May 18, 2009

Reinsurance Accounting

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Today's Discussion

- Accounting
  - Current Regulatory Environment and Disclosure Requirements
  - Prospective & Retroactive Reinsurance Accounting
  - Accruals for Adjustable Features
  - Deposit Accounting
- Risk Transfer Disclosure and Analysis
  - Other Features which Potentially Limit Risk Transfer
  - Reasonably Self Evident
  - Cash Flow Analysis Measures of Risk Transfer – VaR, TVaR & ERD

Regulatory Environment

Regulatory Environment

- Increased focus on contracts characterized as “finite” by NAIC, Insurance departments, FASB, IRS, SEC
- Risk transfer re-examined by FASB, NAIC Casualty Actuarial Task Force and American Academy of Actuaries
  - ➢ No changes made
  - ➢ Still being reviewed
- NAIC changes
  - Implement improved disclosures
  - CEO/CFO attestations
  - Effective for 2005 Annual Statement

NAIC Attestation of CEO and CFO

- All reinsurance contracts for which company takes credit in current financial statements
- **No separate written or oral agreements** that reduce, limit or mitigate loss
- Contracts effective or amended after 1/1/94 **where risk transfer is not self-evident** have documentation available on:
  - Economic intent of the transaction
  - Risk transfer analysis
- Complies with requirements in SSAP 62
- Appropriate controls in place to comply with SSAP 62
- Disclose exceptions and attach explanations

Contract Features Requiring Statutory Disclosure

- Disclose in General Interrogatories
- Features that limit Quota Share ceded losses below stated percentage
  - Loss ratio corridor
  - Loss cap or aggregate limit
  - Disclose whether credit taken reflects loss limiting provisions

Contract Features Requiring Statutory Disclosure

- Contracts with the following features where U/W result, ceded WP or ceded year end loss reserves exceed 5% (was 3%) of prior year surplus
  - Term > 2 years and non-cancelable
  - Cancellation triggers new agreement
  - Aggregate stop loss
  - Unilateral commutation rights (unless triggered by credit status decline)

Contract Features Requiring Statutory Disclosure

- Reporting or payment of losses less frequently than quarterly
- Payment schedule or accumulating retention
- Other
  - WP ceded = 50% or more of total WP for a reinsurer
  - 25% of PW by reinsurer is retroceded back to reporting entity

Contract Features Requiring Statutory Disclosure

- If any of the above – provide in Reinsurance Summary Supplemental Filing
  - Summary of contract terms
  - Discussion of management objective
  - Aggregate financial statement impact
- Also disclose
  - Contracts reported as reinsurance under SAP and as a deposit under GAAP or vice versa

Reinsurance Accounting

Reinsurance Accounting

- Adequate risk transfer required – for ALL contracts
  - Assume significant insurance risk (timing and underwriting risk)
  - Reasonable possibility that the reinsurer realizes a significant loss
- No risk transfer-deposit accounting
  - Balance sheet
  - No benefit to underwriting income or to leverage ratios

Prospective & Retroactive Reinsurance Accounting

- Prospective Reinsurance
  - Covers losses with accident dates on or after the effective date
    - Types of Covers: QS, Agg Stop, XOL
- Retroactive
  - Covers losses with accident dates prior to the inception of the reinsurance contract
  - Calendar year contracts include both prospective and retroactive components
    - Types of Covers: ADC or LPT
- Each must first meet risk transfer conditions to receive reinsurance accounting

Accruals and Adjustable Features

Accruals for Adjustable Features

- Commissions – Sliding Scale or Profit
- Premium Adjustments – Rate adjustments or other AP's based on loss experience
- Coverage adjustments for future periods
- Asset or liability should be computed based on experience to date
  - Including IBNR
- Impact of early termination
  - SAP: only considered at time agreement is actually terminated
  - GAAP: If decision to terminate made measure assuming termination; otherwise lesser of total incremental cost assuming termination or no termination

Deposit Accounting

- **If the contract does not provide for indemnification of the ceding enterprise by the reinsurer against loss or liability, contract is accounted for as a deposit**
  - **SOP 98-7 provides GAAP guidance on how to account for contracts that do not transfer risk**
  - **SSAP 75 provides statutory guidance on how to account for contracts that do not transfer risk**

Risk Transfer Disclosure & Analysis

Reinsurance Accounting

- To qualify for reinsurance accounting, a reinsurance contract must contain adequate risk transfer
- Risk transfer criteria are guided by
  - SFAS 113 (GAAP)
  - SSAP 62 (Statutory Accounting)
- No formally published rules on what constitutes:
  - Adequate risk transfer
  - Reasonably Self Evident

