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COMMUTATION PRICING IN THE POST TAX-REFORM ERA

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Abstract

This paper discusses how a reinsurer prices the commutation of a group of claims. A commutation is an agreement between an insurer and a reinsurer in which one payment by the reinsurer settles a group of claims that have not been settled by (or perhaps reported to) the insurer. After discussing the reasons for commutations, an example is used to discuss the after-tax interest rate that is used to determine the present value of the claims. Also discussed is how to determine the value of the unwinding of the discount, as well as the tax on the underwriting gain/loss normally generated by a commutation. Also covered is a formula used to determine price and why the commutation price normally appears low to insurance companies. The second, more complicated example develops a commutation price for a typical property/casualty line. The overall discussion in this example touches upon a number of different points to keep in mind when pricing commutations. Some of these points include contract analysis, IBNR development, payment profile(s), and interest rate selection. An additional example comments on the effects on commutation pricing when the payment patterns and interest rates used to determine the present value of the losses are not

equal to those used to develop tax basis discounted reserves. The last part of the paper deals with sensitivity analysis where interest rates, tax rates, and payment profiles are varied to see their effect on the indicated price. While initially appearing complex, it is hoped that this step-by-step approach with examples will make this subject more understandable.

1. INTRODUCTION

In today's marketplace, reinsurers receive premiums from ceding companies in exchange for a promise to make loss payments, under certain fortuitous conditions, at some future date. The conditions governing the timing and method of the loss payments are in the reinsurance contract. For the most part, reinsurance losses are paid shortly after the ceding company makes payments.

In response to its promise to reimburse the ceding company for future losses, the reinsurer sets up loss reserves. The level of the reserves is continually monitored and adjusted by the reinsurer as new information becomes available and actual loss payments are made. This process continues until the reinsurer's financial obligations to the ceding company are fulfilled.

Sometimes, though, the reinsurer and insurer form an agreement that lets the reinsurer pay for claims before they are actually paid by the ceding company. In essence, through this transaction, known as a commutation of claims, the reinsurer and insurer finalize the reinsurance agreement. This paper describes how to price commutations, with special attention being given to the effects of taxes on the pricing of commutations.

There are a number of reasons for commutations. Commutations can be promoted in order to improve the underwriting results of a contract, since the commutation price is normally less than the reserves carried. Commutations can evolve as a result of disagreements over the proper reserve to carry. Commutations can also arise out of different investment philosophies and forecasts of investment income. Different tax situations for insurer and reinsurer may also promote commutations. Commutations can also stem from insurer/reinsurer insolvencies and disputes over con-

tract terms. For whatever reasons, reinsurers are occasionally asked to develop an overall commutation price for one or more claims.

As a start, consider this elementary case. Assume that the Random Reinsurance Corporation receives the following information regarding a requested commutation:

1. The commutation is for a single claim that occurred 1/10/89.
2. The current reserve is $100,000.
3. The claim will be paid in equal annual installments of $20,000 beginning 6/30/91.
4. Today's date is 6/30/90.

In order to develop an equitable figure, two questions have to be answered:

1. What are the costs of making payments according to the contract terms; i.e., no commutation?
2. What are the costs if there is a commutation?

The general approach is to develop a commutation price that balances these two costs.

2. COSTS OF NOT COMMUTING

Present Value of the Paid Loss

The first cost involved is the estimated five annual payments of $20,000. In order to express this figure in current dollars, thus taking into account the time value of money, the present value of the future loss payments should be calculated using an appropriate interest rate. The rate used should reflect current yields. This is because, to the extent possible, the commutation will be funded out of current cash flow. Even if current cash flow is not sufficient, and the reinsurer must sell securities, it will sell securities at a market price that will reflect current yields.

Before the Tax Reform Act of 1986, many insurance companies probably were not explicitly paying taxes on investment income.[1] As-

[1] This is because overall taxable income during the period was relatively low. This point should not be confused with the fact that a high implicit tax burden did exist. By investing in tax-exempt securities, the industry received a lower before-tax yield than it otherwise would have.

suming investments effectively yielded 8.5% for the five-year period, and that the investment income is re-invested at the same rate, then the present value of the loss is $78,813. However, as a result of the new tax law, taxes are now paid on investment income. Consequently, interest rates used for discounting must be after-tax interest rates.

Assume that, after consulting with tax and investment personnel, Random Reinsurance will be a regular taxpayer[2] at a 34% tax rate. Also assume an 8.5% nominal rate of return (before tax) for each of the six calendar years. Consequently, the after-tax interest rates becomes 5.61% (8.5% × (1 − .34)). As a result, the present value of the five loss payments becomes $85,149. If the company is a minimum taxpayer, it pays at a different tax rate than a regular taxpayer. Current law allows the company to recoup those additional taxes when it becomes a regular taxpayer. Recouping these adjustments can be reflected, but they complicate the calculations.

Thus, when performing the present value calculations, the two key considerations to remember regarding the after-tax interest rate are:

1. The future expected rate of return (before tax); and
2. The anticipated tax situation of the company. (Regarding this point, one item to keep in mind is whether or not the commutation will affect the anticipated tax situation.)

