

**EXAM 8 – FALL 2012**

13. (2 points)

The NCCI uses several procedures to add stability to workers compensation experience rating.

a. (1 point)

Using the NCCI methods as a model, propose two procedures to add stability to terrorism insurance ratemaking.

b. (1 point)

For each procedure in part a. above, provide one argument against including it in terrorism insurance ratemaking.

### **Question 13:**

#### ***Model Solution 1***

a:

1. Separate primary losses from excess losses – Total loss distributions can have a very heavy (and therefore unstable) tail. Using separate distribution for primary vs excess loss mitigates this issue because the tails of both distributions will be less heavy.
2. Give greater weight to actual experience for larger risks – The larger the risk, the more stable their expected losses are. If actual experience for small risks was given the same weight as for large risks, then the mods for small risks would be erratic. (I'm assuming that the question is suggesting that terrorism insurance would have same experience component.)

b:

1. Due to the often catastrophic nature of terrorism losses, it is unlikely that primary losses would have much meaning. (In WC, primary losses are a proxy for frequency.)
2. Due to the rarity and catastrophic nature of terrorism losses, it is unlikely that larger risks would have more stable losses than smaller risks.

#### ***Model Solution 2***

a:

1. One proposal is to introduce a limit to how much of any one loss enters ratemaking. Workers compensation has limits for single claimant & multiple claimant accidents.
2. Break losses into primary & excess components with primary losses receiving far more credibility than excess losses. Since primary losses are more stable, this adds stability to the ratemaking.

b:

1. The problem with A1 is that WC experience rating and terrorism ratemaking have different goals. WC experience rating uses past losses to the extent that they are predictive of the future loss to improve individual risk equity. Large losses are capped because to some extent they are bad luck and should not be allowed to swing the mod past a certain point. Terrorism ratemaking is not interested in individual risk equity as much as spreading the cost of terrorism losses across all insureds. Capping losses may improve stability but may lead to inadequacy.

2. The logic behind separating primary and excess (from one perspective) is that primary reflects frequency, which is thought to be more controllable by the insured. Excess reflects severity. Terrorism losses are essentially all excess losses and are not controllable, so a primary and excess split is not appropriate.

### **Examiner's Comments:**

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#### **Part a**

Most candidates received full credit on this part.

Common responses that garnered full credit included:

- Limit/cap losses that enter into experience rating
- Split losses between primary and excess
- Credibility weight actual experience with expected
- Introduce a ballast value to reduce impact of individual risk experience
- Limit annual rate changes (i.e. swing limits)
- Limit range of mod factors (i.e. max/min mods)
- Vary credibility by size of risk
- Group homogeneous risks
- ... and others

#### **Part b**

Very few candidates received full credit on this part. In order to obtain full credit, solutions needed to tie to part A and be detailed enough to convey understanding. Partial credit was heavily utilized to differentiate between complete and incomplete responses.

Examples of partial credit responses:

- Limit/Cap – Terrorism losses are rare occurrences and catastrophic, data may not be available due to low frequency nature to accurately put into place an appropriate cap/limit.
- Split – Primary and excess components which would reflect frequency and severity respectively. Terrorism events are extremely rare (low frequency), so a split to reflect frequency would be difficult.
- Credibility – often terrorism attacks focus on major known landmarks. To redistribute this risk to lesser buildings in lesser cities would be unfair.
- Ballast – using a ballast may smooth the mods too much. Resulting in subsidies and not providing an incentive to protect against terrorist (at an individual risk level).
- Swing – in a high terrorism year, swing will be applied to many, many insured's, which may make premiums inadequate.

- Max Mod – For terrorism risks, if it happens again, most likely the modification is representative of the future experience. Since experience rating is used to predict the prospective policy period, it could be argued that the mod factor should not be capped.
- Credibility by size of risk –terrorists tend to strike large targets (world trade, OK city) so it may be impossible to determine what is “credible” experience, especially for small risks unlikely to be targets.

Responses that simply mentioned lack of data or difficulty received zero credit.

Responses had to be related to the response in Part a to receive credit.

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