Innovative Design of Insurance Risk Transfer – a Corporate Perspective

Monika Wieczorek-Kosmala

Abstract
The paper discusses innovative solutions within insurance risk transfer available for companies. Innovative design of risk transfer allows companies to combine risk transfer and risk retention with a cost/benefit trade-off. The innovatively designed structures are identified within both the traditional insurance contracts and the solutions considered as so called ART (alternative risk transfer) mechanisms. As the problem raised in the paper is a novel one, the main features of innovatively designed risk transfer solutions are presented and compared to the features of traditional insurance risk transfer. In particular, the multi-line/multi-year and multi-trigger programs, finite risk solutions and captives are discussed.

Key words
Risk transfer, alternative risk transfer, insurance.

1. Introduction
Insurance risk transfer is based on shifting risk from a cedant to an insurer though insurance market. In traditional risk transfer, there is a little or no risk retention included as most of the potential loss burden is passed to the insurer [2, p. 65]. In recent years the insurance market evolved and companies acquired an access to new innovative solutions based on insurance risk transfer. For the purposes of this paper, innovative risk transfer design is defined as solutions that allow companies to integrate risk transfer and risk retention in desired proportions. Within a traditional concept, risk retention and risk transfer are perceived as separate risk management techniques. In particular, risk retention is applied in the case of limited possibilities of risk transfer. The innovative approach assumes that the company actively and purposefully combines risk transfer and risk retention in order to achieve a cost/benefit trade-off.

The paper aims at presenting key ideas of innovative risk transfer design. The innovative design of risk transfer may appear in several forms. A traditional insurance contract may be subject to innovations if it is customised to a company’s needs. The customisation leads to a partial insurance contract design in which company deliberately applies a higher risk retention than usually incurred. However, far more examples of innovative risk transfer design exist within so called ART (alternative risk transfer) solutions.

Numerous definitions of ART solutions exist. However, ART solutions possess several features that under-pine specify the innovative design. First of all, innovative risk transfer is a customised one and aims to meet end-user specific needs. It also offers a multi-dimensional coverage as the innovative risk transfer solutions are multi-year and often multi-risk ones.

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Finally, innovative risk transfer design offers coverage for risk considered as uninsurable (e.g. interest rate or commodity prices risk) [8, p. 23].

As the problem raised in the paper is a novel one, the paper aims mainly at describing the core types of ART solutions with regard to their application. Consequently, the models of multi-risk products, finite risk solutions and captives are presented. Special attention is paid to the comparison of above mentioned innovations to traditional insurance risk transfer.

The paper is based mostly on a conceptual analysis of the current state of affairs and the currently available literature and reports concerning the problem of ART. The structure of the paper is as follows. Section 2 discusses innovations that can be established within traditional partial insurance contract. Sections 3, 4 and 5 present and discuss core features of risk transfer innovations in the form of multi-risk programs, finite risk solutions and captives. Section 6 concludes the paper.

2. Innovations within a partial insurance contract

A standard insurance contract is designed to transfer the risk from the company as insured to the insurer. Usually, the contractual agreement covers certain insurer’s liability restrictions as the insurer intends to reduce the moral hazard. However, the company may wish to apply restrictions higher than usual in standard insurance contracts. Such feature represents an innovative way of designing an insurance contract. As a result, so called partial insurance contract is created. In the partial insurance contract a company deliberately combines risk transfer with risk retention. In other words, a standard insurance contract is tailored so that the company retains more, and thus transfers less [2, p. 66]. As a consequence, the company pays lower premiums and thus acquires the desired cost/benefit trade-off.

In particular, a partial insurance contract is designed if the company wishes to add to the standard insurance contract [2, p. 64]:

1. higher deductibles,
2. lower policy caps,
3. greater co-insurance features,
4. broader exposure exclusions.

