Commutations

What's in it for the Cedent?

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What's in it for the Cedant?

- Commutation Considerations
- Case Studies
- Pricing Commutations – general approach and examples

Commutation Considerations

- Reinsurer in financial trouble
- London reinsurer proposing a "scheme of arrangement" – Forced Commutation
- Reinsurer paying slowly, often due to financial condition, but sometimes due to contract disputes
- Costly claim by claim litigation
- Mandatory commutation

Commutation Considerations

- Cedent exiting a segment of business with consequent "run off" issues
- Administrative costs
- Recoverable concentration with particular reinsurer
- Cash flow
- Reinsurer motivated

Commutation Considerations

- Income hit from taking back discounted reserves
- Uncertainty of ultimate value of liabilities re-assumed
- Investment considerations (cash may or may not be desirable depending on investment environment)

Reinsurer in Financial Trouble Case Study 1

- New Jersey decision 2007 – Integrity Insurance Company
  - IBNR claims are not "absolute" and thus not covered in liquidation
- Can apply equally to Reinsurer liquidations
- Importance of "getting to the table" first. Negotiate commutation before reinsurer goes into liquidation

Solvent Scheme of Arrangement Forced Commutation

Case Study 2

- UK or EU company doing substantial UK business wants to extinguish their liabilities and return capital to shareholders
- Generally done on a "cut-off" basis, there is a fixed time period often as short as 6 months for reporting claims
- Majority in number and 75% in value of creditors must approve
- BAIC decision in 2005
  - Creditors must be separated into classes: those with substantial IBNR and those whose recoverables are reasonably certain to be fully reported
  - Direct policyholders must be excluded (not in the "risk business", unlike insurers)

Solvent Scheme of Arrangement Forced Commutation

Case Study 2

- 100 cents on the dollar as opposed to an insolvent scheme
- Discounting decided by scheme adjudicator
- IBNR can be included in two ways:
  - Scheme may approve a formula which is then applied universally to all creditors
  - IBNR calculation may be submitted by cedent and then reviewed by scheme actuary
- Biggest issue: Can creditors be forced to accept commutation for recoverables which are highly uncertain, when the valuation of these by the scheme determines their voting power?

Commutation of Individual Claims

- Set of claims with similar characteristics, e.g. from a single event
  - Often due to disputed coverage
- Large, slow paying claims, e.g. Worker's Compensation Permanent Total injuries
  - If cedent is negotiating a structured settlement that will go below treaty attachment
- Mandatory Commutations of Facultative Certificates
  - Formula usually specified in certificate

Commutation of Individual Claims
Set of Claims
Case Study 3

- Katrina Claims
  - QS agreement, risks attaching, two consecutive treaty years
  - Interlocking clause not well defined
  - Occurrence limit of $100m for each year
  - Cedent asserts that both the 2004 and 2005 treaty years can use the full occurrence limit, i.e. $200m in total
  - Reinsurer and Cedent agree to compromise rather than enter into lengthy, expensive litigations

Commutation of Individual Claims
Set of Claims
Case Study 4

- Asbestos Claims
  - Cedent has evaluated his reinsurance protection for asbestos claims from casualty treaties purchased in the 1970's.
  - Several reinsurers are in run-off although solvent
  - There are legal ambiguities to the allocation of damages across individual polices and even more across consecutive treaty years
  - Cedent believes the current outlook could worsen
    - in ultimate values
    - In treaty attachment to the latent exposure
  - Cedent may be motivated to commute

Commutation of Individual Claims
Single Claim
Case Study 5

- Cedent has the opportunity to enter into a structured settlement with a PT injured insured

  FACTS

  Case Reserve = $2m, paid over 40 years

  Discounted Reserve = $1m

  Treaty covers $1m x $1m layer

  Discounted $1m x $1m layer = $250k

  No settlement, reinsurer pays $1m

  With settlement, reinsurer pays $0
- May agree to commute the claim for the discounted value of the top $1m (e.g. $250k)

Mandatory Commutation Language can be as specific as:

- Mortality assumptions based on latest US Census Tables, adjusted for mortality improvement
- Future medical costs projected cash payments will be based on the average annual Medical CPI over the last 20 years
- Future indemnity costs projected cash payments will be based on the average annual cost of living increase over the past 20 years as available from the State governing body
- Discount rate will be the yield of the Treasury Bill maturing 10 years from the date of commutation.

