

# The Actuaries Role In Transfer Pricing

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# What is Transfer Pricing?

- *Transfer pricing* is the setting of the *price* for goods and services sold between controlled (or related) legal entities within an enterprise
- Applies to all good and services, including intercompany reinsurance
- For intercompany reinsurance, the interested parties include:
  - the ceding company
  - the assuming company
  - the taxing authority of the ceding company
  - the taxing authority of the assuming company
- The taxing authorities will want evidence that the contract is priced fairly or at an “arms-length” standard

# The Role of the Actuary

- Tax analysts have standard approaches to evaluate transfer pricing. However, since no two reinsurance transactions are exactly alike, demonstrating that pricing is arms length is often more challenging for tax experts
- As a result, actuaries often play a key role:
  - Advising tax experts on pricing matters
  - Developing transfer pricing documentation
  - Determine arms length prices

# A Typical Situation

- A common circumstance involves intercompany reinsurance between a US domicile and its Bermuda based affiliate
  - The Internal Revenue Service (IRS) requires documentation that the contract was priced at “arms length”
  - The IRS will be focused on the risk that premiums are set too high, as the excess premium over an arms length premium would result in tax savings
- The actuary would provide support of the pricing to evidence that it is reasonably consistent with what might have been determined between unrelated parties
  - May be a range of prices
  - Note that if price is less than arms length, it may be acceptable

# Regulatory Background in the US

- Internal Revenue Code (“IRC”) Section 482
- Penalty provision prescribed in IRC Section 6662
- However, these regulations *do not prescribe* a particular method for determining the pricing of such a transaction
- Taxpayer must prepare and maintain documentation to substantiate its pricing of an intercompany transaction by the time it files its tax return
  - Timely preparation allows for penalty protection
  - Does not guaranty, however, that the IRS will agree with the pricing; IRS can still challenge and impose an adjustment. Penalty protection avoids the risk of penalties resulting from the IRS disagreeing with the intercompany reinsurance pricing and imposing an adjustment

# Regulatory Background in the US

- Section 6662 requires documentation including, but not limited to, the following:
  - An overview of the taxpayer's business,
  - A description of the intercompany transaction(s),
  - Selection of the method used to demonstrate that the pricing is consistent with an arm's-length transaction, and
  - An analysis to substantiate the intercompany pricing
- Similar Regulations exist outside the US

# Defining “Price”

- For excess of loss reinsurance contracts, “price” is commonly expressed as the contract premium.
  - In some cases it is expressed as a percentage of underlying subject premium, but, effectively, the price is still the final premium.
- For quota share contracts, the determination of price arises in effect from the ceding commission
  - The higher the expected ceding commission, the lower the effective price of the contract.



# Common Considerations in Determining Price

- Information/data such as expected losses and distribution of such losses
- The pricing methods assumptions used by the assuming company for other transactions of similar risks, if applicable
- Comparable contracts, if applicable
- Market conditions

# Common Methods We Use

- Capital Based
  - Return on Economic Capital (ROEC)
  - Leverage Ratio/Other Capital
- Market Based
  - Industry Combined Ratio
  - Indirect Industry Methods
- Contract Comparison
  - Direct or Indirect
  - Rate on Line Extrapolation
- Expected Profit Sharing

# Capital Based Methods

- Most commonly used, and most complicated approach
- Price is determined based on economic variables and a theoretical construct
- The basic components that determine the price are:
  - Expected amount of covered losses, discounted to present value
  - Internal expenses
  - Cost of capital that the assuming company would maintain over time for the risk inherent in the contract.

