Using the Coefficient of Variation for Not-Ad Hoc Evaluation of Risk Transfer

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What’s This About-Risk Transfer Testing

- Requirement for treating contracts, reinsurance mostly, and otherwise, as re/insurance, not bondlike
- Tax, accounting, and potentially solvency implications
- Current approaches, with varying actuarial complexity, are ultimately based on ad-hoc assumptions
  - Want to provide something that is a natural consequence of the transaction and does not require any quasi-arbitrary thresholds be met.

Key Components of This Approach

- Focus on reducing the coefficient of variation (CV) of the “net line” due to the reinsurance being included
- “Financial Appropriateness” (Is it a fair deal) has been part of the scope that “Risk Transfer” has been asked to address from the beginning.
  - Will address this by comparing the net cost of the re/insurance contract to the cost of maintaining enough surplus to make the reinsurance unnecessary.

Hurdles to be Met: NAIC Guidelines for Risk Transfer

- Reinsurer must assume significant insurance risk
  - After all, it’s reducing the CV
- Reasonably possible that reinsurer may suffer a significant loss from the transaction
  - Consider this in light of later requirement for prudence.

The Coefficient of Variation and Risk Transfer

Problems with Existing Methods for Evaluating Risk Transfer

- 10/10 rule (10% chance of at least a 10% loss)
  - Fails to pass high excess treaties with under 10% chance of hit
  - 10's were ultimately determined subjectively., ad hoc.
- Expected Reinsurer Deficit (expected % of losses over 100% of premium)
  - What deficit is okay? 1% to match 10/10?
  - Amount is ultimately subjective
- Both focus on NAIC's significant probability of significant loss, but don't deal directly with what reinsurance does for the cedant

Suggestion: Require that Most Contracts Reduce Coefficient of Variation of Net Loss

- Coefficient of Variation (CV) is measure of riskiness relative to size.
- Why? CV = standard deviation of (net) loss , or volatility, divided by the mean.
- Requiring that reinsurance contract reduce CV of the net loss, means that the reinsurance makes the net losses less risky. REAL Risk Transfer.

Other Benefits of Using the CV

- Not Ad-Hoc
- Wide Applicability, but other situations may have other issues.

Example

- Forgetting CV, ERD, 10/10, which of contracts appears to have risk transfer
- Base distribution: Pareto order 3, truncated and shifted by 20 (mean = 10)
- Options
  - Coverage all losses excess of $6
  - Underlying coverage then has all losses limited to $6

Which Covers Do You Think Contain Risk Transfer?-Tell Us on the Chat Feature

- Excess cover only
- Underlying cover only
- Both

Chat Feature Poll-Tell Us Which You Think Should Pass Risk Transfer and Why

Reason to Consider Requiring CV of Ceded Losses to be Larger than CV of Retained Losses

- Total Business: CV = 1.6 roughly
- Excess: CV = 2.75 roughly, obviously passes 10/10, ARG, CV
- Underlying : CV = .53 roughly , passes 10/10, Zero Expense ERD Ratio = 24%, fails base CV test because 2.75>1.73,

Poll Question: Does CV Test Appear to Tst Risk Transfer More Correctly than the Alternatives?

- Yes
- No

Poll Results

Is it a Prudent Purchase?

Why Consider Prudence of Purchasing a Reinsurance Contract

- CV approach does (speaker's opinion) a great job of assessing whether a contract makes the business less risky
- Historically, risk transfer was used to test whether contract in some way exploited a company by transfring more funds than necessary to a sister company, etc.)
- The CV approach alone does not address this, but requiring that the contract be prudent purchase does this…

Prudent Purchase Definition:

- Is the Net Cost of Reinsurance Less than the Cost of Any Additional Capital Needed to Cover the Losses Without Reinsurance?

Reasons to Consider the Prudency of a Re/Insurance Purchase?

- There are all kinds of treaties in reinsurance, a small part are viewed as passing income/profit more than transferring risk.
- Some actuaries I’ve spoken to are quite vocal that this must be addressed.
- Prudency of the purchase: Is the expense, profit and other markup of expected less than the cost of obtaining additional capital to cover the losses without reinsurance.

Computing Whether Contract is a Prudent Purchase- Key Factors

- Need type of criteria for needed capital-I like VaR-%likelihood that all claims will be covered (TVaR, etc., too)
- Need numerical criterion for capital-say 95% chance that all claims will be covered
  - Typically, would use current capital level after contract, maybe higher target amount for troubled companies
- Need cost of capital
  - Surplus note rate, cost of capital, increased if loan would lower credit rate/ stock sale overdilute capital.

Computing Whether Contract is a Prudent Purchase- Additional Capital

- Without treaty there is more volatility
- Could use loss ratio variance (in wheelhouse), etc. to estimate the 95% VaR, x%TVaR, x% VaR amount.
- That minus current capital funding is the additional capital needed
- Multiply that by cost of capital rate – for cost of foregoing reinsurance.
- Compare to net cost of reinsurance, as cedant estimates it.

CV Approach Appears to Comply with NAIC Risk Transfer Requirements

- Considering prudence requirement, losses transferred must be significant enough to require more capital, hence they are significant losses.
- Discussed earlier that reinsurance passing CV test, generate reasonable probability of those losses.
- CV approach appears to comply with NAIC requirements for risk transfer

A Couple of Caveats

- Consider that everything we don’t explicitly address would be unchanged from present practices
- In particular, all cash flows and values (except US loss reserves) are discounted.

Special Situations

Special “Fronted-Type” Programs

- Boiler and Machinery
- Cyber
- Umbrella (sometimes)
- Etc., all where reinsurer has special expertise and perhaps technology

- Consider cost of replicating risk selection and assessment (excluding any sales or marketing) along with cost of capital
- Allowing sales or marketing could open the door to transactions some regulators have concerns about.

Poll

- Which of the following could use the CV/prudent purchase approach? [yes /no]
  - A - Aggregate Excess
  - B – 50% cover on a new venture that “matches” a competitor’s profitable program with a substantial reinsurer’s profit
  - C – Loss Portfolio Transfers
  - D – Quota Share

Possible Poll Answers

- A-Aggregate Excess only
- B-New Ventures only
- C-Aggregate Excess and New Ventures
- D-Quota Share only
- E-Loss Portfolio Transfers only
- F-Quota Share and Loss Portfolio Transfers

Possible Poll Answers

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Poll Results

Believe All but Quota Share and Loss Portfolio Transfers - Yes

- But for Quota Share and Loss Portfolio Transfers – Consider Financial Prudence- Why?

Quota Share and Loss Portfolio Transfers.

- Purpose of Quota Share is to reduce Absolute Risk (Absolute Surplus Need)
  - This is contained in prudence, consider just requiring prudence of the purchase.
  - Los Portfolio Transfers serve similar purpose---suggest similar treatment
  - May consider whether adding CV requirement would cause a problem with treaties that are actually appropriate.

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