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David E. Wilmot

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Article abstract

La participation aux bénéfices est chose courante chez les réassureurs et la plupart des traités de réassurance proportionnelle prévoient des commissions sur bénéfice réalisé ou à échelle. Toutefois, assureurs et réassureurs ont souvent du mal à s'entendre sur la méthode de calcul. Ainsi, le report de perte (ou de bénéfice) prospectif, par exemple, est rendu plus complexe par la limite de trois années sur le report et par les changements de réassureurs. Les méthodes comptables utilisées et la résiliation des traités peuvent elles aussi faire qu'il devient difficile de saisir les principes fondamentaux qui régissent les traités de participation aux bénéfices. Nous avons utilisé ici quelques exemples simples pour décrire le système des commissions sur bénéfice réalisé et à échelle. Nous avons mis l'accent sur les problèmes qui surviennent lors des discussions entre les services de comptabilité des assureurs et ceux des réassureurs. Les solutions proposées reposent sur un libellé de contrat très précis ou, à défaut, sur les principes fondamentaux généralement appliqués au Canada en matière de participation aux bénéfices, en réassurance.

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Scale and Profit Commission Carryforwards

Accounting for Limitations and Changing Reinsurers

by

David E. Wilmot[1]

La participation aux bénéfices est chose courante chez les réassureurs et la plupart des traités de réassurance proportionnelle prévoient des commissions sur bénéfice réalisé ou à échelle. Toutefois, assureurs et réassureurs ont souvent du mal à s'entendre sur la méthode de calcul. Ainsi, le report de perte (ou de bénéfice) prospectif, par exemple, est rendu plus complexe par la limite de trois années sur le report et par les changements de réassureurs. Les méthodes comptables utilisées et la résiliation des traités peuvent elles aussi faire qu'il devient difficile de saisir les principes fondamentaux qui régissent les traités de participation aux bénéfices.

Nous avons utilisé ici quelques exemples simples pour décrire le système des commissions sur bénéfice réalisé et à échelle. Nous avons mis l'accent sur les problèmes qui surviennent lors des discussions entre les services de comptabilité des assureurs et ceux des réassureurs. Les solutions proposées reposent sur un libellé de contrat très précis ou, à défaut, sur les principes fondamentaux généralement appliqués au Canada en matière de participation aux bénéfices, en réassurance.

Reinsurers are inclined to share profits, and most proportional treaties make provision for either profit or scale commissions. However, as common as these profit sharing agreements may be, insurers and reinsurers frequently encounter difficulties in agreeing on the correct method of calculation. Features such as the deficit/credit carryforward are complicated by three-year cutoffs and by changes in participating reinsurers. Accounting methods and treaty cancellations can also obscure the underlying principles of treaty profit sharing.

This brief study uses a number of single examples to describe the operation of profit and scale commissions. Emphasis is placed on problems known to crop up in discussions between the accounting departments of

(1) Mr. David E. Wilmot is a vice president of Gerling Global Reinsurance Company.

insurers and reinsurers. The solutions are based on strict contract wording or, where wording is silent, on the fundamental underlying principles of reinsurance profit sharing demonstrated by Canadian market practice.

Underlying Principles

Profit commissions and, to some degree, scale commission calculations are offered by competitive reinsurers in recognition of good underwriting results. However, reinsurers are not willing to return profits if they are in an overall loss position. For this reason, reinsurance losses (deficits) of one year are generally carried forward into the scale or profit commission calculation of the next year. The losses of early years must be recovered before any profits are shared with the insurance company. The carryforward mechanism accomplishes this, and, at the same time, helps to "spread" poor experience over two or more years.

Typical Profit Commission

Consider this single profit commission formula applied to the accounting-year experience of a small surplus treaty.

Commission:	30% of written premiums
Profit commission:	25% of profits after losses, 30% of *earned* premiums, and 7.5% reinsurance management expense.

