may have to be questioned in cases like this. The definition of what constitutes an insurable interest may vary, but it is commonly understood that a party has an insurable interest in, say, an asset, about which that party has the legal power of disposal or rather disposition. In this sense the legal ownership of an asset would constitute an insurable interest in that asset. In this case, Dell did not have such an interest.

However, in the Sumitomo/Dell case, Dell's economic interest should probably open up the possibility for Dell to buy the same insurance cover as Sumitomo. Or in other words: Why should Dell be left here with the (more complicated) solution of buying some kind of Business Interruption Suppliers insurance?

A similar logic could apply in respect of the other founding principle of insurance, indemnity. The Oriental Land/Concentric Re case may serve as an example. Oriental Land, being the owner of Tokyo Disneyland, placed in 1999 two catastrophe bonds to cover its earthquake risk, to be covered even if there is no actual physical damage to the assets in its Disneyland. Thus, the cover actually was more of a BI protection, which was difficult to get in the market. But, as shown above, the client's economic interest, was also very evident.

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