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Actuarial Details of Risk Transfer Come to the Forefront

By Paul A. Vendetti, FCAS, MAAA and Derek W. Freihaut, FCAS, MAAA

Appropriately exhibiting risk transfer in reinsurance contracts is imperative for realizing the accounting benefits of reinsurance. Risk transfer analysis provides an excellent opportunity to review the economic benefits of reinsurance transactions. The insurance accounting and regulatory communities are encouraging this practice by mandating better risk transfer documentation.

The abuses of the past few years in the use of finite reinsurance contracts have highlighted the need to document and quantify risk transfer. A notable example is the finite reinsurance scandal that led to felony convictions stemming from the AIG/Gen Re transaction. Such increasing scrutiny of reinsurance contracts has led to the introduction of the "Reinsurance Attestation Supplement," in the 2005 National Association of Insurance Commissioners Annual Statement.

The supplement requires the chief executive officer (CEO) and chief financial officer (CFO) to confirm that:

1. There are no separate written or oral agreements between the reporting entity and assuming reinsurer.
2. There is documentation for every reinsurance contract for which risk transfer is not **reasonably self-evident** that details the

transaction's economic intent and that documentation evidencing risk transfer is available for review.

3. The reporting entity complies with all requirements set forth in the Statement of Statutory Accounting Principles No. 62, "Property and Casualty Reinsurance" (SSAP 62).
4. The appropriate controls are in place to monitor the use of reinsurance.

CEOs and CFOs have the responsibility to attest to risk transfer in reinsurance transactions. However, since actuaries are uniquely qualified to quantify and evaluate risk transfer, they are increasingly being called upon to quantify risk transfer and provide the necessary documentation.

Every reinsurance transaction should be reviewed for risk transfer prior to entering into an agreement.

The demonstration of risk transfer in reinsurance contracts is also required by Financial Accounting Standard No. 113 (FAS 113), "Considerations in Risk Transfer Testing," for the contract to receive reinsurance accounting treatment under Generally Accepted Accounting Principles (GAAP). Statutory accounting principles defined in SSAP 62 are similar in guidance to FAS 113. Generally, both standards for risk transfer require that the reinsurer

assumes significant insurance risk under the reinsured portion of the underlying insurance agreement; and it is reasonably possible that the reinsurer may realize a significant loss from the transaction.

It is important to note that both standards apply to insurance risk only. Other sources of risk, including credit risk, interest rate risk, currency fluctuations or any other business risk, are not considered. Because the terms “significant insurance risk,” “reasonably possible” and “significant loss” are not defined in either accounting standard, the key challenge in determining risk transfer is to appropriately interpret and apply the standards to each reinsurance transaction.

Risk Transfer Documentation

According to the Reinsurance Attestation Supplement, only contracts where risk transfer is not “reasonably self-evident” require documentation of risk transfer testing. This exception is a practical consideration that significantly reduces the number of contracts requiring an in-depth actuarial analysis. The Reinsurance Attestation Supplement is filed with the annual statement and is therefore subject to SAP. Because the language of the GAAP and SAP standards are very similar, a contract that passes risk transfer under SSAP 62 would likely pass under FAS 113.

Categories of Risk Transfer

The first step when reviewing contracts is to categorize them into one of three groups: exempt, reasonably self-evident and not reasonably self-evident. Placing contracts in these three categories helps avoid unnecessary analysis by identifying which contracts require further testing.

▶ Exempt Contracts

A reinsurance contract can be considered exempt from the risk transfer testing requirement when:

1. The reinsurer has assumed substantially all the risk relating to the reinsured portion of the risk (i.e. the reinsurer is in the same economic position as the reinsured).
2. The contract was effective prior to 1992. FAS 113 became effective in 1992 and SSAP 62 became effective in 1994. Therefore, showing risk transfer for contracts effective in 1992 and 1993 is required for GAAP accounting, but not for the Reinsurance Attestation Supplement.
3. The contract is inactive with no amount recoverable. The scope of the Reinsurance Attestation Supplement applies only to contracts for which the reporting entity is taking credit on its current financial statement.

▶ Reasonably Self-Evident Contracts

Reasonably self-evident contracts are characterized by the payment of a predetermined amount of premium with the reinsurer assuming nearly all of the potential variability in underlying losses. Reasonably self-evident contracts have:

1. No experience-based premium adjustments;
2. Standard contract terms and conditions; and,
3. Potential loss greater than the premium provided.