A model of a partial insurance contract with above mentioned instruments is presented on figure 1. A deductible is a portion of covered loss that is not paid by the insurer. The higher the deductible in the contract, the lower risk is transferred to the insurer and thus higher risk is retained (panel A). However, insurers tend not to favour high deductibles contracts as it makes some difficulties in the pricing of fair premium [2, p. 66]. A policy cap is the limit on the insurer’s loss payment liability in the insurance contract. The smaller the policy cap, the lower is transferred risk (panel B). Policy caps force the company to retain the risk over and above the cap, which means that the scale of retention may be potentially large. At the same time the company remains uninsured for a large burden of loss. Co-insurance occurs if the company and its insurer share a certain amount of loss at a predetermined percentage basis. The greater is the company’s share of co-insurance, the lower is the risk transfer (panel C). Exposure exclusions mean that certain types of risk are purposefully excluded from the insurer’s liability. The company specifies the scope of desired coverage and indicates the risk it is willing to transfer. The higher the number of exposure exclusions in a contract, the lower the scale of risk transfer (panel D). The company may be interested in excluding the exposures it may easily manage (fund) with risk retention programs.
The companies that are willing to insure against certain types of risk usually accept the standard contracts that are prepared by insurers. Therefore, an intention to create a tailor-made contract, with actively managed level of risk retained within, promotes an innovative way of transferring the risk with insurance. Such innovative design of insurance contract may result in lower premiums payments. However, due to the extended scale of risk retention, it is only recommended for larger companies who can apply appropriate risk retention funding arrangements. Also, large companies have a competitive advantage in applying for tailor-made insurance contract. They represent a desirable group of customers for the insurance industry as they bring large risk and thus pay large premiums. Therefore, insurers are more willing to form customised contracts for larger companies than for the smaller ones.

3. Multi-risk Products

Multi-risk products are highly customised structures combining various risk exposures into a single insurance contract and on a multi-year basis. Thus, the transfer of risk is usually cheaper because of the effect of correlation and joint probabilities of risk exposures covered. Multi-risk products are sometimes referred to as integrated insurance programs as they embed features of a range of separate insurance contracts [2, p. 103].

The two broad classes of multi-risk products can be identified:
(1) integrated multi-line and multi-year products (MMPs),
(2) multi-trigger products (MTPs).
Multi-line/multi-year products (MMPs) combine a company’s risk portfolio into a single, multi-year policy, with an aggregate premium and eventually aggregated deductible and policy caps, as presented on figure 2. [1, p. 24.]

Figure 2: A model of Multi-line/Multi-year Product (MMP) compared to the model of a standard insurance contract

The primary goal of initiating such programs is to increase the efficiency of an insurance program. The efficiency is achieved due to an integrated approach as compared to the traditional insurance contract, as presented in table 1. Within a standard insurance contract, each element of coverage is created, documented and managed separately, with its own deductible, cap and premium. Such a “piecemeal” approach raises transaction costs that might be reduced with MMPs. Moreover, MMPs allow to achieve efficiency due to the multi-year basis, as the company’s loss experience is assessed in the long run. Also, the company benefits from stable costs because premium payments are fixed over several years. MMPs also help to avoid both over-insurance commonly caused by many different uncoordinated insurance policies and any gaps in cover [1, p. 24; 2, p. 105].

<table>
<thead>
<tr>
<th>Traditional insurance contract</th>
<th>Multi-line/Multi-year product (MMP)</th>
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<tbody>
<tr>
<td>yearly renewed coverage</td>
<td>multi-year coverage</td>
</tr>
<tr>
<td>separate contracts for separate insurance lines</td>
<td>one contract for joined insurance lines (all exposures covered in unison)</td>
</tr>
<tr>
<td>premium separately established for each insurance line and each year</td>
<td>one, aggregated premium for the program</td>
</tr>
<tr>
<td>deductibles/policy caps separate for each insurance line</td>
<td>one, aggregated deductible/policy cap</td>
</tr>
<tr>
<td>many providers of the coverage</td>
<td>fewer or single provider of the coverage</td>
</tr>
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</table>

Table 1: A comparison of distinctive features of traditional insurance contract and multi-line/multi-year product

Multi-trigger products (MTPs) are also based on a holistic risk approach. The key feature of MTPs is that the claims are paid only if the triggers appear simultaneously. In the program there is always a defined insurance event (so called first trigger) and a non-insurance event (so called second trigger). In such case the MTPs has a dual trigger structure, however it can also be build as a triple trigger structure. From the insurer point of view such a dual (or triple)
trigger structure reduces the probability of loss and allows offering a lower premium. The non-insurance trigger is usually related to a financial indicator, for example the price of a commodity, an interest rate or a rate of return. The burden of loss and consequently the claim is caused by the occurrence of both predefined triggers at the same time, as presented on figure 3 [2, p. 108].