Mandatory Commutation
Single Claim Calculation
Case Study 6

Example of Individual Claim Calculation on Mandatory Commutation

Parameters

Date of Loss	1/1/2000	
Evaluation Date:	12/31/2009	
Current Age:	65	
Gender	M	
Est'd Annual Indem. Pmt:	20,871	Per State Formula
Est'd Annual Med. Pmt:	50,000	Estimated by Cedent
Cost of Living Adjustment:	2.00%	Specified in Cert as 20 year COLA per State
Est'd Medical Cost Infl'n:	5.00%	Specified in Cert as 20 year Medical CPI
Reins. Attachment Point:	1,000,000	
Reins. Limit:	5,000,000	
Discount Rate:	3.51%	Specified in Cert as 10 year Treasury
100% Expected Layer Pmt, Discounted	973,645	

Cal Yr.	Incremental Indemnity Payment	Incremental Medical Payment	Total Payment	Cumulative Payment	Excess of Attachment	Incremental Excess Paymt	Probability of Surviving to the Pmt Yr	3.5% Discount Factor	Expected Disc't Pmt
######	150,042	250,000	400,042	400,042	0	0		1.00	
2010	21,079	51,235	72,314	472,356	0	0	100%	0.98	-
2011	21,501	53,796	75,297	547,653	0	0	99%	0.95	-
2012	21,931	56,486	78,417	626,070	0	0	97%	0.92	-
2013	22,369	59,311	81,680	707,750	0	0	95%	0.89	-
2014	22,817	62,276	85,093	792,843	0	0	94%	0.86	-
2015	23,273	65,390	88,663	881,506	0	0	92%	0.83	-
2016	23,739	68,659	92,398	973,904	0	0	90%	0.80	-
2017	24,213	72,092	96,306	**1,070,210**	70,210	70,210	87%	0.77	47,441
2018	24,698	75,697	100,395	**1,170,604**	170,604	100,395	85%	0.75	63,821
2019	25,191	79,482	104,673	**1,275,278**	275,278	104,673	83%	0.72	62,440
2020	25,695	83,456	109,151	**1,384,429**	384,429	109,151	80%	0.70	60,921
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
2042	39,724	244,131	283,855	**5,474,080**	4,474,080	283,855	7%	0.33	6,606
2043	40,519	256,337	296,856	**5,770,936**	4,770,936	296,856	5%	0.32	5,132
2044	41,329	269,154	310,483	6,081,420	5,000,000	229,064	4%	0.30	2,875
2045	42,156	282,612	324,768	6,406,187	5,000,000	0	3%	0.29	-
2046	42,999	296,742	339,741	6,745,929	5,000,000	0	0%	0.28	-
Total									973,645

Cedent Exiting Surety Business
Case Study 7

- Cedent has a national surety book composed of multi-year contract surety bonds
- Excess of Loss reinsurance treaty on a "losses discovered basis"
- Recent years have produced few losses "discovered"
- Current year premiums are strong after hardening of the market
- Reinsurer expects good results from prior years but fears bad results from current year due to economic downturn
- Cedent thinks the losses from the current economic downturn will not be "discovered" this year
- Both sides are motivated to commute the agreement

Old Treaty with Administrative Costs
Case Study 8

- Cedent has a very long tail casualty excess of loss and clash program on a risks attaching basis for the years 1950 – 1970
- Several non-admitted reinsurers are on the program, some in financial difficulty
- Asbestos and environmental exposures have been commuted
- Remaining claims are mostly precautionary notices
- Ongoing reporting costs to broker, data systems maintenance, held IBNR, credit concerns, Sch. F penalties, LOC maintenance, etc.

Pricing a Commutation

- Formula from Connor and Olsen
  - **Reinsurer Ambivalence Point**
  - Cost to not Commute = Cost to Commute
  - Cost to not Commute = NPV(Loss) – Tax Benefit (unwind of discount)
  - Cost to Commute = Cash Payment + Tax (Profit on transaction)
  - Price = NPV(Loss) – Tax Unwind Benefit – Tax on transaction profit
- Now including Cedent side
  - **Cedent Ambivalence Point**
  - Cost to not Commute = Cost to Commute
  - Cost to not Commute = Tax Loss (unwind of ceded discount)
  - Cost to Commute = NPV(Loss) – Cash - Tax(Loss on transaction)
  - Price = NPV(Loss) – Tax Unwind Hit – Tax on transaction loss
- It appears that these two are equal to each other
- Are they?