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[2] Property and casualty insurers are required to make two tax calculations a year. The tax is the higher of the regular calculation and the alternative minimum tax calculation. Regular taxable income is primarily statutory underwriting income, adjusted to discount the losses, plus investment income, excluding non-taxable municipal bond income, plus other adjustments. The regular income tax rate of 34% is used for income above $335,000. Alternative minimum taxable income is regular taxable income plus various tax preference items. The major tax preference item for a property and casualty insurer is expected to be 75% of the difference between Generally Accepted Accounting Principles (GAAP) book income and regular taxable income. The alternative minimum tax rate is 20%. A good description of the Tax Reform Act of 1986 as it applies to insurance companies is contained in "An Analysis of the Impact of the Tax Reform Act on the Property/Casualty Industry" by Owen M. Gleason and Gerald I. Lenrow in *Financial Analysis of Insurance Companies,* 1987 Discussion Paper Program, Casualty Actuarial Society, page 119. This paper also deals with the special requirements for municipal bond income and the development of tax-basis discounted reserves. Another good reference on this subject can be found in "Federal Income Taxes Provisions Affecting Property/Casualty Insurers" by Manuel Almagro and Thomas L. Ghezzi in *PCAS* LXXV, 1988, page 95.

Present Value of Tax Benefit on the Unwinding of the Discount

The next part of developing the cost of not commuting is to calculate the present value of the tax benefit on the unwinding of the discount.

Before the Tax Reform Act of 1986, the outstanding reserves for tax purposes were the same as those on the annual statement. The new law now requires the discounting of reserves.

Tax-basis discounted reserves can be based on individual company history or industry factors. Because losses are discounted, the tax-basis reserves will be less than current nominal reserves. Since the reinsurer expects to eventually pay out losses that equal current nominal reserves, the Random Reinsurance Corporation will, over time, realize a change in taxable income equal to the difference between the nominal and tax-basis reserves. This change in taxable income is expected to produce a tax benefit in total (although not necessarily in every calendar year) to the reinsurer. Consequently, this benefit should be reflected in the commutation price.

The amount of benefit that "unwinds," or is realized over each calendar year, will be equal to the change in tax-basis reserves plus the amount of calendar year payments; i.e., the tax-basis incurred. The change in taxes for the reinsurer will be equal to the change in taxable income multiplied by the anticipated tax rate for that particular calendar year. This assumes that there is sufficient taxable income to offset. The present value of these amounts is then calculated using the same after-tax interest rate as that assumed for the present value calculation of the paid losses. This calculation, using industry discount factors to calculate the tax-basis reserves, is presented in Table 1.

TABLE 1

Cal. Year	Paid in Cal. Yr.	Year End Reserve	Discount Factor	Disc. Tax Res.	Change in Tax Income	Tax Rate	Tax Ben.	Pres. Value[3]
1990	$ 0	$100,000	.79812	$79,812	$ —	—	$ —	$ —
1991	20,000	80,000	.77935	62,348	2,536	.34	862	816
1992	20,000	60,000	.75561	45,337	2,989	.34	1,016	911
1993	20,000	40,000	.73577	29,431	4,094	.34	1,392	1,182
1994	20,000	20,000	.70271	14,054	4,623	.34	1,572	1,264
1995	20,000	0	.68950	0	5,946	.34	2,022	1,539
Total	$100,000				$20,188		$6,864	$5,712

Thus, the present value of the tax benefit on the unwinding of the discount is calculated to be $5,712. The calendar year 1990 change in taxable income will be reflected elsewhere.

Therefore, the cost of not commuting is the present value of the losses, equal to $85,149, less the present value of the tax benefit on the unwinding of the discount, equal to $5,712. The resulting value of $79,437 is the amount of money the reinsurer needs to pay the claims. This amount, as it is increased by investment income earned as well as the tax benefit of the unwinding of the discount, will be sufficient for the payment of taxes on the investment income, as well as for payment of the loss, providing the assumptions are correct.

3. COSTS OF COMMUTING

The Commutation Price

This is the amount of money, to be calculated below, that the reinsurer will pay the ceding company to assume the nominal $100,000 liability.

[3] With estimated tax payments, assume that the benefit unwinds midway through the calendar year. The interest rates used to form the present value are the after-tax rates presented previously.

The Tax on the Underwriting Gain/Loss Generated by the Commutation

Before the Tax Reform Act of 1986, many insurance companies might not have been concerned about the taxable gain or loss generated by a commutation because they probably were not paying taxes. As a result of this legislation, most insurance companies are now paying taxes, or they soon will be. Consequently, the taxable underwriting gain or loss should be taken into account when pricing the commutation.

In order to quantify this amount, consider the following. If the commutation was done at year-end, the change in taxable income would be equal to the difference between the amount of tax-basis reserves taken down as a result of the commutation and the commutation price. Because taxes are calculated only once a year, a different approach is necessary when the commutation is not done at year-end.

The approach taken here is to contrast taxable income when there is *no* commutation against taxable income when there *is* a commutation. This comparison is shown in Exhibit 1. The exhibit shows the change in taxable income if the reinsurer does the commutation, which includes the unwinding of the discount, in the current calendar year. This change is equal to the estimated year-end tax-basis reserves plus the estimated 7/1/90–12/31/90 paid losses (assuming no commutation), less the commutation payment.