Figure 3: A model of Multi-trigger Product (MTP) with a dual trigger structure

An insurable trigger event (e.g. a fire) is sometimes referred to as a variable trigger because the value of payout is determined by the level of the trigger. Then, the non-insurable trigger event is referred to as a fixed trigger as it is a barrier determining whether or not an insurable loss occurs and does not influence the level of claim and payment (e.g. a growth of raw materials prices) [2, p. 108]. MTPs are recommended only for companies that are able to absorb large losses if the triggers appear separately (e.g. a fire or a growth of raw materials price). With MTPs such companies protect themselves against the scale of the burden of loss arising from the simultaneous occurrence of both (uncorrelated) triggers that might be too high to absorb.

4. Finite risk programs

Finite risk programs represent solutions that were primarily designed for the reinsurance market and thus traded between insurers and reinsurers. Companies, especially large ones, gained an access to these solutions as they adopted some of them as risk management techniques. Finite risk solutions – although designed for risk retention – form a specific insurance contract as they are traded between companies and insurers. Thus, finite risk programs should be perceived as an innovative risk transfer mechanism.

The name of finite risk programs is derived from the finite (limited) assumption of risk by the (re-)insurer. However, from a practical point of view, finite risk programs are designed for gathering capital reserves needed for covering expected losses. From this point of view, retrospective (post-loss) and prospective (pre-loss) finite risk programs can be identified.

In a retrospective finite risk programs the company sets aside a premium which is almost equal to the loss burden expected on a multi-year basis. A special account named an “experience account” is established. All premiums paid and incomes from invested capital are debited, and all expenses and claims paid are credited to the “experience account”. Usually, at the end of the finite risk program life, the surplus is shared between the company and the insurer.

The concept of prospective finite risk programs is similar to the concept of retrospective ones. However the risk is associated with future or expected liabilities rather than those that...
have already occurred. In prospective finite risk programs, the company pays small premiums in advance of any loss. If the loss occurs and the premiums are not enough to cover the loss burden, the insurer provides the coverage. In this case however, a company will have to pay higher premiums so that the “experience account” is balanced at the end of the finite risk program life [4, p. 556-558]. Prospective finite risk programs are uncommon for companies and are still traded on the reinsurance market [5, p. 395]. However, several types of retrospective finite risk programs are sometimes recommended for companies. Their main features are gathered in table 2 [2, p. 75; 4, p. 558-560; 5, p. 387-393].

<table>
<thead>
<tr>
<th>Type of finite risk program</th>
<th>The risk ceded by the company</th>
<th>Cost components</th>
<th>Exemplary areas of use</th>
</tr>
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<tbody>
<tr>
<td>LPT (Loss Portfolio Transfer)</td>
<td>all remaining unclaimed losses associated with a previously incurred liability</td>
<td>an arrangement fee, a premium equal to the net present value of reserves that the company has set aside for transferred liability, risk premium to compensate insurer for the timing of risk of the assumption</td>
<td>environmental claims and clean-up cost allocations</td>
</tr>
<tr>
<td>ADC (Adverse Development Cover)</td>
<td>insurer provides excess-of-loss coverage for losses incurred on an existing liability that exceed the company’s current reserves</td>
<td>like with LPT except from the cession of loss portfolio reserves (the insurer simply compensates company for any loss above the agreed level); risk premium includes both timing of risk and the underwriting risk for transfer of losses exceeding an agreed level</td>
<td>catastrophic risk management; to cap old liabilities that are of concern in a merger or acquisition</td>
</tr>
<tr>
<td>RALC (Retrospective Aggregate Loss Cover)</td>
<td>all existing and incurred but not reported losses associated with a defined liability</td>
<td>premium equal to the current value of reserves; usually includes a provision that requires the company to pay for any losses over a specified amount or above a defined loss ratio when they are actually incurred by the company</td>
<td>as above (as RALC combines LPT and ADC features)</td>
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Table 2: Main features of the most common retrospective finite risk programs

Undoubtedly, from a company’s point of view, finite risk programs represent an innovative design of risk transfer. First of all, the company manages the risk on multi-year basis and thus acquires a risk diversification over time. Secondly, in finite risk programs risk transfer supports risk retention if the reserves gathered by the company are inadequate to cover the loss burden. Simultaneously, the company enjoys a portion of the return on the capital invested. The investment income is explicitly included in the contract. It means that any interest income earned during the life of the program is taken into account while calculating the premium. Ultimately, the ending surplus balance of the program is usually shared between the company and the insurer in the program. Premiums that are not required to pay the claims are paid back to the company at the end of the program [1, p. 19; 2, 74; 3, p. 531]. Above mentioned features of finite risk program are presented in table 3, as compared to traditional insurance contract.