1990	Earned premium income (EPI)	= $ 1,000,000	
(a profit	Incurred losses	= $ 540,000	
is earned)	Commission on EPI	= $ 300,000	
	Management expense	= $ 75,000	(7.5% of EPI)
	Profit (Loss)	= $ 85,000	
	Profit commission	= $ 21,250	(25% of Profit)

1991	Earned premium income (EPI)	= $ 1,000,000
(a deficit	Incurred losses	= $ 700,000
is incurred)	Commission on EPI	= $ 300,000
	Management expense	= $ 75,000
	Profit (Loss)	= $ (75,000)
	Deficit carryforward	= $ 75,000

1992	Earned premium income (EPI)	=	$ 1,000,000
(deficit	Incurred losses	=	$ 500,000
applied to	Deficit carryforward	=	$ 75,000 (from 1991 loss)
calculation)	Commission on EPI	=	$ 300,000
	Management expense	=	$ 75,000
	Profit (Loss)	=	$ 50,000
	Profit commission	=	$ 12,500

Typical Scale Commission

Here is a scale commission formula applied to the same accounting year experience.

Commission: Provisional 30% of written premiums. Commission adjusted to 27.5% of premiums earned if the loss ratio is 65% or more and to 35% of premiums earned if the loss ratio is 50% or less. If the loss ratio is between 65% and 50%, the commission is adjusted upward from 27.5% by 0.5% for every 1% improvement in loss ratio below 65%. Deficits or credits are carried forward. The treaty will state, or the parties should agree, that calculations will be completed to a certain number of decimal places (usually two or three).

1990	Earned premium income (EPI)	=	$ 1,000,000
(additional	Incurred losses	=	$ 540,000
commission	Loss ratio	=	54.00%
is earned)	Adjusted commission	=	27.50%
		+	(half of 65.00% - 54.00%)
		=	27.50% + 5.50%
		=	33.00%
		=	$ 330,000
	Prov. commission on EPI	=	$ 300,000
	Amount due to insurer	=	$ 30,000

1991	Earned premium income (EPI)	=	$ 1,000,000	
(a deficit	Incurred losses	=	$ 700,000	
incurred)	Loss ratio	=	70.00%	
	Adjusted commission	=	27.50%	(the minimum)
		=	$ 275,000	
	Prov. commission on EPI	=	$ 300,000	
	Amount due to reinsurer	=	$ 25,000	
	Deficit carryforward	=	70.00%	- 65.00%
		=	5.00%	
		=	$ 50,000	

1992	Earned premium income (EPI)	=	$ 1,000,000	
(deficit	Incurred losses	=	$ 500,000	
applied to	Deficit carryforward	=	$ 50,000	(from 1991 loss)
calculation)	Adjusted loss ratio	=	55.00%	
	Adjusted commission	=	27.50%	
		+	(half of 65.00% - 55.00%)	
		=	27.50%	+ 5.00%
		=	32.50%	
		=	$ 325,000	
	Prov. Commission on EPI	=	$ 300,000	
	Amount due to insurer	=	$ 25,000	

Notes

- In the above examples, earned premiums and incurred losses are presumed to be those calculated on an "accounting year" basis.

  Earned Premiums = premiums written during the period (usually one year)

  \+ unearned premiums at the beginning of the period

  \- unearned premiums at the end of the period

Incurred Losses = losses paid during the period
+ losses outstanding at the end of the period
- losses outstanding at the beginning of the period

- The above examples assume the continuing participation of the reinsurer or reinsurers. An interesting question arises if one or more of the reinsurers change from one year to the next. If there is a deficit (or credit) carryforward to be applied to the next year, and there are new participating reinsurers on the treaty, do they too benefit from the carryforward? The answer to this question is generally "no," although almost anything can be negotiated prior to renewal of the treaty. An insurer does not have to offer a deficit carryforward to a new reinsurer. (After all, that reinsurer did not participate in the losses that generated the deficit.) On the other hand, the insurer may wish to offer the deficit carryforward as an inducement to new reinsurers.

- A variation on this issue is the changing participation of individual reinsurers. Market practice suggests that if a reinsurer increases or decreases its share from one year to the next, the deficit or credit attributable to that reinsurer does not increase or decrease. Rather, each reinsurer carries forward its *dollar* amount of deficit or credit from one year to the next, regardless of its treaty share.
- It is important to note that, in the case of changing participations or changing reinsurers, separate calculations must be made for each reinsurer. The results will be different from one reinsurer to the next and the accumulated calculations will not match the results produced in the examples above. (These examples assumed no changes in participation from one year to the next.) Furthermore, the insurer will have to complete these multiple calculations before it can determine its own net commission.

