EXPOSURE LIMITATION

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EXPOSURE LIMITATION

1. Definition

Exposure Limitation is a risk management technique of placing limits on risk exposures or risk management metrics to achieve strategic and or operational objectives.

2. Types of Applications

a. Exposure limitations can specify the maximum loss a risk bearing entity is willing to take from some event(s). The aim is to limit the cost of the specific event.

b. Exposure limitations may vary by level of management to ensure decisions are made at the appropriate level of management and that the overall exposure of the company is limited.

c. Exposure limitations can reduce the expected cost of risk by limiting the exposure of a specific type of risk to a percentage of the total risk exposure. This would ensure total exposure is a combination of specific exposures that are not 100% correlated.

d. Exposure limitations can reduce the variance in the expected cost of risk by limiting the exposure in any specific instance of a particular type of risk. By limiting any specific instance, it is hoped the total exposure in a particular type of risk will result from more instances, thus taking advantage of the law of large numbers to reduce variance.

e. Exposure limitations can be used in contractual arrangements to describe how risk will be shared between two or more parties.

f. Exposure limitations can be used in combination with another risk management metric by placing a floor and or cap on that risk management metric.

g. Exposure risk limitation can be used as part of a flexible pricing process by adjusting prices up (or down) as the difference between the exposure limitation and the current exposure decreases (increases). Price will be adjusted based on whether the quantity represented by the exposure limitation is ample or scarce.

h. Exposure limitations do not have to be monetary. Exposure limitations can also be used to limit operational risk or achieve operational objectives.

3. Examples

3.1. Examples of type a applications

Section 1115(a) of New York Insurance law reads in part as follows:

> Except as otherwise provided in this chapter, no insurer doing business in this state shall expose itself to any loss on any one risk in an amount exceeding ten percent of its surplus to policyholders. In determining the amount of risk, any portion reinsured in an assuming insurer authorized to do such business in this state or in an accredited reinsurer, as defined in subsection (a) of section one hundred seven of this chapter, shall be deducted. In determining the limitation of risk under any provision of this chapter, "surplus to policyholders" shall include voluntary reserves, or any part thereof, not required by law, …

See http://assembly.state.ny.us/leg/?cl=52&a=6

The Canadian Office of the Superintendent of Financial Institutions (OSFI) gives additional examples of type a applications at their web site.
http://www.osfi-bsif.gc.ca/eng/publications/guidance/index_prudential.asp#INSURlife

3.2. Examples of type b applications

A company could piggyback on the New York section 1115(a) requirement with the following internal limitations:

1) Exposure to any one risk exceeding 8% of surplus requires Board approval.
2) Exposure of any one risk exceeding 5% of surplus requires Senior Management approval.
3) Exposure of any one risk exceeding 1% of surplus requires approval of Business Line Management.
4) Exposures of any one risk to less than 1% of surplus are to be managed by product level managers.

OSFI recommends and expects a type b application (i.e., that internal company limits be set lower than regulatory requirements). In some cases OSFI has a regulatory exposure limit and a lower limit to trigger regulatory reporting.

3.3. Examples of types c & d applications

The NAIC has two model investment laws, a defined limits version and a defined standards version. The following are examples of the requirements in the defined standards version.

- An insurer shall not acquire, directly or indirectly through an investment subsidiary, an investment under this Act if, as a result of and after giving effect to the investment, the insurer would hold more than three percent (3%) of its admitted assets in investments of all kinds issued, assumed, accepted, insured or guaranteed by a single person (see section 10.A.1).

  This is a type d application since it directly limits the size of a specific instance of risk without regard to type. *This requirement illustrates a common feature often found in exposure limitations. The limit is on management actions and not on actual exposure.* As another example of a limit on management action, a company may have a $10 million acquisition limit on investment grade bonds, a $5 million limit on the acquisition of high yield bonds, but no requirement to sell investment grade bonds in excess of $5 million that get downgraded to below investment grade.

- Section 10.B of the NAIC defined limits investment model law puts the following limits on Medium and Lower Grade Investments.