<table>
<thead>
<tr>
<th>Traditional insurance contract</th>
<th>Finite Risk program</th>
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<tbody>
<tr>
<td>– single-year coverage</td>
<td>– multi-year coverage</td>
</tr>
<tr>
<td>– focused primarily on risk transfer</td>
<td>– focused primarily on risk retention; risk transfer appears only in case of inability to retain the risk</td>
</tr>
<tr>
<td>– premium depends on expected loss occurrence and underwriting costs</td>
<td>– premium primarily depends on investment income from the capital gathered in the program</td>
</tr>
<tr>
<td>– premium is retained by the insurer in exchange for bearing the risk</td>
<td>– premium is shared by the company and the insurer at the end of the program life</td>
</tr>
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Table 3: A comparison of distinctive features of traditional insurance contract and finite risk program
The way in which retrospective finite risk programs operate, helps companies to smooth cash flows as they serve as a cash flow timing mechanism [2, p. 71; 3, p. 531]. They represent an interesting solution for managing the rate of loss or the high-severity exposures. The cost of applying such a program is high as the burden of premiums and fees is high. However, an inclusion of investment profit sharing based on time value of money makes the cost of finite risk program comparable to other risk management techniques [2, p. 74].

5. Captive

A company may organise its own insurer or reinsurer whose sole or major customer is the company itself. Such insurer or reinsurer is called a captive. The parent company raises the captive’s equity capital, thus captives are often defined as special case of self-insurance structures [7, p. 48; 9, p. 234-235]. However, a captive should rather be perceived as an innovative design of risk transfer, because a captive writes insurance policies. The innovation springs from the fact that the insurer belongs to the company for which the insurance policies are written.

Captives represent the oldest form of innovative design or risk transfer. The idea was born in 1950s, when insurance market hardening was observed. Then, companies “invented” captives for providing coverage for a very specific low-frequency, high-severity risk for which no cover was available on the traditional insurance market [1, p. 14; 6, p. 931]. From that time, the idea of captives evolved and nowadays numerous types of captives can be seen, as presented on figure 4. However, insurance and reinsurance captives remain fundamental forms of all other captives’ structures.

![Figure 4: A model of insurance and reinsurance captive](image)

In an insurance captive, the risk of the parent company is underwritten by a captive operating as an insurance company. Then, the risk is ceded on the reinsurance market. In a reinsurance captive, the risk of the parent company is underwritten by a so called “fronting insurer”, who is unrelated to the parent company. Then, the “fronting insurer” cedes the risk to the captive operating as a reinsurance company in the form of a reinsurance contract [2, p. 90; 4, p. 366-370]. This structure is perceived as a more beneficial one as reinsures are not subject to legal restrictions. Insurance companies usually require a national insurance licence in each country where they operate and are subject to local supervisory controls [1, p. 14].
Within insurance and reinsurance captive structures a few typical types can be identified. Depending on the number of owners and involvement of captive users, they form a specific “universe” of captives and in some way represent the process of captives’ evolution. The core features of the main types of captives are presented in table 4 [2, p. 94-98; 4, p. 365-374].