Limiting the carryforward

The examples above show a loss carryforward that was absorbed into the profitability of the following year. Often, such losses are not fully absorbed and may even be exacerbated by further losses in subsequent years.

If the reinsurance loss to be carried forward is very large, the insurer may despair of ever again seeing a favourable commission adjusment from its current reinsurers.

It is for this and other commercial reasons that reinsurers may offer a three-year limitation on the carryforward of certain losses. In such cases, they will "forgive" the remaining deficit of a given year after it has been carried forward three years.

The following example of a three-year deficit carryforward illustrates the major principles of adjustment. This example is based on a profit commission, but the *principles* of carryforward may be applied to a scale commission adjustment as well.

Commission: 30%; profit commission 25% after 7.5% management expense. Carryforward not to exceed three years.

1990	Earned premium income (EPI)	=	$ 1,000,000
(a deficit	Losses incurred	=	$ 775,000
is incurred)	Commission on EPI	=	$ 300,000
	Management expenses	=	$ 75,000
	Profit (Loss)	=	$ (150,000)
	Loss carryforward	=	$ 150,000

1991	Earned premium income (EPI)	=	$ 1,000,000
(deficit is	Losses incurred	=	$ 550,000
reduced by	1990 Loss carryforward	=	$ 150,000 (carried 1 year)
the relative	Commission on EPI	=	$ 300,000
profitability	Management expenses	=	$ 75, 000
of 1991)	Profit (Loss)	=	$ (75,000)

1992	Earned premium income (EPI)	= $ 1,000,000
(a further	Losses incurred	= $ 650,000
deficit is	1990 Loss carryforward	= $ 75,000 (carried 2 years)
incurred)	Commission on EPI	= $ 300,000
	Management expenses	= $ 75,000
	Profit (Loss)	= $ (100,000) *

* Loss carryforward is now $75,000 remaining from 1990 plus $25,000 generated by 1992 experience.

1993	Earned premium income (EPI)	= $ 1,000,000
(1990 deficit	Losses incurred	= $ 575,000
is reduced by	1990 Loss carryforward	= $ 75,000 (carried 3 years)
the relative	1992 Loss carryforward	= $ 25,000 (carried 1 year)
profitability	Commission on EPI	= $ 300,000
of 1993)	Management expense	= $ 75,000
	Profit (Loss)	= $ (50,000) **

**The $100,000 carryforward from prior years has been reduced by $50,000. All of the $50,000 is deducted from the 1990 loss carryforward of $75,000. In other words, the *oldest* deficit is reduced first.

1994	Earned premium income (EPI)	= $ 1,000,000
	Losses incurred	= $ 500,000
	1990 Loss carryforward	= $ 0
	(The 1990 loss cannot be carried forward a fourth time)	
	1992 Loss carryforward	= $ 25,000
	Commission on EPI	= $ 300,000
	Management expenses	= $ 75,000
	Profit (Loss)	= $ 100,000
	Profit commission	= $ 25,000

A key point in the above example is the distinct identification of each year's deficit (if any). The deficit of each year is tracked separately. The oldest deficit is the first to be reduced by future profitability, and any deficit remaining after three years is dropped from the calculation of the fourth and subsequent commission adjustments.

This is shown in Table A.

TABLE A

Deficit carried forward

1990	1991	1992	1993	1994
(150,000)	–> (150,000)			
	75,000			
	(75,000)	–> (75,000)	–> (75,000)	
			50,000	
			(25,000)	– –
		(25,000)	–> (25,000)	–> (25,000)

Phantom Profits

Like the examples above, most profit and scale commissions are calculated on an accounting-year basis. Unfortunately, if the reserves for outstanding or unreported losses are understated, then treaty accounting results will overstate profitability. In such cases, reinsurers may pay a profit commission on results that ultimately prove to be unprofitable.