While appearing a little odd, the estimated 7/1/90–12/31/90 paid losses plus the year-end tax-basis outstanding can be viewed as an estimate of the tax-basis reserves at the time of the commutation. This calculation is consistent with the formula used at year-end. The appropriate tax rate can then be applied to this figure to determine the amount of taxes. If estimated taxes are paid over the calendar year, it is usually not necessary to discount the tax payment.

4. COST ANALYSIS

Once the above values have been calculated, except for the commutation price, formula equations can be set up to determine the commutation price by equating the cost of not commuting with the cost of commuting. Since the example does not include any profit or risk loading in the costs, this formula seeks to determine a point of indifference between commuting or not commuting.

This formula is given as follows:

Cost of not commuting = PV of paid losses − PV of tax benefit on unwinding of discount

equals

Cost of commuting = Commutation price + tax on commutation

= Commutation price + tax rate × (expected payments, remainder of current calendar year + year-end tax-basis outstanding − commutation price).

Using the inputs:

Cost of not commuting = \$85,149 − \$5,712 = \$79,437

equals

Cost of commuting = Commutation price + .34 × (0 + \$79,812 − commutation price).

Then, using algebra, a commutation price of \$79,244 is determined.

Regarding this price, it is interesting to note that the commutation price may appear low, because the offer is less than the present value of the estimated paid losses. It can be noted that this will tend to happen, because of the tax effects created by the unwinding of the discount and the taxable gain generated by the transaction.

Now that a relatively elementary case has been analyzed and a good foundation has been laid, a more complicated example is considered. Assume the following information regarding a requested commutation is received:

1. The commutation is for a monoline, long-tailed, liability contract.
2. The current case reserves are as follows:

Accident Year	Reserves
1988	$ 5,000,000
1987	4,000,000
1986	6,000,000
1985	3,000,000
Total	$18,000,000

3. The timing of the individual claim payments is unknown.
4. Today's date is 6/30/90.

Given this data, a commutation price would be calculated as in the following paragraphs.

As a start, a thorough review of the contract would be performed. This investigation should include a detailed analysis of contract terms and limits, as well as discussions with various legal and underwriting personnel. In this way, potential areas of coverage dispute and confusion can be identified and appropriately resolved.

If there are adjustable features such as retrospectively-rated premium amounts payable by or to the reinsurer, these values should be included in the analysis. Sometimes these amounts are payable over time and therefore must be discounted. To keep this example simple, there will not be any adjustable features.

The next step is to estimate the IBNR reserves. In this calculation, any of the standard IBNR techniques could be used, and it is advisable to use more than one. If a loss development approach is taken and if the business is excess, it is important that excess loss development factors be used. Also, normally unallocated loss adjustment expense is not included in the contract. However, assuming expenses are not fixed, if the losses are commuted, Random Reinsurance will not have this expense. An estimate of this amount can also be included in the calculation.

For this example, assume that the estimates of IBNR, ALAE, and ULAE are as follows:

Accident Year	IBNR, ALAE, and ULAE	Case Reserves	Total Reserves
1988	$ 3,000,000	$ 5,000,000	$ 8,000,000
1987	2,000,000	4,000,000	6,000,000
1986	1,000,000	6,000,000	7,000,000
1985	500,000	3,000,000	3,500,000
Total	$ 6,500,000	$18,000,000	$24,500,000

Given this estimated total outstanding loss by accident year, the commutation cost analysis can now be started.

Present Value of the Paid Loss

In this case, because the timing of loss payments is not known, an estimate must be made of how the accident year reserves will pay out over future calendar years. In order to make this estimate, one would consider various economic, legal, and type of business factors; e.g., long-tailed versus short-tailed lines, proportional versus nonproportional reinsurance, and/or monoline versus multiline policy. Ideally, the estimated payment pattern would be based on the experience of the ceding company. However, reinsurance industry factors can also be used. As with the IBNR reserves, if the business is excess of a retention, an excess payment pattern must be used. If this contract covered multiple lines, several different payment patterns would be used for the projections.

Assume that the payment pattern displayed in Exhibit 2 is reflective of the type of business in this monoline contract. Based upon this pattern, an estimate of the future calendar year payment profile can be made. This calculation is displayed in Exhibit 3.

At this point, one must determine the present value of the estimated payments of the $24,500,000 in reserves. As in the elementary case, the interest rate(s) used must be reflective of the future expected rate of return (before tax) and the anticipated tax scenario of the reinsurer. For this calculation, assume a nominal 8% (before-tax) rate of return. Assume that the company anticipates that it will be a regular taxpayer for all the

calendar years at a 34% tax rate. Based upon these inputs, the present value of the paid losses is calculated to be $19,641,000. This calculation is presented in Exhibit 4.

Present Value of Tax Benefit on the Unwinding of the Discount

This amount, whose calculation (using industry factors to calculate the tax-basis reserves) is displayed in Exhibit 5, emerges as a result of the difference between the tax-basis discounted reserves and the nominal reserves. This difference will be a reduction in taxable income in the future, and the present value of this amount can be determined.

As with the elementary case, the amount of benefit that "unwinds" or is realized over each ensuing calendar year will be equal to the estimated tax-basis incurred (change in tax-basis reserves plus estimated loss payments) multiplied by the anticipated calendar year tax rate. The present value of these amounts is then obtained using the same after-tax interest rates assumed in the calculation of the present value of the paid losses.