Some examples of reasonably self-evident contracts include: quota share contracts with no loss corridors or loss ratio caps; single-year property catastrophe treaties with no unusual reinstatement provisions; and, excess of loss contracts with no experience-based premium adjustments.

▶ Not Reasonably Self-Evident Contracts

The remaining treaties are then considered not reasonably self-evident. These contracts require further review to determine if risk transfer is present. Characteristics for not reasonably self-evident contracts may include those where:

1. The premium approaches the present value of coverage provided;
2. The contract is “manuscripted” using contractual terms and conditions of coverage that are not standard for contract type; or,
3. The contract includes provisions that enable the reinsurer to recover a significant portion of a covered loss.

Contracts where risk transfer is not reasonably self-evident have terms and conditions that limit risk transfer. Some examples of those terms and conditions include: low loss ratio caps or loss corridors; multi-year contracts with the later year’s premiums being adjusted by prior years’ experience; experience-based premiums and swing rates; or, high reinstatement premiums.

Every reinsurance transaction should be reviewed for risk transfer prior to entering into an agreement. Although not every reinsurance transaction requires a rigorous actuarial review, it is our recommendation that risk transfer conclusions be documented for all reinsurance transactions. This documentation should include an affirmative statement on the presence of risk transfer for contracts receiving reinsurance accounting treatment.

Risk Transfer Analysis

From the ceding company’s viewpoint, risk transfer testing is essentially a discounted cash flow test. All cash flows between the ceding and assuming entities need to be considered. These include: premiums, losses, ceding commissions and experience-based premium provisions. Since reinsurer expenses are not a cash flow between the ceding company and the reinsurer, they are not considered in the analysis. All cash flows are discounted at the same interest rate, often times at the risk-free rate.

The duration of the interest rate used for discounting can be approximately equal to that of net cash flows.

The first step in analyzing risk transfer is to understand the reinsurance contract by reviewing it for terms and conditions that limit risk. The timing of any cash flows between the ceding and assuming entities must also be defined.

The next step is to model the cash flows under reasonably possible outcomes. This determines the net present value of all amounts paid to the assuming entity and by the assuming entity under several outcomes. A comparison of the two cash flows under each scenario will determine if there is a reasonable possibility of a significant loss to the reinsurer.

Risk Transfer Measures

Neither SSAP 62 nor FAS 113 provides a clear numeric trigger of when a treaty does not contain risk transfer. The “10-10” rule was developed as a benchmark to give meaning to the criteria in the two accounting standards. The “10-10” rule says that a reinsurance contract exhibits risk transfer if there is at least a 10% chance of a 10% or greater loss for the reinsurer.

While the “10-10” rule does translate risk transfer into an easy-to-apply benchmark, it has major shortcomings. Several different contracts that appear to exhibit risk transfer do not pass the “10-10” rule. Many property catastrophe treaties fail the “10-10” rule because the frequency of major catastrophes is so low that there may not be a 10% chance of a reinsurer loss. However, there is a chance of a much larger loss.

Another measure that is gaining acceptance and overcomes the shortcomings of the “10-10” rule is the Expected Reinsurer Deficit (ERD). ERD can be viewed as the probability of a net present value (NPV) underwriting loss for the reinsurer multiplied by the NPV of the average severity of the underwriting loss. A treaty can be considered to exhibit risk transfer if ERD is greater than 1%, which is consistent with the “10-10” rule (10% loss multiplied by 10% chance is a 1% ERD). Therefore, contracts that qualify for risk transfer under the “10-10” rule generally qualify under a 1% ERD.

Exhibit 1 - Treaty and Loss Parameters

Event	Probability	Net Present Value of Expected Loss	Treaty	Coverage	Net Present Value of Premium
No Event	70%	0	Treaty #1	\$4M XS \$1M	1,500,000
Event 1	20%	2,000,000	Treaty #2	\$5M XS \$5M	1,000,000
Event 2	8%	5,000,000			
Event 3	2%	10,000,000			

Consider how ERD works with two property catastrophe treaties. Exhibit 1 shows the probabilities and the NPV of expected losses for covered events. Exhibit 2 (on page 4) includes the calculation of ERD for the first treaty, which covers the \$4M excess of \$1M layer.