  - Medium and lower grade investments are limited to 20% of admitted assets;
  - Lower grade investments are limited to 10% of admitted assets;
  - Investments rated 5 or 6 by the SVO are limited to 3% of admitted assets;
  - Investments rated 6 by the SVO are limited to 1% of admitted assets;

  These limits are typical of the risk limitations applied to a risk that can be banded into different levels. Stricter limitations are placed on the riskier bands. Note the first 20% limit is a type c application in that it forces investments to be spread among various asset classes with a maximum of 20% in the medium and lower grade investment categories. Some admitted assets classes not 100% correlated to this class are stocks, real estate and interest rate derivatives. *The aim of the 20% limitation is to spread investments over less than highly correlated assets to reduce the overall expected cost.*

  The 10%, 3% and 1% limits are a type d application because the risk in these very similar exposures is spread among several exposures. *This will not reduce the expected cost as the type c application did, but will reduce the variability in expected cost due to the law of large numbers.*

3.4. Examples of type e applications

Retention limits on life insurance is a typical application of type e limits. The retention limit is the maximum out of pocket cost a company is willing to incur on a single death. It can sell policies in excess of its retention if the risk can be reinsured. To allow a company to write policies above its retention limit, a reinsurer may agree to automatically reinsurance risk up to a reinsurance limit on any risk rated standard or better by the direct writing company's underwriting process. A company with a $10

million retention limit and $20 million of automatic reinsurance could issue a policy of up to $30 million.

Another example of a type e limit is finite risk reinsurance. In finite risk reinsurance the reinsurer agrees to pay all losses up to the limit with the ceding company paying losses above the limit. In this case the limit protects the reinsurer.

3.5. Examples of type f applications

A company may prescribe limits on exposure to interest rate risk. The limitation may be set in terms of Duration mismatch. For example, the Duration mismatch between assets and liabilities may not exceed 0.25 years. Separate limits may be set for Key Rate (or Partial) Durations. Limitations may involve combination of Duration and Dollar Duration.

3.6. Example of type g application

A Company has a capital budgeting process to manage and achieve a target risk based capital ratio. The company's plan is based on reaching yearend with a specific capital usage by a GIC product line. The GIC line has a minimum ROC target. As the plan year unfolds, if sales have been good the ROC target is raised on future business as the capital limitation is approached. If sales have been poor the margins on future business can be reduced to the floor ROC target.

3.7. Examples of type h applications

A Company may require that no more than 24 hours should pass before critical systems used in day-to day operations are restored. These systems could include customer relationship systems, cheque writing systems, call center systems, customer websites, etc. The result of this limitation is to bring focus to the goals of a disaster recovery plans as well as efforts to prevent disasters from occurring.

A reinsurer as it works on its backlog of treaties may require that no more than 5 unsigned treaties be inforce at any time. This would limit the legal exposure and uncertainty should reinsured events occur before a final treaty is written.

Turnover of key staff could be limited to no more than 20% a year. As the rate of staff losses approach the limit, executives in human resources would need to investigate the cause of turnover and develop action plans to stay within the 20% limitation.

4. Determination of Limits

The determination of appropriate limits will depend on a number of factors:

- Are there regulatory limits?
- At what level of management will the limits apply?
- What are the company's competencies? A Company should be willing to take greater risk relative to competitors in an area where it believes it has a competitive advantage.
- What is the company's tolerance for publicly reporting a large loss? Will a large loss in the short term cause a change in strategy whose rationale was based on a long-term horizon?
- What is the purpose of setting the limit? For example, if the limit is to force some diversification, how much diversification is desired?
- How bad can things get? In general, there is little to be gained in placing exposure limits on immaterial or highly stable items.
- What are the available data and resources? Does the company have the sophistication and systems required for managing a particular risk metric (e.g., partial durations)?
- How do the limits impact capital requirements? Does the reduction in risk lower or control capital requirements?
- What is the impact on operations? For example a lower limit in the size of investments that can be purchased needs to be balanced against the potential cost of having funds invested short or in treasuries because not enough deals can be found for available cash.

Stochastic models are gaining popularity with the ever enhancing capabilities of personal computers. Such models are most useful in determining limits on exposure to mortality, interest rate risk and asset default risk.