For this example, the taxable income effect of the unwinding of the discount is estimated to be $5,202,000 in Exhibit 5. The present value of the tax is calculated to be $1,363,000 in Exhibit 6.

Thus, for this case study, the cost of not commuting is equal to $18,278,000 (present value of paid loss less present value of tax benefit on unwinding of discount). Now that this value has been calculated, the rest of the analysis follows the same routine developed for the elementary case. Using the theoretical relationships that balance the two costs, the tax on the change in taxable income generated by the commutation, as well as the commutation price, can be easily calculated.

Cost of not commuting = PV of paid losses −
PV of tax benefit on unwinding of discount
equals
Cost of commuting = Commutation price + tax on commutation
= Commutation price + tax rate × (expected payments, remainder of current calendar year + year-end tax-basis outstanding − commutation price)

Using our inputs:

$$\text{Cost of not commuting} = \$19{,}641{,}000 - \$1{,}363{,}000 = \$18{,}278{,}000$$

equals

$$\text{Cost of commuting} = \text{Commutation price} + .34 \times (2{,}070{,}000 + \$17{,}227{,}000 - \text{commutation price})$$

Then, again using algebra, one arrives at a commutation price of $17,753,000.

Exhibit 7 summarizes the information for this case in a useful format. The reinsurer is expected to make payments of $24,500,000. Taking into account the time value of money, it is estimated that $19,641,000 will be sufficient to fund these payments. Taking into account the benefit of the unwinding of the discount ($1,363,000), only $18,278,000 is necessary.

The reinsurer is willing to pay this amount, but must deduct the tax of $525,000 due on the commutation to develop the indicated price of $17,753,000. Please note that this is more than $1,800,000 less than the present value of the losses.

One point worth emphasizing is that commutation pricing involves the use of two separate payment profiles and nominal interest rates. The first set is used to determine the present value of the paid losses. The second set is used to calculate discounted loss reserves for tax purposes. If the payment pattern and nominal interest rate used to determine the present value of the losses are identical to the factors used to develop the tax-basis discounted reserves, then the commutation price will equal the present value of the losses using the nominal interest rate. To demonstrate, consider the elementary case with the following adjustments to make the calculations a little easier:

1. The five annual payments of $20,000 will begin 12/31/91.
2. Today's date is 12/31/90.

Using this information, Table 2 can be constructed.

TABLE 2

(1) Reserve/ Payment Date	(2) Loss Payment	(3) Nominal Reserve	(4) Discounted Tax Reserve	(5) Tax Basis Incurred	(6) Tax Credit	(7) After-Tax Payment
12/90	—	$100,000	$79,854	—	—	—
12/91	$20,000	80,000	66,243	$6,389	$2,172	$17,828
12/92	20,000	60,000	51,542	5,299	1,802	18,198
12/93	20,000	40,000	35,665	4,123	1,402	18,598
12/94	20,000	20,000	18,519	2,854	970	19,030
12/95	20,000	0	0	1,481	504	19,496

(8) Reserve/ Payment Date	(9) Interest Income	(10) Interest Income Tax	(11) After-Tax Interest Income	(12) Fund Liquidation
12/90	—	—	—	$79,854
12/91	$6,389	$2,172	$4,217	66,243
12/92	5,299	1,802	3,497	51,542
12/93	4,123	1,402	2,721	35,665
12/94	2,854	970	1,884	18,519
12/95	1,481	504	977	0

The five loss payments are paid out over the 12/91–12/95 period (columns 1 and 2). The corresponding reduction in the nominal reserves is given in column 3. For federal income tax purposes, the loss reserves are discounted at rates prescribed by the Internal Revenue Service (IRS). If the nominal interest rate is 8% and the IRS payment profile matches the payment schedule above, then the 12/90 tax-basis reserve (in column 4) can be calculated to be:

$$\$20{,}000 \times ((1.08)^{-1} + (1.08)^{-2} + (1.08)^{-3} + (1.08)^{-4} + (1.08)^{-5}),$$

or $79,854.

Column 5 shows the annual cost to the insurer: the loss payment plus the change in the tax-basis discounted reserve. For instance, in 1991,

the insurer paid $20,000 and took down the discounted reserve from $79,854 to $66,243. The "cost" is $20,000 + ($66,243 − $79,854), or $6,389.

The annual cost to the insurer in column 5 provides a 34% tax credit shown in column 6. Column 7 shows the after-tax payment, or column 2 minus column 6. Column 12 shows the funds needed on 12/31/90 to fund the after-tax payments shown in column 7. For instance, the $79,854 invested on December 31, 1990, earns 8% interest, or $6,389 in 1991 (column 9). Federal income taxes of $2,172 must be paid on the interest income (column 10), so the after-tax return is $4,217 (column 11). The after-tax payment in 1991 is $17,828, so the value of the fund on December 31, 1992, is $79,854 + $4,217 − $17,828, or $66,243.

As a result, $79,854 is the present value of losses, with or without consideration of taxes, and is the amount of money needed to fund the loss payments. It is also the commutation price, using the equations presented earlier.