  → Therefore important to look at substance of contract

Reinsurance Accounting
SFAS 113

- **Risk transfer requirements**
  - Contract must indemnify cedant against “loss or liability”
  - Para 9.a. The reinsurer assumes significant **insurance risk** under the reinsured portions of the underlying insurance contracts
    - Amount and timing
  - Para 9.b. **Reasonable possibility** that reinsurer may realize a **significant loss**

Reinsurance Accounting
SFAS 113

- **Para 11 "Exception"**
  - Reinsurer's exposure to loss is essentially the same as the insurer's
  - "If **substantially** all of the insurance risk relating to the reinsured portions of the underlying insurance contracts has been assumed by the reinsurer"
  - D-34 Q&A 23: to qualify, no more than "trivial" insurance risk may be retained
  - Does not require cash flow analysis
- **If no risk transfer: deposit accounting**
  - Generally a balance sheet effect
  - No benefit to underwriting income or to leverage ratios

Risk Transfer
SFAS 113

- **Assessing a contract for risk transfer**
  - Compare the present value of cash flows between the ceding company and the reinsurer ("Cash Flow") to the present value of the amount paid or deemed to be paid to the reinsurer ("Premium")

- **Cash Flow defined as**
  - Ceded Premium (Funds Transferred), plus
  - Margin, plus
  - Additional Premiums, plus
  - Cancellation Penalties, plus
  - Maintenance Fees or Capacity Charges, less
  - Ceding Commissions, less
  - Losses paid under the cover, less
  - Profit Commissions paid under the cover
  - **Note: reinsurer's internal expenses not considered in Cash Flow**

Risk Transfer
SFAS 113

- Premium is gross of brokerage and ceding commission
  - Does not include cancellation penalties, capacity charges, maintenance fees, etc.

- Does this comparison indicate the reinsurer is exposed to reasonable possibility of significant loss?

Cash Flow Testing for Risk Transfer

- 1) Scenario Analysis – determine contract cash flows under specific reasonably possible scenarios
- 2) Stochastic modeling – model employing thousands of scenarios generated through parameterization of subject losses overlaid with contract terms

Interest Rate
SFAS 113

- A constant interest rate is used to calculate Present Value
  - Variation in interest rate is not an element of insurance risk
  - The same interest rate shall be used for each reasonably possible outcome tested
- Per the FASB Board: need not specify in detail the interest rate used
  - Judgment required to identify a reasonable and appropriate rate
  - D-34 Q&A 19: a reasonable and appropriate rate generally would reflect the expected timing of payments to the reinsurer and the duration over which those cash flows are expected to be invested by the reinsurer

Reasonably Self Evident (RSE)

- According to NAIC guidelines, quantitative testing is not required to achieve accounting treatment as a reinsurance contract
  - NAIC guidelines do not define RSE
- SFAS 113, paragraph 11 / SSAP 62, paragraph 15
  - Narrow circumstance when cash flow testing is not required
  - “Substantially all” the insurance risk relating to the subject business of the reinsurance contract has been transferred under the reinsurance contract
  - If above satisfied, reasonably self evident risk transfer exists
- “Reasonably Self Evident” for attestation purposes may be broader than paragraph 11

Reasonably Self Evident for Risk Transfer (RSE)

- If a contract is deemed to be RSE – cash flow testing not required
- Defining Characteristics Underlying RSE (American Academy of Actuaries' (AAA) Risk Transfer Testing Practice Note)
  - Potential loss to the reinsurer is much larger than the premium
  - Contractual terms and conditions are standardized for the type of contract
  - Contract does not include provisions that enable the reinsurer to recover significant portion of covered losses

Reasonably Self Evident for Risk Transfer (RSE)

- Features usually precluding RSE
  - Premium approaches present value of contract loss coverage
  - Contract is manuscripted using non-standard terms
  - Provisions allow reinsurer to be paid back for significant portion of loss

Reasonably Self Evident for Risk Transfer (RSE)

- Contracts often considered RSE
  - Property catastrophe XS with little or no risk limiting features except reinstatement premium common to these covers
  - Low Rate on Line (premium as percentage of loss limit)
  - Most facultative and treaty per risk XS with premium well below present value of aggregate limit of coverage

Reasonably Self Evident for Risk Transfer (RSE)

- Contracts usually *not* considered RSE
  - Aggregate XOL
  - Contracts with experience accounts or experience rating refunds
  - Multiple year contracts
  - Contracts with the following features: loss corridors, loss caps or sliding scale commissions

Other Potentially Risk Limiting Features in Reinsurance Contracts

- Retrospective premium rating (swing rate)
- Premium > X% of aggregate limit (such that it approaches present value of loss)
- Payback for prior year losses
- Profit, contingent or sliding scale commission; no claims bonus (may indicate high initial premium)
- Funds withheld or experience account
- Linkage of experience with other contracts

Risk Transfer Testing – Brief Review

- Step 1: Does the contract have uncertainty in the ultimate amount of cash flows paid by reinsurer?
- Step 2: Does the contract have uncertainty in the timing of cash flows paid and received by reinsurer?
- Step 3: Does the reinsurer have a reasonable possibility of a significant loss on the contract?