Pricing a Commutation
Example 1

- E&O XOL cover on a claims made basis
- Incepted 1/1/2007
- Unpaid losses = $20m
- Duration of 3 years
- Discount Rate = 1.7% (Treasury at 12/31/09)
- Commutation Date of 12/31/2009

- Reinsurer elected to use the IRS payout pattern for tax discounting, i.e. "Reinsurance B"
- Reinsurer effective tax rate = 35%
- Ceded elected to use the IRS payout pattern, i.e. "GL Claims Made"
- Ceded effective tax rate = 28%

Pricing a Commutation
Reinsurer Ambivalence Point
Example 1

Company NPV using 3 Year Treasury = 1.7%

IRS Discount Factors based on IRS disc rate of 3.4%
Using "Reinsurance B (Non-Proportional Liability)" Payout Pattern

	(1)	(2)	(3)	(4) = 20m*2*3	(5)	(6) = 1*5	(7) = 1-6	(8) = 7- 7	(9) = 3*8
Year	Unpaid	Remaining Payout Pattern	Disc Factor	Disc Loss	IRS Disc Fct	IRS Disc Unpaid	IRS Disc	Disc Unwind	Discounted Disc Unwind
Inception	34,295,905				82.3%				
2007	32,279,443				84.9%				
2008	27,823,067				87.4%	17,474,258	2,525,742		
2009	**20,000,000**		1.00		88.8%	11,415,587	1,434,334	1,091,408	1,073,164
2010	12,849,921	36%	0.98	7,030,559	87.0%	7,900,773	1,180,542	253,791	245,378
2011	9,081,316	19%	0.97	3,643,668	89.4%	5,520,874	651,154	529,388	503,282
2012	6,172,028	15%	0.95	2,765,819	88.6%	3,455,587	444,577	206,577	193,107
2013	3,900,165	11%	0.93	2,123,726	89.4%	2,847,050	338,800	105,778	97,228
2014	3,185,850	4%	0.92	656,576	91.5%	1,618,590	149,741	189,059	170,872
2015	1,768,331	7%	0.90	1,281,159	93.0%	1,189,457	90,158	59,583	52,951
2016	1,279,615	2%	0.89	434,321	94.1%	720,400	44,776	45,381	39,656
2017	765,176	3%	0.87	449,537	94.5%	349,743	20,504	24,273	20,856
2018	370,246	2%	0.86	339,337	95.0%	164,062	8,720	11,784	9,956
2019	172,782	1%	0.84	166,832	95.7%	70,857	3,192	5,528	4,592
2020	74,049	0%	0.83	82,022	96.7%	23,879	805	2,387	1,950
2021	24,683	0%	0.82	40,325	96.7%	-	-	805	646
2022	-	0%	0.80	19,826					
	Maturity	2.98		19,033,707				2,525,742	2,413,638

NPV (Loss)	NPV Tax Disc Unwind	Tax Rate	Tax Benefit on Unwind Disc	Cost to Not Commute
19,033,707	2,413,638	35.0%	844,773	18,188,934

Commutation Payment	Reserves Taken Down	Profit on Transaction	Tax on Profit on Trans	Cost to Commute
17,213,745	20,000,000	2,786,255	975,189	18,188,934

Pricing a Commutation
Cedent Ambivalence Point
Example 1

Company NPV using 3 Year Treasury = 1.7%

IRS Discount Factors based on IRS disc rate of 3.4%
Using "Other Liability - Claims Made" Pattern