<table>
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<tr>
<th>Captive owner(s)</th>
<th>Captive user(s)</th>
<th>Type of captive</th>
</tr>
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</table>
| single owner     | related single user | **Pure captive** (also known as *single-parent captive*)
|                  | related multiple users | insurer/reinsurer owned by a single sponsor; writes insurance to cover solely or primarily for the sponsor |
| multiple owners  | related multiple users | **Sister captive**
|                  |                    | extension of the pure captive structure; insurer/reinsurer owned by a single sponsor; writes insurance cover for other companies that form part of the same economic family (e.g. subsidiaries or affiliates of the sponsor) |
| single owner or multiple owners | unrelated multiple users | **Group captive** (also known as *multi-parent captive* or *association captive*)
|                  |                    | insurer/reinsurer owned by a number of companies; primarily writes insurance cover for all of them; often writes cover for third-party businesses to achieve portfolio diversification |
|                  |                    | **Rent-a-captive** *(RAC)*
|                  |                    | typically a reinsurance captive with a structure similar to group captive except that the users relying on captive for insurance do not actually own any part of it; usually rent-a-captive is managed and maintained by reinsurer or broker on behalf of an unrelated, third-party owner; it is used by companies that lack the equity capital to fund the creation of their own pure or group captive |
|                  |                    | **Protected cell companies** *(PCCs, also known as segregated account companies)*
|                  |                    | structure similar to RAC except that each user has a ring-fenced segregated account |

Table 4: Core features of main types of captives

The primary benefit of establishing a captive is that the company acquires an access to professional reinsurance market. The reinsurance market is more flexible by nature and tradition and thus offers different methods of risk management, especially for low-frequency and high-severity risk as well as for the uncommon risk in the traditional insurance market. Captives may also result in possible costs savings. Reinsurance obtained through a captive can be both cheaper and more flexible than primary insurance. Any risk that the sponsor company does not want to retain can be retroceded by the captive (at rates often preferable to those that could be obtained by direct insurance). Captives also allow cash flow smoothing. With classical insurance the company usually has to pay an annual premium. With a captive, the company can choose the timing of premium payment at a time most advantageous for it. A source of benefits is also an investment income generated by assets held to offset a premium and loss reserves. In traditional insurance this income belongs to the insurer while in a captive it is retained by the sponsor company and thus reduces the cost of insurance capital. Often mentioned source of benefits are also possible tax savings the company may face as the captives are mainly domiciled in offshore centres [1, p. 14; 2, p. 91; 3, p. 525; 4, p. 375-379].
6. Conclusion

An innovative risk transfer design is a one which considers risk transfer and risk retention on an integrated basis, as opposed to a traditional approach. Currently, companies face numerous possibilities of implementing such innovations in their enterprise risk management programs.

An innovative design of risk transfer can be obtained even within a traditional insurance contract. It requires the company to establish the level of risk it is willing to retain and then to customise the insurance contract for this purpose. As a consequence, the insurance risk transfer is limited to the amount of risk the company does not want to retain. This concept of innovative insurance risk transfer design is easily obtainable for most companies, regardless of their size. However, smaller companies may meet some obstacles as insurers may not be willing to customise their typical products to the needs of minor clients. Also, smaller companies may find it difficult to properly define the level of desired (and safe) risk retention.

An innovative insurance risk transfer design is also underpinning advanced solutions that serve as special products/facilities available on the market and created on a multi-year basis. Multi-risk products represent a sophisticated customisation of traditional insurance contracts. Finite risk solutions are even more complicated in structure whereas captives require a company’s deep involvement in insurance market operations. Undoubtedly, such solutions are available only for larger companies. There are at least three reasons for this. Firstly, the scale of risk involved in their operations is large, thus the cost of traditional solutions are often high enough to enhance searching for innovative solutions. Secondly, large companies have a potential to apply innovations for covering risks considered as uninsurable (e.g. financial risks) or difficult to be insured (e.g. catastrophic risk). Finally, due to their size, large companies are welcomed as a partner for innovative solutions from insurer’s profitability perspective.

However, although numerous reasons for applying innovative risk transfer design exist, it is still a rare solution, especially among East-European countries. Perhaps, the low level of insurance market development is a reason why companies are still focused on traditional solutions. As a consequence, the innovative solutions are scarcely promoted and thus the knowledge about purposes of their use is limited amongst companies. Probably, the only innovative solution widely known and used is a captive.

Reference

Summary

Innovative risk transfer design includes solutions that are concerned with active and purposeful combination of risk transfer and risk retention with a cost/benefit trade-off. Such innovations possess following distinctive features: a multi-dimensional, customised coverage, available for both insurable and uninsurable risks. Innovative design of risk transfer can be applied within a traditional insurance contract by forming a partial insurance contract with higher degree of insurer’s liability restrictions. However, more possibilities for innovations exist due to the application of ART solutions: multi-line/multi-year products, finite risk solutions and captives. However, ARTs promote sophisticated and advanced solutions, available for larger companies.