A Contract Loss and Net Cash Flow Probability Distribution

Probability	PV Loss Amount	PV Premium	PV Net Cash Flow	% Gain (Loss)
10.0%	100	1400	1,300	93%
30.0%	350	1400	1,050	75%
50.0%	700	1400	700	50%
70.0%	1,200	1400	200	14%
80.0%	1,425	1400	(25)	-2%
90.0%	1,500	1400	(100)	-7%
95.0%	1,700	1400	(300)	-21%
99.0%	2,000	1400	(600)	-43%
99.5%	2,250	1400	(850)	-61%
99.9%	3,000	1400	(1,600)	-114%
100.0%	4,000	1400	(2,600)	-186%

VaR 90 or 10% Chance

Common Cash Flow Statistics

- **VaR = Value at Risk –** A measure of the amount of loss (as % of premium) at a specific probability point
  - In our example *VaR 90* = 7% loss
  - *VaR 95* = 21% loss
  - Often *VaR 90* is expected to show a 10% loss (aka 10/10 rule)

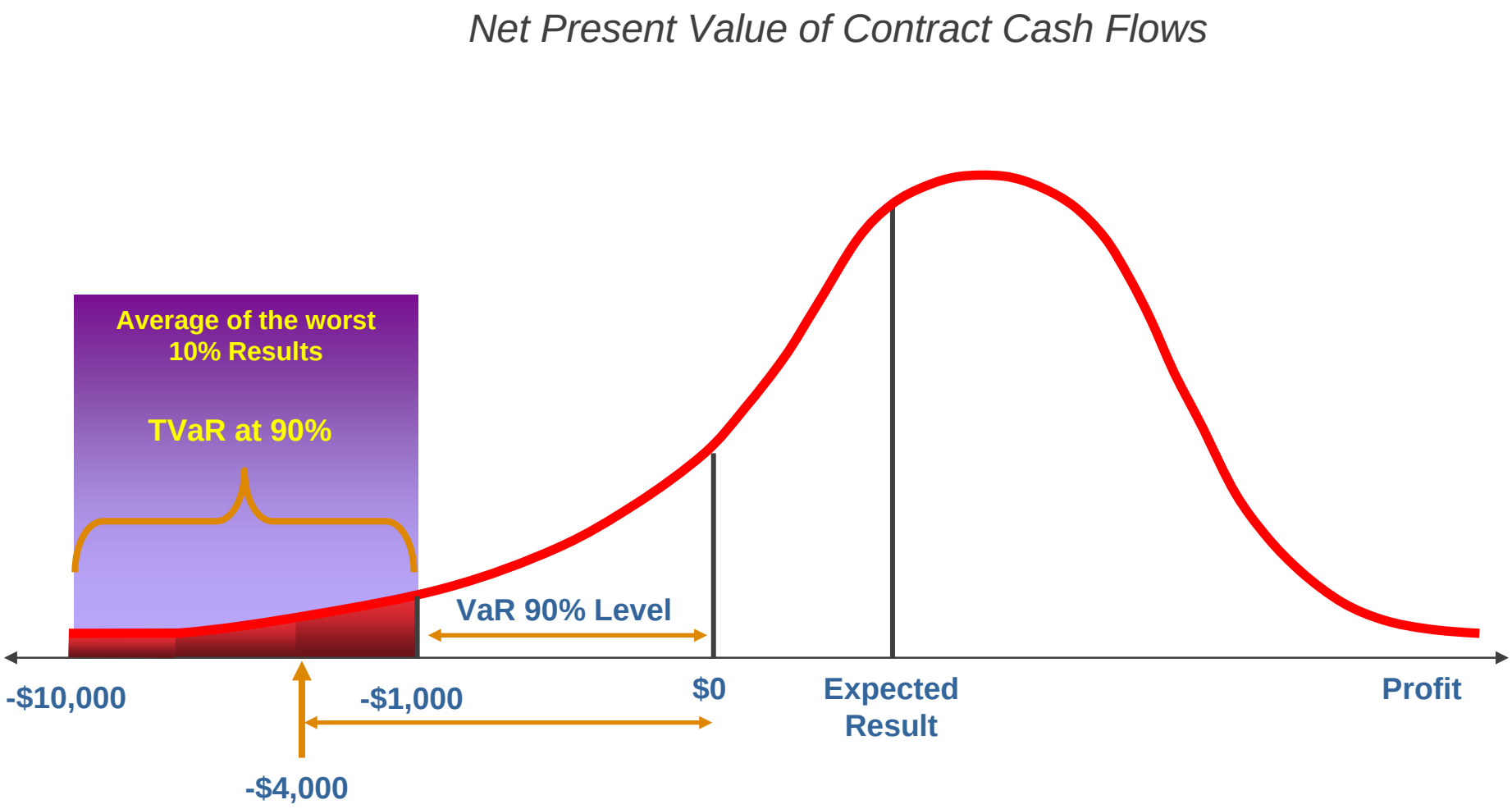
Common Cash Flow Statistics

- Strengths of VaR Methodology
  - Generally accepted and commonly used
  - Easy to understand
- Weaknesses
  - Does not work for many types of contracts (e.g. catastrophe XOL)
  - Ignores low frequency but high severity events
  - Arbitrary choice of thresholds (e.g. 10% chance of 10% loss is OK but 9% chance of 100% not OK)

