Risk Retention in a Hard and Soft Market

October 8, 2019

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Why Retain Risk?

- Primary goal is to reduce the total cost of risk
  - i.e. Retained Losses + Reinsurance Premiums
    \[= E[L_{retained}] + E[L_{ceded}] + \text{expenses} + \text{profit}\]

- Insurance market won’t assume the risk
  - Cost prohibitive to transfer risk
  - Some risks insurance companies won’t touch
  - Or maybe, they just don’t want to assume as much of it

*Ability to do so is influenced by the insurance market cycle*
Insurance Market Cycle

Soft Market

Increased competition/capacity

Increasing profits

Reduced Capacity/Competition

Hard Market
Insurance Market Cycle

Actuaries indicate rates but the market sets the prices
Characteristics of Soft/Hard Markets

**Soft Market**

- Lower insurance premiums
- Broader coverage
- Relaxed underwriting criteria
- Increased capacity
- Increased competition
Characteristics of Soft/Hard Markets

**Hard Market**

- Higher insurance premiums
- More stringent underwriting criteria
- Reduced capacity
- Less competition among insurance carriers.
Pools Are The Result of a Hard Market

• Between 1984 and 1987 premiums for general liability increased from $6.5B to $19.5B

• Insurers limited cost of claims by
  • Raising deductibles
  • Lowering policy limits
  • Changing coverage trigger from Occurrence to Claims-Made

*Pools are designed to protect members from changes driven by the insurance cycle*
Disadvantages to Risk Retention

• Possible higher losses

• Increased volatility in financials
Terminology

• Expected Value
• Confidence Levels/Percentile
• Tail of Distribution
Terminology

- **Expected Value/Actuarial Central Estimate**
  - Probability weighted average over a range of reasonably possible outcomes

<table>
<thead>
<tr>
<th>Probability</th>
<th>Outcome</th>
<th>Contribution to Exp. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>$100</td>
<td>$20</td>
</tr>
<tr>
<td>70%</td>
<td>$200</td>
<td>$140</td>
</tr>
<tr>
<td>10%</td>
<td>$300</td>
<td>$30</td>
</tr>
</tbody>
</table>

**Expected Value** $190
Terminology

• Percentile/Confidence Level
  • Refers to the likelihood a random event will fall below a specified threshold
  • e.g. If losses at the 60th percentile are $1,000,000, then there is a 60% chance that actual losses will be below this threshold.
  • Conversely, a 40% chance that actual losses will exceed $1,000,000
Terminology

- Tail of Distribution
  - Related to percentiles/confidence levels
  - Two tails: Left tail (when losses are really good) and a right tail (when losses are really bad)
  - Right tail – 95th percentile and beyond
    - 95th percentile (1 in 20 modeled event)
    - 99th percentile (1 in 100 modeled event)
    - 99.9th percentile (1 in 1,000 modeled event)
Risk Tolerance
Example: Total Cost of Risk for 2019
*Losses Limited to $100,000 per Occurrence*

- Excess Premium
- Claims > $50k
- Claims < $50k

17% of claims/57% of projected losses

Property Total = $4,728,000
Example: Total Cost of Risk for 2019

Losses Limited to $250,000 per Occurrence

Property Total = $4,352,000

17% of claims / 67% of projected losses

- Excess Premium
- Claims > $50k
- Claims < $50k
Example: Total Cost of Risk for 2019

*Losses Unlimited!*

![Graph showing total property costs](image)

- Property Total = $3,957,000
- 17% of claims / 73% of projected losses

<table>
<thead>
<tr>
<th>Claims &gt; $50k</th>
<th>Claims &lt; $50k</th>
</tr>
</thead>
<tbody>
<tr>
<td>[VALUE]</td>
<td>[VALUE]</td>
</tr>
</tbody>
</table>
Which Would You Choose?

Distribution of Property Losses at Various Limits

Thousands

$0

$2,000

$4,000

$6,000

$8,000

$10,000

$12,000

5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 99%

$100,000

$250,000

Unlimited
Now, Which Would You Choose?

Total Cost of Risk at Various Limits

Thousands

$0

$2,000

$4,000

$6,000

$8,000

$10,000

$12,000

5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80% 85% 90% 95% 99%

Hard Market?

Soft Market?

$100,000

$250,000

Unlimited
Evaluating Your Options
Scenario 1: “Poorly Priced Soft Market”

Reinsurance Premiums + Losses
Percentile

- No material benefit for taking higher retention
- Costs begin to increase dramatically in the tail
Evaluating Your Options
Scenario 2: Hard Market

Small probability (< 5%) that a lower retention will be less costly
Consider Capital Position!

- Ensure that there is enough capital to absorb losses at higher limits

<table>
<thead>
<tr>
<th>Current Retention</th>
<th>Total Capital</th>
<th>Economic Capital</th>
<th>Free Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100,000</td>
<td>$2,000,000</td>
<td>$1,500,000</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Appetite</th>
<th>Modeled Event</th>
<th>Add'l Capital Needs @</th>
<th>Add'l Capital Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>99.00%</td>
<td>1 in 100</td>
<td>$300,000</td>
<td></td>
</tr>
<tr>
<td>99.50%</td>
<td>1 in 200</td>
<td>$450,000</td>
<td></td>
</tr>
<tr>
<td>99.75%</td>
<td>1 in 400</td>
<td>$600,000</td>
<td></td>
</tr>
<tr>
<td>99.90%</td>
<td>1 in 1,000</td>
<td>$750,000</td>
<td></td>
</tr>
</tbody>
</table>
Case Study – Hardening Market

It’s renewal season and your property excess carrier is offering three options:

1. $100,000 per occurrence retention (current coverage)
   - Expected Loss = $1,297,000; XS Premium = $743,000 (15% rate increase)
   - Total = $2,039,000
   - Prior total was $1,943,000 – 4.9% overall increase

2. $250,000 per occurrence retention
   - Expected Loss = $1,457,000; XS Premium = $518,000 Total = $1,975,000 – 1.6% overall increase

3. $500,000 per occurrence retention
   - Expected Loss = $1,570,000; XS Premium = $338,000; Total = $1,908,000 – 1.8% overall decrease
Case Study (Cont.)