If the IRS payment profiles and interest rates equal the factors used to determine the present value of the losses, then the commutation price will equal the present value of the losses using the nominal interest rate. While this is an interesting result, this situation will rarely come about in practice for several reasons.

First, once an interest rate and payment pattern are published by the IRS for an accident year, they are fixed for all time. If the commutation is transacted several years after the accident year has expired, it would be unlikely that current yields match the IRS yield.

Second, the payment profiles used to discount loss reserves are subject to change once every five years. As a result of swings in underwriting, economic, and legal cycles, insurer policy retentions, limits, coverages, and appetite for reinsurance vary. Consequently, the tax-basis payment profiles, which would be based upon relatively old loss experience, may not be reflective of the current type of business being written.

Third, if the type of business subject to the commutation is reported under the reinsurance line in the annual statement, the reinsurer must use an industry aggregate payment profile to develop tax-basis reserves.

It does not have the option of using its own company experience. This IRS pattern may have little resemblance to the actual payment profile associated with the line of business.

As a result of all these factors, it is doubtful that the profiles used to determine the present value of the losses will match the profiles used to determine the tax-basis reserves. This mismatch in patterns and interest rates can lead to situations that can either promote or deter commutations.

5. CONCLUSION

Overall, while commutation pricing may appear quite complex, the study becomes much more manageable when the individual pieces are looked at one at a time. Throughout this paper, only a single set of assumptions has been made for each example. Due to the fact that the input values can vary substantially, risk loads may be considered for any or all of the following parameters:

1. IBNR.
2. After-tax interest rates.
3. Payment profile(s).

The amount of risk loading for each parameter can be set judgmentally by the actuary.[4] Due to the high variability associated with most of these parameters, though, it may be best to perform the analysis iteratively using different assumptions. If the study is programmed, perhaps using any one of the many spreadsheet software packages, this form of sensitivity analysis can be performed easily.

Exhibit 8 shows developed commutation prices for the first case using different interest rate and tax assumptions. Please note that the interest rate and tax assumptions given apply to all the calendar years. Exhibit 9 shows commutation prices for the second case using varying tax situations, interest rate, and payment profiles. Regarding these various outcomes, the following points can be noted:

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[4] Robert Butsic suggests a method for doing this in "Determining the Proper Interest Rate for Loss Reserve Discounting: An Economic Approach" in *Evaluating Insurance Company Liabilities*, 1988 Discussion Paper Program, Casualty Actuarial Society, page 147.

1. The effects created by varying the payment schedules can be quite significant. Great care should be taken when the future payment stream is estimated.

2. In certain instances, the commutation price developed under this methodology can be negative. This can occur when there is a great mismatch between the payment profile/interest rate used to develop tax-basis discounted reserves and the payment profile/interest rate used to calculate the present value of the losses. Specifically, the tax-basis discounted reserves are substantially higher than the present value of the losses. This leads to the tax on the underwriting gain/loss becoming greater than the cost of not commuting. In cases of reinsurance of long-tailed lines, such as workers' compensation, where the overall industry average reinsurance payment profile is quite short relative to the actual payment profile, negative commutation values can be expected frequently. In these situations, commutations are not favored.

There are a large number of assumptions made in pricing a commutation. The present value of the future expected losses is only the starting point in determining the price of the commutation. In addition to this, assumptions can include future yields and tax positions going out 30 years, or more. The use of a spreadsheet allows the actuary to vary assumptions and determine their effect on the indicated price. The bottom line is that the indicated commutation price is still an estimate based on many assumptions. Regarding this point, it must be stressed that the prices developed above are all theoretical. In the actual negotiation process between reinsured and reinsurer, both parties may have broad differences of opinion regarding any/all of the parameters. Also, if the motivation behind the commutation is insolvency, or threatened insolvency, the actual price may be much less than the theoretical price.

One last word of caution: It is usually a good idea to put a time limit on a commutation offer. Changes in economic outlook can affect any or all of the input parameters; e.g., interest rates, tax assumptions, etc. This can lead to significant changes in the commutation price.

EXHIBIT 1

Determination of Change in Taxable Income As a Result of a Commutation

No Commutation

A. Current Year Taxable Income = Change in Tax-Basis Reserves − Paid Losses in Current Year

= Beginning of Year Tax-Basis Reserves − Estimated Year-End Tax-Basis Reserves − Calendar Year Paid Losses prior to Date of Commutation − Expected Calendar Year Paid Losses after Date of Commutation

Commutation

B. Current Year Taxable Income = Change in Tax-Basis Reserves − Paid Losses in Current Year

= Beginning of Year Tax-Basis Reserves − Estimated Year-End Tax-Basis Reserves (=0) − Calendar Year Paid Losses prior to Date of Commutation − Expected Calendar Year Paid Losses after the Date of Commutation (=0) − Commutation Price

Change in Taxable Income as a result of a commutation equals B − A, which is:

Estimated Year-End Tax-Basis Reserves +
Calendar Year Paid Losses after the Date of Commutation − Commutation Price

EXHIBIT 2

ESTIMATED PAYMENT PROFILE
RANDOM REINSURANCE CORPORATION

Year	Payout Percentage
1	2.00%
2	3.00
3	16.00
4	11.00
5	10.00
6	10.00
7	9.00
8	8.00
9	6.00
10	5.00
11	4.00
12	3.00
13	3.00
14	3.00
15	2.00
16	2.00
17	1.00
18	1.00
19	1.00
Total	100.00%