Common Cash Flow Statistics

- **TVaR = Tail Value at Risk**
  - The probability weighted average loss for all loss scenarios above a specific probability point (e.g. between the 90th percentile and the maximum loss amount)
  - Some believe superior to VaR as it includes the lower probability but higher severity tail losses
  - Most property catastrophe covers will not have a 10% chance of a 10% loss
    - But TVaR might be high because the 98th percentile loss (2% chance) could be 200% or much higher

TVaR vs. VaR Illustration



TVaR

Probability	PV Loss Amount	PV Premium	PV Net Cash Flow	VaR	TVaR
10.0%	100	1400	1,300	93%	37%
30.0%	350	1400	1,050	75%	23%
50.0%	700	1400	700	50%	8%
70.0%	1,200	1400	200	14%	-9%
80.0%	1,425	1400	(25)	-2%	-16%
90.0%	1,500	1400	(100)	-7%	-28%
95.0%	1,700	1400	(300)	-21%	-41%
99.0%	2,000	1400	(600)	-43%	-76%
99.5%	2,250	1400	(850)	-61%	-100%
99.9%	3,000	1400	(1,600)	-114%	-150%
100.0%	4,000	1400	(2,600)	-186%	-186%

TVaR

- Strengths:
  - Simple and convenient representation of risk
  - Applicable to many types of contracts
  - Takes into account the risk in the tail
  - Not impacted by a single scenario
- Weaknesses
  - Probability level starting point is arbitrary (e.g. 90%)
  - Does not consider reinsurer losses below starting point
- Question: What is enough risk transfer? TVaR 90 of negative 15% (average loss of 15% for worst 10% of scenarios)? Less or more?

Common Cash Flow Statistics

- **ERD = Expected Reinsurer Deficit**
  - A statistic which captures the average probability weighted loss to the reinsurer given that there is a reinsurer loss
  - Equals probability of a loss X (average reinsurer loss / average premium) if there is a loss
  - Assume 10,000 scenarios run and 3,500 produce negative cash flow = 35% chance of loss
  - Assume average net cash flow for the 3,500 scenarios is negative 500
  - Assume premium for each of those 3,500 scenarios is 5,000
  - ERD = 35% X (500 / 5,000) = 3.5%

ERD

- Some, including AAA, feel this is the best statistic of all
  - Captures all scenarios where reinsurer has a loss
  - Includes high frequency of smaller reinsurer loss as well as low frequency but high severity loss
  - No arbitrary probability point is used
  - One single value
- But what level of ERD defines adequate risk transfer?
  - 10% chance of 10% loss sometimes is thought of as a 1% “expected” loss implying 1% ERD is threshold

Theory – Parameter Risk

Parameter Risk

- Include reasonable provisions for all risk factors
  - Including those not directly measurable from the data set
- Provide improved guidance, consistency, and documentation

Reflects the "did we get our model of the process right?" risk

- Functional form is imperfect
- Given a functional form, parameters are imperfect
- There are many systematic risks outside the data
- Historical data may not be entirely indicative of future exposure

Parameter Risk
Why is It Important?

- General effect of parameter uncertainty is to push probability away from the center of a distribution toward the extremities
  - Loss distributions are one-sided
  - So parameter risk tends to push probability up into the tails
- If you ignore parameter risk, you severely underestimate the probability of tail (i.e. BAD) events happening!
- Example from lognormal estimation, where we actually can get the true results: probability of IBNR exceeding a certain value was
  - 1.4% ignoring parameter uncertainty
  - 12.8% including parameter uncertainty

Volume of data does not eliminate all parameter risk!

Parameter Risk Components

- **Limitations of the sample**
- **Uncertainty in other analysis parameters**
  - Trend factors
  - Loss development factors
  - Payment patterns
- **Market Risks (pricing / underwriting)**
  - Imperfect exposure data / on-level process
  - Actual prices achieved differ from targets
  - Risk quality changes (underwriting selection)
- **External Conditions**
  - Changes in inflation
  - Changes in insurance loss trends / social inflation
  - Other economic conditions (line specific)
- **Differences in exposure between the data and the future period**