# Methods to Determine Capital

- A solvency ratio, for example the 99.5<sup>th</sup> percentile of the loss distribution
  - Further consideration may be given to diversification within the reinsurer's portfolio of business
  - Need to consider capital needs for whole book
- Observed leverage ratios in the property/casualty insurance sector (e.g., premium/surplus ratios)
- Risk-based capital (RBC) prescribed ratio applied to premiums and estimated unpaid claims
- Allocation of total company capital from internal ERM or other approaches

# Capital Based Methods – Pros/Cons

- **Pros**

- Consistent with common actuarial pricing approaches
- Directly consider the distribution of expected losses, expected payment pattern, cost of capital, and profitability targets to estimate price.
- Can be helpful to demonstrate to taxing authorities that key assumptions used in the pricing (i.e., required capital, expected return, etc.) are the same between third party contracts and intercompany contracts.
- Works well with longer tail exposures

- **Cons**

- Numerous subjective assumptions are required (particularly when no other third party contracts are assumed), such as a capital requirement and of an appropriate return on capital
- Can be complicated for the taxing authorities to understand
- These assumptions may be made and the overall model may lack real market significance and may not reflect changes in cycle or market forces that drive price
- Tends to understate premiums for contracts that cover predictable and homogeneous exposures like A&H

# Market Based Methods

- Industry comparisons of commonly used market benchmarks, such as combined ratios from publicly available information
  - Aggregated data within a line of business or sector
  - Selected companies writing comparable business
- Performed on a line of business level, such as commercial auto liability, or at times by general class of business, such as Reinsurance Type B
  - May be a higher or different level of aggregation than typically used by reinsurance pricing actuaries.

# Market Based Methods – Pros/Cons

- **Pros**

- Simplicity - easy to calculate and understand by the taxing authorities
- Reflects actual/current market conditions
- Does not require extensive assumptions (for example, capital requirements and expected return on capital)

- **Cons**

- May be an oversimplification - they may not reflect the nuances of a particular contract
- Minimal use for non proportional coverages
- The more uncertainty and/or the longer the payout of claims, the less reasonable these methods are for transfer pricing

# Contract Comparison Methods

- Directly comparing the pricing for similarly reinsured business
  - Using premium rates or commissions
- Indirect comparisons
  - Such as the relationship of CV to Margin
- “The rate-on-line method.”
  - Leverages information regarding rates-on-line from externally placed reinsurance to estimate rates-on-line on other layers being reinsured between related parties for the same underlying business.



# Contract Comparison Methods – Pros/Cons

- **Pros**

- Directly (or indirectly) provides evidence that the pricing is consistent with actual contracts between unrelated parties – comparable contracts are a strong source of evidence with taxing authorities
- Work equally well for both quota share and excess of loss contracts, for various levels of risk

- **Cons**

- Broader market perspectives or unique contract features are often not considered
- Difficult to find comparable contracts

# Expected Profit Methods

- Used for quota share contracts only with no risk limiting features
- Compares the expected profit of the assuming company to the expected profit of the ceding company
- All else equal, taxing authorities may expect the following:
  - The ceding and assuming companies share profits consistent with their proportional share as contractually set under the contract, or
  - The ceding company retaining somewhat more of its proportional share, as this entity typically owns and controls the business and may negotiate a somewhat greater share in the open market

# Expected Profits Method – Pros/Cons

- **Pros**

- Simplicity, coupled with a logical appeal – relatively easy for a taxing authority to understand and accept

- **Cons**

- Apart from acquisition expenses, it is not clear how the ceding company's operating expenses are determined
- It is also not clear if the equivalence of profit is performed before or after income taxes (how is the tax benefit shared?)
- The application of this method can yield significantly different results depending on how these assumptions are set

# Sample Contracts

- Quota Share
  - Underlying Subject Premium = 100,000
  - Percent Ceded = 50%
  - Actual Ceding Commission = 25.0%
  - Lines of Business = Other Liability Occurrence
  - Acquisition costs = 25% or \$25,000
  - Assuming Company expense ratio = 2%
  - Ceding Company is U.S. based with a tax rate of 35%
  - Assuming Company is domiciled in Bermuda and pays no corporate taxes.
- Aggregate Excess Cover written between a 72.5% and 92.5% loss ratio.
  - Actual Price is 6.75% of underlying subject premium