EXHIBIT 3

DEVELOPMENT OF FUTURE PAID LOSS STREAM
RANDOM REINSURANCE CORPORATION
(000 omitted)

Step 1: Develop Expected Nominal Paid Losses by Accident Year

Accident Year	Reserves at 6/30/90	Percentage of Total Acc. Yr. Losses Paid to Date	Expected Total Losses* for Accident Year
1985	$3,500	47.00%	$ 6,604
1986	7,000	37.00	11,111
1987	6,000	26.50	8,163
1988	8,000	13.00	9,195

Step 2: Develop Paid Loss Stream

Year	Expected Payout Pattern Acc. Yr. 1985–88	Calendar Year	Accident Yr. 1985 Payout Stream	Accident Yr. 1986 Payout Stream	Accident Yr. 1987 Payout Stream	Accident Yr. 1988 Payout Stream	Total
1	2%	1985	$ 132				$ 132
2	3	1986	198	$ 222			420
3	16	1987	1,057	333	$ 163		1,553
4	11	1988	726	1,778	245	$ 184	2,933
5	10	1989	660	1,222	1,306	276	3,465
6	10	1/1/90–6/30/90	330	556	449	736	2,070
7	9						
8	8	7/1/90–12/31/90	330	556	449	736	2,070
9	6	1991	594	1,111	816	1,011	3,533
10	5	1992	528	1,000	816	920	3,264
11	4	1993	396	889	735	920	2,939
12	3	1994	330	667	653	828	2,478
13	3	1995	264	556	490	736	2,045
14	3	1996	198	444	408	552	1,602
15	2	1997	198	333	327	460	1,318
16	2	1998	198	333	245	368	1,144
17	1	1999	132	333	245	276	986
18	1	2000	132	222	245	276	875
19	1	2001	66	222	163	276	727
Total	100%	2002	66	111	163	184	524
		2003	66	111	82	184	443
		2004	0	111	82	92	285
		2005	0	0	82	92	174
		2006	0	0	0	92	92
		2007	0	0	0	0	0
		2008	0	0	0	0	0
		Future Total**	$3,500	$7,000	$6,000	$8,000	$24,500

* Based on estimated payout pattern.

** Future Total does not include payments prior to 7/1/90.

Note: Paid in a Year = Total Expected Loss × Payout Percentage for Year.

EXHIBIT 4

PRESENT VALUE OF FUTURE PAID LOSSES
RANDOM REINSURANCE CORPORATION
(000 omitted)

Present Value Calendar Year	Paid Losses*	Nominal Interest Rate	Tax Factor	Net of Tax Rate	Discount Factor	Present Value of Paid
1990	$ 2,070	8.0%	0.660	5.3%	0.9872	$ 2,044
1991	3,533	8.0%	0.660	5.3%	0.9498	3,356
1992	3,264	8.0%	0.660	5.3%	0.9022	2,945
1993	2,939	8.0%	0.660	5.3%	0.8570	2,519
1994	2,478	8.0%	0.660	5.3%	0.8140	2,017
1995	2,045	8.0%	0.660	5.3%	0.7732	1,581
1996	1,602	8.0%	0.660	5.3%	0.7344	1,177
1997	1,318	8.0%	0.660	5.3%	0.6976	919
1998	1,144	8.0%	0.660	5.3%	0.6626	758
1999	986	8.0%	0.660	5.3%	0.6293	621
2000	875	8.0%	0.660	5.3%	0.5978	523
2001	727	8.0%	0.660	5.3%	0.5678	413
2002	524	8.0%	0.660	5.3%	0.5393	283
2003	443	8.0%	0.660	5.3%	0.5123	227
2004	285	8.0%	0.660	5.3%	0.4866	139
2005	174	8.0%	0.660	5.3%	0.4622	80
2006	92	8.0%	0.660	5.3%	0.4390	40
2007	0	8.0%	0.660	5.3%	0.4170	0
2008	0	8.0%	0.660	5.3%	0.3961	0
Total	$24,500					$19,641

* For 1990, assume payment is made 10/1/90. For all other years assume June 30.

EXHIBIT 5, Part 1

DETERMINATION OF UNWINDING OF DISCOUNT PAYOUT STREAM
RANDOM REINSURANCE CORPORATION
(000 omitted)