	(1)	(2)	(3)	(4) = 20m*2*3	(5)	(6) = 1*5	(7) = 1-6	(8) = 7- 7	(9) = 3*8
Year	Unpaid	Remaining Payout Pattern	Disc Factor	Disc Loss	IRS Disc Fct	IRS Disc Unpaid	IRS Disc	Disc Unwind	Discounted Disc Unwind
Inception	34,295,905				88.7%				
2007	32,279,443				90.4%				
2008	27,823,067				90.8%	18,169,746	1,830,254		
2009	**20,000,000**		1.00		90.5%	11,631,864	1,218,057	612,197	601,964
2010	12,849,921	36%	0.98	7,030,559	90.9%	8,255,175	826,141	391,916	378,923
2011	9,081,316	19%	0.97	3,643,668	91.1%	5,624,032	547,996	278,144	264,428
2012	6,172,028	15%	0.95	2,765,819	90.8%	3,541,658	358,507	189,489	177,134
2013	3,900,165	11%	0.93	2,123,726	92.5%	2,946,672	239,177	119,330	109,684
2014	3,185,850	4%	0.92	656,576	92.1%	1,628,436	139,895	99,282	89,731
2015	1,768,331	7%	0.90	1,281,159	93.4%	1,194,588	85,026	54,869	48,762
2016	1,279,615	2%	0.89	434,321	94.1%	720,400	44,776	40,250	35,172
2017	765,176	3%	0.87	449,537	94.5%	349,743	20,504	24,273	20,856
2018	370,246	2%	0.86	339,337	95.0%	164,062	8,720	11,784	9,956
2019	172,782	1%	0.84	166,832	95.7%	70,857	3,192	5,528	4,592
2020	74,049	0%	0.83	82,022	96.7%	23,879	805	2,387	1,950
2021	24,683	0%	0.82	40,325	96.7%	-	-	805	646
2022	-	0%	0.80	19,826					
	Maturity	2.98		19,033,707				1,830,254	1,743,799

NPV Tax Disc Ceded Unwind	Tax Rate	Tax Hit on Unwind Disc	Cost to Not Commute
1,743,799	28.0%	488,264	488,264

Disc Loss	Commutation Payment	Loss on Transaction	Tax Savings on Trans	Cost to Commute
19,033,707	17,979,782	2,020,218	565,661	488,264

Pricing a Commutation
Example 1

- Reinsurer Ambivalence Point = $17.2m
- Cedent Ambivalence Point = $18.0m

Now the negotiation begins!

Pricing a Commutation
Considering Risk Load

- Risk Load
  - Can be expressed as the amount of capital each party will put up to support the transaction and the return on capital required by the capital providers
  - Required return can be approximated by the cost of raising capital via surplus notes
  - Capital can be approximated in several ways
    - Capital based on market price
    - Capital based on volatility (some downside measure), but tempered by diversity in the party's total book of business
    - Capital based on some ratio to Rating Agency required Capital

Pricing a Commutation
Including Risk Load – Example 2

- The Cedent is considered to be a lower risk investment than the Reinsurer
  - Investors expect a premium of 500 basis points over risk free for investing in the Cedent
  - Investors expect a premium of 1000 basis points over risk free for investing in the Reinsurer
- Capital based on 99th percent VAR of profit
- Cedent has a larger, more diversified book of business, which reduces required capital
- Tax rates remain at 35% for the Reinsurer and 28% for the Cedent

Pricing a Commutation
Including Risk Load – Example 2

		Cedent	Reinsurer
(1)	Premium	21,100,000	23,949,812
(2)	Expected Loss	20,000,000	20,000,000
(3)	Discounted Loss	19,055,385	19,055,385
(4)=1-3	NPV Profit (before Tax)	2,044,615	4,894,427
Tax	Tax Rate	28.0%	35.0%
(6)=4*(1-Tax)	NPV Profit (after Tax)	1,472,123	3,181,377
(7)=1.7%*(1-Tax)	Passive Return	1.2%	1.1%
(8) = 14	Capital	16,813,339	22,859,294
	ROE	**10.0%**	**15.0%**
	Loss Ratio	**94.8%**	**83.5%**

Cost of Capital

	Risk Free	Premium	Total
Reinsurer	5.0%	10.0%	15.0%
Cedent	5.0%	5.0%	10.0%

Capital Calculation

		Cedent	Reinsurer
(9) Agg Loss Curve	99th Downside Loss	30,000,000	30,000,000
(10)=1-9	99th Downside Profit	(8,900,000)	(6,050,188)
(11) Selected	Diversity Factor	0.50	1.00
(12)=10*11	First Year Capital	(4,450,000)	(6,050,188)
(13)=Sum NPV(O/S)	Years Held Multiplier	3.78	3.78
(14) = 12*13*-1	All Years Capital	16,813,339	22,859,294

Pricing a Commutation
Including Risk Load – Example 2

Cedent

Cost to Not Commute

NPV Tax Disc Unwind	Tax Rate	Tax Hit on Discount Unwind	Cost to Not Commute
1,743,799	28.0%	488,264	488,264

Cost to Commute

NPV Loss	Risk Load	Commutation Payment	Profit on Transaction	Tax on Profit	Cost to Commute
19,055,385	1,472,123	**20,054,505**	54,505	15,262	488,264