# ROEC Method Quota Share

Calendar Year	Paid Loss (%)	Duration Matched Rate (%)	Discount Factor To Time Zero	Disc. Percent Paid	Disc. Percent Outs.	Disc. Percent Outs.	Disc. Outs. Loss	Disc. Outs. Loss	Capital Needed Charge at 5.00%	Capital Charge	Disc. Capital Charge
			1.000		100.00	92.00	32,200	13,321			
2014	5.93	0.10	1.000	5.93	94.07	86.11	30,140	13,009	329	329	
2015	8.25	0.26	0.996	8.22	85.81	78.15	27,351	11,648	650	648	
2016	28.14	0.58	0.986	27.74	57.67	50.84	17,794	6,933	582	574	
2017	2.48	1.02	0.965	2.39	55.19	49.45	17,306	7,057	347	335	
2018	15.02	1.51	0.935	14.04	40.17	36.02	12,608	5,154	353	330	
2019	14.11	1.93	0.900	12.71	26.06	23.29	8,152	3,301	258	232	
2020	8.44	2.28	0.864	7.29	17.62	15.83	5,541	2,277	165	143	
2021	4.36	2.55	0.828	3.61	13.26	12.16	4,255	1,844	114	94	
2022	4.46	2.75	0.794	3.54	8.80	8.21	2,874	1,300	92	73	
2023	3.80	2.94	0.759	2.88	5.00	4.79	1,677	806	65	49	
2024	5.00	3.07	0.728	3.64	0.00	0.00	0	0	40	29	

Total Charge 2,836

Economic Premium 35,751

Nominal Premium 50,000

Implied Commission 28.50%



# ROEC Method AGXS

Calendar Year	Paid Loss (%)	Duration Matched Rate (%)	Discount Factor To Time Zero	Disc. Percent Paid	Disc. Percent Outs.	Disc. Percent Outs.	Disc. Outs. Loss	Disc. Outs. Loss	Capital Needed Capital	Capital Charge at 5.00%	Disc. Capital Charge
			1.000		100.00	89.48	3,876	10,466			
2014	-	0.10	1.000	-	100.00	89.52	3,878	13,573	258	258	
2015	5.93	0.26	0.996	5.91	94.07	83.89	3,634	12,703	679	676	
2016	8.25	0.58	0.986	8.13	85.81	76.53	3,315	11,589	635	626	
2017	28.14	1.02	0.965	27.16	57.67	50.03	2,167	7,507	579	559	
2018	2.48	1.51	0.935	2.32	55.19	49.16	2,129	7,441	375	351	
2019	15.02	1.93	0.900	13.52	40.17	36.02	1,560	5,464	372	335	
2020	14.11	2.28	0.864	12.19	26.06	23.43	1,015	3,557	273	236	
2021	8.44	2.55	0.828	6.99	17.62	16.01	693	2,438	178	147	
2022	4.36	2.75	0.794	3.47	13.26	12.32	534	1,890	122	97	
2023	4.46	2.94	0.759	3.39	8.80	8.43	365	1,306	95	72	
2024	8.80	3.07	0.728	6.40	0.00	0.00	0	0	65	47	

Total Charge 3,405

Economic Premium 7,430

Nominal Premium 100,000

# Leverage Ratio Quota Share

Calendar Year	Paid Loss (%)	Duration Matched Rate (%)	Discount Factor To Time Zero	Disc. Percent Paid	Percent Outs.	Disc. Percent Outs.	Disc. Percent Outs.	Disc. Outs. Loss	Capital Needed Capital	Capital Charge at 5.00%	Disc. Capital Charge
			1.000		100.00	92.00		32,200	20,635		
2014	5.93	0.10	1.000	5.93	94.07	86.11		30,140	18,291	510	509
2015	8.25	0.26	0.996	8.22	85.81	78.15		27,351	16,686	915	911
2016	28.14	0.58	0.986	27.74	57.67	50.84		17,794	11,214	834	822
2017	2.48	1.02	0.965	2.39	55.19	49.45		17,306	10,732	561	541
2018	15.02	1.51	0.935	14.04	40.17	36.02		12,608	7,812	537	502
2019	14.11	1.93	0.900	12.71	26.06	23.29		8,152	5,068	391	352
2020	8.44	2.28	0.864	7.29	17.62	15.83		5,541	3,427	253	219
2021	4.36	2.55	0.828	3.61	13.26	12.16		4,255	2,578	171	142
2022	4.46	2.75	0.794	3.54	8.80	8.21		2,874	1,711	129	102
2023	3.80	2.94	0.759	2.88	5.00	4.79		1,677	972	86	65
2024	5.00	3.07	0.728	3.64	0.00	0.00		0	0	49	35
										Total Charge	4,201
										Economic Premium	37,144
										Nominal Premium	50,000
										Implied Commission	25.71%