Calendar Year	(1) Nominal Paid Losses	(2) Accident Year 88 O/S at 12/31	(3) IRS Factor	(4) Tax-Basis Accident Year 88 O/S at 12/31	(5) Accident Year 87 O/S at 12/31	(6) IRS Factor	(7) Tax-Basis Accident Year 87 O/S at 12/31	(8) Accident Year 86 O/S at 12/31	(9) IRS Factor	(10) Tax-Basis Accident Year 86 O/S at 12/31	(11) Accident Year 85 O/S at 12/31	(12) IRS Factor	(13) Tax-Basis Accident Year 85 O/S at 12/31	(14) Nominal O/S at 12/31	(15) Total Tax-Basis O/S at 12/31	(16) Discount Unwind*
1990	$ 2,070	$7,264	0.787052	$5,717	$5,551	0.776806	$4,312	$6,444	0.758586	$4,889	$3,170	0.728501	$2,309	$22,430	$17,227	
1991	3,533	6,253	0.764042	4,777	4,735	0.758586	3,592	5,333	0.728501	3,885	2,575	0.716837	1,846	18,896	14,101	$ 407
1992	3,264	5,333	0.744839	3,972	3,918	0.728501	2,855	4,333	0.716837	3,106	2,047	0.713613	1,461	15,632	11,394	558
1993	2,939	4,414	0.712961	3,147	3,184	0.716837	2,282	3,444	0.713613	2,458	1,651	0.716331	1,183	12,693	9,070	615
1994	2,478	3,586	0.700375	2,512	2,531	0.713613	1,806	2,778	0.716331	1,990	1,321	0.746667	986	10,215	7,294	701
1995	2,045	2,851	0.696588	1,986	2,041	0.716331	1,462	2,222	0.746667	1,659	1,057	0.780160	824	8,170	5,931	683
1996	1,602	2,299	0.698986	1,607	1,633	0.746667	1,219	1,778	0.780160	1,387	858	0.817540	702	6,568	4,915	586
1997	1,318	1,839	0.730679	1,344	1,306	0.780160	1,019	1,444	0.817540	1,181	660	0.859831	568	5,250	4,111	514
1998	1,144	1,471	0.765829	1,127	1,061	0.817540	868	1,111	0.859831	955	462	0.908514	420	4,106	3,370	402
1999	986	1,195	0.805246	963	816	0.859831	702	778	0.908514	707	330	0.965834	319	3,120	2,690	307
2000	875	920	0.850059	782	571	0.908514	519	556	0.965834	537	198	0.965834	191	2,245	2,029	214
2001	727	644	0.901909	581	408	0.965834	394	333	0.965834	322	132	0.965834	128	1,517	1,424	123
2002	524	460	0.963277	443	245	0.965834	237	222	0.965834	215	66	0.965834	64	993	958	58
2003	443	276	0.963277	266	163	0.965834	158	111	0.965834	107	0	0.965834	0	550	531	16
2004	285	184	0.963277	177	82	0.965834	79	0	0.965834	0	0	0.965834	0	266	256	10
2005	174	92	0.963277	89	0	0.965834	0	0	0.965834	0	0	0.965834	0	92	89	6
2006	92	0	0.963277	0	0	0.965834	0	0	0.965834	0	0	0.965834	0	0	0	3
2007	0	0	0.963277	0	0	0.965834	0	0	0.965834	0	0	0.965834	0	0	0	0
2008	0	0	0.963277	0	0	0.965834	0	0	0.965834	0	0	0.965834	0	0	0	0
	$24,500															$5,202

* (16) = Paid in Current Year + Change in Tax-Basis Reserves = Tax-Basis Incurred.

EXHIBIT 5, Part 2

IRS Discount Factors*

Calendar Year	Accident Year 1988	Accident Years 1987 and Prior
AY + 0	0.835127	0.844514
AY + 1	0.805296	0.816121
AY + 2	0.787052	0.798700
AY + 3	0.764042	0.776806
AY + 4	0.744839	0.758586
AY + 5	0.712961	0.728501
AY + 6	0.700375	0.716837
AY + 7	0.696588	0.713613
AY + 8	0.698986	0.716331
AY + 9	0.730679	0.746667
AY + 10	0.765829	0.780160
AY + 11	0.805246	0.817540
AY + 12	0.850059	0.859831
AY + 13	0.901909	0.908514
AY + 14	0.963277	0.965834
AY + 15	0.963277	0.965834

* Composite Schedule P

EXHIBIT 6

PRESENT VALUE OF UNWINDING OF DISCOUNT
RANDOM REINSURANCE CORPORATION
(000 omitted)

Calendar Year	Nominal Unwinding Discount	Nominal Interest Rate*	Tax Factor	Net of Tax Rate	Discount Factor**	Present Value of UWD	Tax Rate	Present Value of Tax on UWD
1990		8.0%	0.660	5.3%			34%	
1991	$ 407	8.0%	0.660	5.3%	0.9498	$ 386	34%	$ 131
1992	558	8.0%	0.660	5.3%	0.9022	503	34%	171
1993	615	8.0%	0.660	5.3%	0.8570	527	34%	179
1994	701	8.0%	0.660	5.3%	0.8140	571	34%	194
1995	683	8.0%	0.660	5.3%	0.7732	528	34%	179
1996	586	8.0%	0.660	5.3%	0.7344	430	34%	146
1997	514	8.0%	0.660	5.3%	0.6976	359	34%	122
1998	402	8.0%	0.660	5.3%	0.6626	267	34%	91
1999	307	8.0%	0.660	5.3%	0.6293	193	34%	66
2000	214	8.0%	0.660	5.3%	0.5978	128	34%	43
2001	123	8.0%	0.660	5.3%	0.5678	70	34%	24
2002	58	8.0%	0.660	5.3%	0.5393	31	34%	11
2003	16	8.0%	0.660	5.3%	0.5123	8	34%	3
2004	10	8.0%	0.660	5.3%	0.4866	5	34%	2
2005	6	8.0%	0.660	5.3%	0.4622	3	34%	1
2006	3	8.0%	0.660	5.3%	0.4390	1	34%	1
2007	0	8.0%	0.660	5.3%	0.4170	0	34%	0
2008	0	8.0%	0.660	5.3%	0.3961	0	34%	0
Total	$5,202					$4,010		$1,363

* Tax factor and net of tax rate same as those used to present value the losses given in Exhibit 4.