The information in Exhibit 2 (on page 4) is based on the example treaty information and loss parameters given in Exhibit 1. It is worth noting that the gain or loss in Column (3) does not include the reinsurer’s internal expenses or brokers fees. This is consistent with the SSAP 62 and FAS 113 definition of reinsurer loss.

The frequency of a reinsurer deficit is based on the sum of the probabilities of Event 2 and Event 3 (8% + 2% = 10%). The NPV of the reinsurer loss in Column (4) is shown for each event. When the reinsurer has an underwriting gain, the NPV of reinsurer loss is set to zero. The average reinsurer loss is the average loss given a loss has occurred. It is calculated as

Exhibit 2 - Treaty #1 \$4M XS \$1M

Event	Net Present Value of Premium	Net Present Value Reinsurer Gain/(Loss)	Net Present Value Reinsurer Loss (as % of Premium)
(1)	(2)	(3)	(4)
No Event	1,500,000	1,500,000	0%
Event 1	1,500,000	500,000	0%
Event 2	1,500,000	(2,500,000)	167%
Event 3	1,500,000	(2,500,000)	167%
Frequency of a Reinsurer Loss			10%
Average Severity of a Reinsurer Loss			167%
Expected Reinsurer Deficit			16.7%

Exhibit 3 - Treaty #2 \$5M XS \$5M

Event	Net Present Value of Premium	Net Present Value Reinsurer Gain/(Loss)	Net Present Value Reinsurer Loss (as % of Premium)
(1)	(2)	(3)	(4)
No Event	1,000,000	1,000,000	0%
Event 1	1,000,000	1,000,000	0%
Event 2	1,000,000	1,000,000	0%
Event 3	1,000,000	(4,000,000)	400%
Frequency of a Reinsurer Loss			2%
Average Severity of a Reinsurer Loss			400%
Expected Reinsurer Deficit			8.0%

a weighted average of only the loss events in Column (4), using the frequencies of loss from Exhibit 1 as weights. The ERD of the treaty is the product of these two values or, $10\% \times 167\% = 16.7\%$.

While currently there is no universally defined standard for any risk transfer test, an ERD result greater than 1.0% is generally accepted as an indication that a contract contains risk transfer. Given the relatively high ERD calculated above, this treaty clearly exhibits risk transfer. Because there is a 10% chance the reinsurer will experience a greater than 10% loss, this contract also exhibits risk transfer according to the “10/10” rule.

The second treaty is designed to cover the same loss events but at a higher layer. This contract covers the \$5M excess of \$5M layer. As shown in Exhibit 3, this contract also exhibits risk transfer according to 1% ERD. However, the reinsurer only experiences a loss of 10% or greater 2% of the time. Therefore, this contract would not exhibit risk transfer according to the “10-10” rule.

These two sample contracts demonstrate the benefit of using ERD instead of the “10-10” rule. The ERD calculation includes all loss scenarios, not just the worst 10%. Just as importantly, ERD also recognizes the full severity of reinsurer loss scenarios in its calculation. These differences make ERD a much more robust measure of risk transfer than the previously relied upon “10-10” rule.

Conclusion

While compliance with accounting standards is the primary motivation for risk transfer analysis, it also provides an excellent opportunity to evaluate the economics of a ceding company’s reinsurance transactions. The goal of risk transfer analysis is to determine if the reinsurer has a reasonable possibility of a significant loss. A contract that does not pass risk transfer may also be a contract that is not achieving the original goal of the reinsurance purchase. Risk transfer analysis, as the simplified example shows, can highlight contract features that need to be restructured to achieve the ceding company’s goals and optimize their reinsurance purchases.

While documenting risk transfer can be time consuming and at times difficult, it is an important part of corporate governance. It is necessary for compliance with FAS 113 and SSAP 62, and is required for the “Reinsurance Attestation Supplement.” All insurance entities -- whether primary insurers, reinsurers or captive insurers -- need to review their contracts for risk transfer. ERD provides a flexible and intuitive tool for performing these analyses.

With the current accounting standards and a better approach, companies will be in a much better position to measure risk transfer. As a result, they should be able to incorporate this information into better reinsurance decisions.

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