# Market Combined Ratio Quota Share

	Industry Other Liability Combined Ratio (%)
Lower Quartile	61.0
Median	74.3
Upper Quartile	86.8
Contract Expected Combined Ratio	95.0
Equalizing Commission	
Lower Quartile	(9.0)
Median	4.3
Upper Quartile	16.8



# Indirect Industry Comparison Method

CV greater than 1.0	56.7
CV greater than .5 and less than 1.0	73.2
CV greater than .25 and less than .5	86.4
CV less than .25	100.6

	Contract CV	Fitted Combined Ratio (%)	Expected Combined Ratio (%)	Implied Comission at Fitted Combined Ratio	Implied Price at Fitted Combined Ratio
Aggregate Excess Fitted Value	170.3%	63.6	64.2		6.8
Quota Share	23.2%	92.7	95.0	22.7	

# Contract Comparison Method

Third Party Reinsured	Contract Type	Coefficient of Variation	Expected Combined Ratio	Margin
Company A	All Lines QS	16.5%	95.5%	4.5%
Company B	Marine QS	16.0%	96.0%	4.0%
Company C	Property Catastrophe QS	58.7%	66.8%	33.2%
Company D	General Liability & Liquor Liability QS	16.4%	94.0%	6.0%
Company E	Property QS	16.7%	100.0%	0.0%
Company F	Workers' Compensation XOL	76.9%	90.4%	9.6%
Company 5	Auto QS Retro Reinsurance	11.9%	97.0%	3.0%
Company H	Workers' Compensation XOL	26.3%	91.9%	8.1%
Company I	Medical Professional Liability Clash XOL	60.0%	73.0%	27.0%
Company J	Property Catastrophe Retrocession	125.0%	68.4%	31.6%
	Minimum	11.9%	66.8%	0.0%
	Maximum	125.0%	100.0%	33.2%

# Rate On Line Method – Property Excess of Loss Contract

Layer	Premium Charged 2013	Width Of Layer	Charged Rate on Line	Low Selected ROL	High Selected ROL	Low Premium	High Premium
10 M xs 15 M	\$ 4,875,000	10,000,000	48.8%				
10 M xs 25 M	1,100,000	10,000,000	11.0%				
5 M xs 35 M	300,000	5,000,000	6.0%				
25 M xs 40M		25,000,000		3.0%	5.0%	\$ 750,000	\$ 1,250,000

# Expected Profits Method

	Ceding Company	Assuming Company
Premium	50,000	50,000
Expenses	(25,000)	(1,000)
Expected Commission	12,500	(12,500)
Expected Losses	(35,000)	(35,000)
Margin	5.0%	3.0%
After Tax Margin	3.3%	3.0%
Equalizing Commission		
Before Tax	24.0%	
After Tax	24.8%	
Commission at 24.8%	12,424	(12,424)
Margin	4.8%	3.2%
After Tax Margin	3.2%	3.2%

# Special Circumstances

- Captive Insurance Companies
  - The capital held in the captive may be much less than required under an economic capital analysis
  - Internal expenses for captives are generally much lower than other reinsurance companies
  - Captives may be subject to different tax laws, depending on the jurisdiction.
- Who gets the benefit of this capital efficiency?  
Is it shared, or is it specifically for the benefit of the captive?

# Special Circumstances

- Multiple Jurisdictions and Contracts
  - Each intercompany contract should be fairly priced on its own
  - A jurisdiction may be a country or a state, depending on the tax laws.
    - It is important to have a comprehensive understanding of the tax treatment for each entity
    - Companies that are located in certain jurisdictions may be taxed in another region, depending on the relevant corporate and tax laws
  - Pricing methodologies between transactions in the group should use consistent methodology
    - Similar to the assertion that pricing assumptions must be consistent with the company's pricing of third party transactions

# Questions