- Board is extremely risk averse
- Board does not want to increase rates to any members
- Between 1 & 2 claims exceed $100,000 every year
- Total free capital is $150,000

Which one would you choose?
Distribution of Losses
$500,000 is Tempting. But…

- Recall free capital = $150,000
- Board is very risk averse

<table>
<thead>
<tr>
<th></th>
<th>$100,000</th>
<th>$250,000</th>
<th>$500,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>99th Percentile</td>
<td>$3,210,000</td>
<td>$3,281,000</td>
<td>$3,487,000</td>
</tr>
<tr>
<td>Capital Charge</td>
<td>$71,000</td>
<td>$277,000</td>
<td></td>
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</table>

- $250,000 would require a rate increase
- Solution to satisfy Board’s requirements?
Corridor

- Refers to a layer of risk that is subject to a cap
  - e.g. A $250,000 excess $250,000 corridor deductible subject to a $250,000 aggregate cap
  - Aggregate caps are typically multiples of the corridor layer - $250,000, $500,000, $750,000, etc.
Corridor layer erodes over time as claims enter the layer
Corridor Deductible - Example

Suppose a $250,000 excess $250,000 corridor deductible with a $250,000 aggregate

**Claims Excess $200,000**

<table>
<thead>
<tr>
<th></th>
<th>Ground-Up</th>
<th>Losses @ $250,000</th>
<th>Corridor Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claim #1</td>
<td>$200,000</td>
<td>$200,000</td>
<td>$0</td>
</tr>
<tr>
<td>Claim #2</td>
<td>$275,000</td>
<td>$250,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>Claim #3</td>
<td>$300,000</td>
<td>$250,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Claim #4</td>
<td>$500,000</td>
<td>$250,000</td>
<td>$175,000</td>
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<tr>
<td>Claim #5</td>
<td>$750,000</td>
<td>$250,000</td>
<td>$0</td>
</tr>
<tr>
<td>Claim #6</td>
<td>$1,000,000</td>
<td>$250,000</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3,025,000</strong></td>
<td><strong>$1,450,000</strong></td>
<td><strong>$250,000</strong></td>
</tr>
</tbody>
</table>
Corridor Deductibles

- Increasing a retention is mathematically equivalent to a corridor deductible in the additional layer with no aggregate cap.

- Thus, a corridor serves as a convenient compromise that allows you to take on more risk but move back to your original retention if experience is worse than expected/tolerated.

*Corridors can also be applied on a quota share basis*
## Knowledge is Power

<table>
<thead>
<tr>
<th>Percentile</th>
<th>$250k x $250k</th>
<th>$250k Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>10%</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>15%</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>20%</td>
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<tr>
<td>25%</td>
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<tr>
<td>30%</td>
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<tr>
<td>35%</td>
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<td>40%</td>
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<tr>
<td>45%</td>
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<tr>
<td>50%</td>
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<tr>
<td>55%</td>
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<td>$37,129</td>
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<tr>
<td>60%</td>
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<tr>
<td>65%</td>
<td>$131,188</td>
<td>$131,188</td>
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<tr>
<td>70%</td>
<td>$199,802</td>
<td>$199,802</td>
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<tr>
<td>75%</td>
<td>$250,000</td>
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</tr>
<tr>
<td>80%</td>
<td>$250,000</td>
<td>$250,000</td>
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<tr>
<td>85%</td>
<td>$250,000</td>
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<tr>
<td>90%</td>
<td>$301,980</td>
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</tr>
<tr>
<td>95%</td>
<td>$448,515</td>
<td>$250,000</td>
</tr>
<tr>
<td>99%</td>
<td>$500,000</td>
<td>$250,000</td>
</tr>
</tbody>
</table>
Considerations: Large Members

• Your pool acts as an excess carrier for members with large deductibles ($100,000+)

• Ensure that your large deductible members understand the market cycle

• Similar approaches can be used to select a deductible that balances the risk assumed with cost
Considerations: Pricing with A Risk Margin

- Careful with changes to funding if pricing at a higher confidence level

- If probability of claim piercing layer is small, loss funding at a particular confidence level (e.g. 65th percentile) may not change

- May be appropriate to use the market savings as a benchmark for additional funding
Tips for Managing Market Cycle

• Important that a company’s management is involved with and committed to its safety programs
• Start the renewal process earlier
• Be cognizant of financials
• Maintain a strong relationship with your broker
Key Questions to Ask in Hard/Soft Market

• What factors are driving changes in the economic landscape?

• Is my insurance carrier subject to concentration risk?
  • Hurricanes?
  • Earthquakes?

• How can I leverage a soft market with my insurance carrier?

• How much capital should I earmark to weather a hardening market?
Questions? Comments?