Reinsurer

Cost to Not Commute

NPV Loss	NPV Tax Disc Unwind	Tax Rate	Tax Benefit on Unwind Disc	Risk Load	Cost to Not Commute
19,055,385	2,413,638	35.0%	844,773	3,181,377	21,391,989

Cost to Commute

Commutation Payment	Reserves Taken Down	Profit on Transaction	Tax on Transaction	Cost to Commute
22,141,522	20,000,000	(2,141,522)	(749,533)	21,391,989

Pricing a Commutation
Including Risk Load – Example 2

- Reinsurer Ambivalence Point = \$22.1m
- Cedent Ambivalence Point = \$20.0m
- Values are higher than "tax only" scenario due to the cost of earning a "investor required" return on capital
- Reinsurer commutation value is now higher than the Cedent's due to different return requirements

Pricing a Commutation
Other Considerations affecting Price

- Other considerations that affect the price of commutations:
  - Value of cash flow
  - LOC costs for the Non-Admitted Reinsurer
  - Expected credit risk costs for the Cedent
  - Schedule F penalties for the Cedent
  - Rating Agency Capital requirements

Pricing a Commutation
Including Value of Cash Flow – Example 3

- Reinsurer has matched assets to the treaty liabilities (3 year duration)
- If assets are liquidated, the Reinsurer will realize a 10% loss
- Cedent's investment rate on new cash for a 3 year duration is 1.7%
- Cedent believes that the long-term average for 3 year investments should be 4%

Pricing a Commutation
Return on Equity - Cedent
Including Value of Cash Flow – Example 3

		4.0% Rate	1.7% Rate
(1)	Premium	21,100,000	21,100,000
(2)	Expected Loss	20,000,000	20,000,000
(3)	Discounted Loss	17,906,460	19,055,385
(4)=1-3	NPV Profit (before Tax)	3,193,540	2,044,615
Tax	Tax Rate	28.0%	28.0%
(6)=4*(1-Tax)	NPV Profit (after Tax)	2,299,349	1,472,123
(7)=1.7%*(1-Tax)	Passive Return	2.9%	1.1%
(8) = 14	Capital	16,095,318	16,813,339
	ROE	**17.2%**	**9.9%**
	Loss Ratio	**94.8%**	**94.8%**

Cost of Capital

	Risk Free	Premium	Total
Reinsurer	5%	10%	15%
Cedent	5%	5%	10%

Capital Calculation

(9) Agg Loss Curve	99th Downside Loss	30,000,000	30,000,000
(10)=1-9	99th Downside Profit	(8,900,000)	(8,900,000)
(11) Selected	Diversity Factor	0.50	1.00
(12)=10*11	First Year Capital	(4,450,000)	(8,900,000)
(13)=Sum NPV(O/S)	Years Held Multiplier	3.62	3.62
(14) = 12*13*-1	All Years Capital	16,095,318	32,190,637

Pricing a Commutation
Including Value of Cash Flow – Example 3

Cedent

Cost to Not Commute

NPV Tax Disc Unwind	Tax Rate	Tax Hit on Discount Unwind	Cost to Not Commute
1,743,799	28.0%	488,264	488,264

Cost to Commute

NPV Loss	Perceived Cost of Low Investment Rate	Risk Load	Commutation Payment	Profit on Transaction	Tax on Profit	Cost to Commute
19,055,385	827,227	2,299,349	**21,203,431**	1,203,431	336,961	488,264

Reinsurer

Cost to Not Commute

NPV Loss	NPV Tax Disc Unwind	Tax Rate	Tax Benefit on Unwind Disc	Risk Load	Cost to Not Commute
19,055,385	2,413,638	35.0%	844,773	3,181,377	21,391,989

Cost to Commute

Commutation Payment	Reserves Taken Down	Profit on Transaction	Tax on Transaction	Loss on Asset Liquidation	Capital Gains Tax	Tax on Asset Liquidation	Cost to Commute
19,580,937	20,000,000	419,063	146,672	1,958,094	15.0%	(293,714)	21,391,989

Pricing a Commutation
Including Value of Cash Flow – Example 3

- Reinsurer Ambivalence Point = \$19.6m
- Cedent Ambivalence Point = \$21.2m
- Reinsurer must offer less to offset the realized loss on investments
- Cedent requires more due to the perceived lower investment yield of cash today than an average return over recent years