Some profit or scale commission formulae take steps to overcome this problem. An IBNR (Incurred But Not Reported) factor may be included with the losses. Alternatively, the calculation of the profit or scale commission may be delayed one year after the end of the treaty period so that claims have time to develop.

In the event of a significant change in loss experience, the insurer may agree (or offer) to reopen the commission calculation. (This last scenario is rarely documented and depends instead on the partnership and utmost good faith that exists between the insurer and its reinsurers.)

The overpayment of profit commission can be completely avoided if the treaty and profit formula operate on an underwriting-year basis. There is an increasing tendency to account for proportional treaties on an underwriting-year basis, and in such cases, all profit or scale commissions are calculated *provisionally* until the final claim is settled. More work is involved in such commission calculations; the experience and the carryforward of each reinsurer must be recalculated every year. However, the calculated profits will accurately reflect the experience of the treaty.

A complete scale or profit commission example would be somewhat laborious, but some notes on the completion of an underwriting year calculation are in order.

- The losses pertaining to an underwriting year can occur over a two-year period. For this reason alone, the first calculation of any given year is generally delayed until at least 24 months after the beginning of the year.
- Deficits (or credits) are carried from one underwriting year to the next just as in the case of accounting-year treaties. However, the deficit (or credit) of underwriting year x (to be carried forward into underwriting year y) will likely change each year until all the losses of underwriting year x are settled. It follows that underwriting year y must be recalculated each year until the preceding underwriting year's deficit or credit (if any) is finalized. Note too, that the deficit of underwriting year x is carried forward to underwriting year y and *not* to the next recalculation of underwriting year x.

Consider the 1994 recalculation of a surplus treaty in force during the underwriting years 1990 and 1991. A 25% profit commission applies after a 7.5% management expense and deficit carried forward of up to three years. This is the third or fourth time the commission has been calculated since the treaty inception in 1990. Prior to this calculation, the insurer has received $11,250 in profit commission for underwriting year 1991.

1994 Calculation of Surplus Treaty #nnn
(Prepared by D.W. on February 20, 1995)

1990	Written premiums	=	$ 1,000,000
	Earned premiums @ 31.12.94	=	$ 1,000,000
	Paid losses @ 31.12.94	=	$ 545,000
	Outstanding losses @ 31.12.94	=	$ 20, 000
	Commission earned @ 31.12.94	=	$ 300,000
	Management expense @ 31.12.94	=	$ 75,000
	Profit (Loss)	=	$ (60,000)
1991	Written premiums	=	$ 1,000,000
	Earned premiums @ 31.12.94	=	$ 1,000,000
	Paid losses @ 31.12.94	=	$ 490,000
	Outstanding losses @ 31.12.94	=	$ 33,000
	Deficit carryforward	=	$ 60,000
	Commission earned	=	$ 300,000
	Management expense	=	$ 75,000
	Profit (Loss)	=	$ 42,000
	25% Profit commission	=	$ 10,500
	Profit commission paid to date	=	$ 11,250
	Due to reinsurers	=	$ 750

- In the above calculation, post calculations are ignored until the second last line (which identifies the monies already paid to the insurer as profit commission). In effect, each year's calculation of profit commission "starts from scratch."
- During 1994, the incurred losses of 1990, 1991 or both deteriorated. Thus, a small portion of paid profit commission must be returned to reinsurers. Note that the 1990 deficit must still be carried forward into 1991 and that it may continue to change in the future even though the 1994 calculation takes place more than three-years after underwriting year 1990. The three-year carryforward limitation does not apply to calendar years but to the number of treaty (underwriting) years into which it may be carried. A 1990 deficit cannot be carried into the 1994 underwriting year calculation, but it can be carried into the 1994 calculation of underwriting year 1991.

Conclusion

The variations that exist in scale and profit commissions make it impractical to include sample wordings in this short study. On the other hand, this variety of wordings makes it imperative that those responsible for preparing or agreeing commission calculations read the contract carefully. Where the wording is silent, one may rely on the underlying principles discussed at the beginning of this study. Considering the latitude for misinterpretation, it is wise to double-check not only the mathematics of commission calculations, but the logic as well.