** Assume discount unwinds on June 30 of each year.

EXHIBIT 7

GENERAL SUMMARY
RANDOM REINSURANCE CORPORATION COMMUTATION
(000 omitted)

Current Outstanding Losses	$24,500
PV* of Outstanding Losses	$19,641
PV of Tax Affected Unwinding of Discount	$1,363
Initial Cost without Commutation	$18,278
Tax on Underwriting Gain	$525
Balance Commutation Price	$17,753

* In the present value calculation, the discount factor is a function of our expected tax situation.

EXHIBIT 8

SENSITIVITY ANALYSIS
ELEMENTARY CASE

Tax Situation*	Nominal Interest Rate	Present Value	PV of Unwinding of Discount	Tax on Underwriting Gain	Commutation Price
Minimum	6%	$87,071	$3,447	$ (952)	$84,576
Minimum	7%	85,171	3,361	(501)	82,311
Minimum	8%	83,338	3,278	(63)	80,123
Minimum	9%	81,566	3,198	360	78,008
Minimum	10%	79,853	3,121	769	75,963
Regular	6%	89,137	6,019	(1,702)	84,820
Regular	7%	87,507	5,893	(928)	82,542
Regular	8%	85,923	5,772	(175)	80,326
Regular	9%	84,385	5,653	556	78,176
Regular	10%	82,890	5,538	1,268	76,084

* Minimum indicates 20% tax rate for all years; Regular indicates 34% tax rate for all years.

EXHIBIT 9
Part 1

SENSITIVITY ANALYSIS
PAYOUT PROFILE USING EXAMPLE PAYMENT PATTERN

Tax Situation*	Nominal Interest Rate	Present Value	PV of Unwinding of Discount	Tax on Underwriting Gain	Commutation Price
Minimum	6%	$20,005	$ 820	$ 28	$19,157
Minimum	7%	19,406	790	171	18,445
Minimum	8%	18,841	762	305	17,774
Minimum	9%	18,308	735	431	17,142
Minimum	10%	17,804	710	551	16,543
Regular	6%	20,674	1,451	38	19,185
Regular	7%	20,145	1,406	288	18,451
Regular	8%	19,641	1,363	525	17,753
Regular	9%	19,162	1,323	751	17,088
Regular	10%	18,705	1,284	967	16,454

* Minimum indicates 20% tax rate for all years; Regular indicates 34% tax rate for all years.

EXHIBIT 9
Part 2

SENSITIVITY ANALYSIS
PAYOUT PROFILE USING EXAMPLE PAYMENT PATTERN

Tax Situation*	Nominal Interest Rate	Present Value	PV of Unwinding of Discount	Tax on Underwriting Gain	Commutation Price
Minimum	6%	$19,402	$834	$ 126	$18,442
Minimum	7%	18,729	801	286	17,642
Minimum	8%	18,096	769	436	16,891
Minimum	9%	17,499	739	578	16,182
Minimum	10%	16,937	710	711	15,516
Regular	6%	20,155	1,482	206	18,467
Regular	7%	19,559	1,432	487	17,640
Regular	8%	18,993	1,383	754	16,856
Regular	9%	18,455	1,338	1,007	16,110
Regular	10%	17,943	1,294	1,248	15,401

* Minimum indicates 20% tax rate for all years; Regular indicates 34% tax rate for all years.

EXHIBIT 9
Part 3

SENSITIVITY ANALYSIS
PAYOUT PROFILE USING EXAMPLE PAYMENT PATTERN

Tax Situation*	Nominal Interest Rate	Present Value	PV of Unwinding of Discount	Tax on Underwriting Gain	Commutation Price
Minimum	6%	$21,969	$ 858	$ (383)	$21,494
Minimum	7%	21,596	839	(294)	21,051
Minimum	8%	21,235	822	(208)	20,621
Minimum	9%	20,886	804	(125)	20,207
Minimum	10%	20,548	788	(45)	19,805
Regular	6%	22,375	1,492	(671)	21,554
Regular	7%	22,055	1,465	(520)	21,110
Regular	8%	21,744	1,439	(373)	20,678
Regular	9%	21,441	1,414	(230)	20,257
Regular	10%	21,147	1,389	(91)	19,849

* Minimum indicates 20% tax rate for all years; Regular indicates 34% tax rate for all years.

EXHIBIT 9
Part 4

ADDITIONAL PAYMENT PATTERNS

Year	Slow Pattern	Fast Pattern
1	1.00%	5.00%
2	3.00	7.00
3	5.00	20.00
4	7.00	15.00
5	9.00	12.00
6	9.00	12.00
7	11.00	12.00
8	11.00	10.00
9	9.00	4.00
10	7.00	2.00
11	5.00	1.00
12	5.00	
13	4.00	
14	4.00	
15	3.00	
16	2.00	
17	2.00	
18	2.00	
19	1.00	
Total	100.00%	100.00%