

Insurance Capital As A Shared Asset

Don Mango

Director of R&D, GE Insurance Solutions
CAS Vice President, Research and
Development

*2005 ASTIN Colloquium
ZURICH*



imagination at work

GE Insurance Solutions protects people, property and reputations. With over \$50bn in combined assets, the GE Insurance Solutions group of companies is one of the world's leading providers of commercial insurance, reinsurance and risk management services.

Life, Health, Property and Casualty

PROPRIETARY INFORMATION NOTICE

The information contained in this document is the property of Employers Reinsurance Corporation, a member of the GE Insurance Solutions group of companies. It should not be reprinted, redistributed or disclosed to others without the express written consent of ERC.

Overview

Context: Asking Price model reflecting frictional capital costs

Insurance capital is a Shared Asset

Two distinct types of usage: consumptive and non-consumptive

More appropriate financial analogue than IRR:
Letter-of-Grant (~letter of credit)

Advocates EVA as decision metric

Parental Guarantees

Merton-Perold: “risk capital” for a business unit should be cost of parental guarantee to make up any operating shortfall

Valuing this guarantee is easy when there are capital market equivalents

What about low liquidity, informationally opaque guarantees?

- > E.g., Insurer portfolio of liabilities

Insurer provides shortfall guarantee to each policy it underwrites

Guarantee is issued by the entity in total, similar to a Letter of Credit (LOC)

Exercise of guarantee by product segment depends on:

- > Volatility
- > Price adequacy
- > Reserve adequacy

Company must manage the timing and size of guarantee exercises (i.e., an internal bank run)

Insurer Capital Is A Shared Asset

Asset Owners:

- Control Overall **Access Rights**
- Preserve Against **Depletion** From Over-Use

Shared Asset

*Reservoir, Golf Course,
Pasture, Hotel, ...
Insurer Capital*

User 1

User 4

User 2

User 3

- Consumes On Standalone Basis
- Tunnel Vision - No Awareness Of The Whole

- Consumes On Standalone Basis
- Tunnel Vision - No Awareness Of The Whole

Shared Assets Can Be Used Two Different Ways

Consumptive Use

- Example: RESERVOIR
- *Permanent* Transfer To The User

Non-Consumptive Use

- Example: GOLF COURSE
- *Temporary* Grant Of Partial Control To User For A Period Of Time

Both Consumptive and Non-Consumptive Use

- Example: HOTEL
- *Temporary* Grant Of Room For A Period Of Time
- Guest could destroy room or entire wing of hotel, which is *Permanent Capacity Consumption*

An Insurer Uses Its Capital Both Ways

1. “Rental” Or Non-Consumptive

- Returns Meet Or Exceed Expectation
- Capacity Is Occupied By Generation of External Required Capital
- But It Is Returned Undamaged Over Time
- A.k.a. *Room Occupancy*

2. Consumptive

- Results Deteriorate
- Reserve Strengthening Is Required
- A.k.a. *Destroy Your Room, Your Floor, Or Even The Entire Hotel*

Insurer Capacity – Definition

- Legitimate standing as a counterparty is essential to their market viability → **claims-paying rating**
- Key rating variable is **capital adequacy ratio (CAR)** = Actual Capital / Required Capital
- Each rating has a **minimum CAR** associated with it
- If Actual Capital is fixed, then there is a **maximum Required Capital** constraint
- Required Capital = $\text{fn}(\text{Premium, Reserves, Assets})$
- For planning purposes, assume reserves and assets are fixed → Required Capital constraint really means a **Premium Constraint**
- Required Premium Capital = **excellent proxy for underwriting capacity**

Insurer Capacity – Occupation

- Underwriting activity generates required capital
 - > Either Current Year Premium or Reserves
- Since insurer is subject to a maximum Required Capital, underwriting activity **occupies available capacity**
- Longer duration business occupies capacity **for a longer time**
- Any occupation of capacity precludes the insurer from using that capacity to underwrite other products = clear **opportunity cost**

Capital Usage Cost Calculation

Paying for the Parental Guarantee

Two Kinds Of Charges:

1. **Rental** = Access fee for LOC
 - Function of *Capacity Usage* (i.e., Rating Agency Required Capital)
 - Opportunity Cost of **Occupying Capacity**
2. **Consumption** = Drawdown fee for LOC
 - Function of *Downside Potential* (i.e., segment economic shortfalls)
 - Opportunity Cost of **Destroying Future Capacity**

Charge portfolio segments for *Both Uses* of Capital

Economic Value Added or EVA Becomes the Decision Metric

$EVA = \text{Return} - \text{Cost of Capital Usage}$

Factors in:

- > Capacity Usage (finite supply, driven by CAR)
- > Company Risk Appetite
- > Segment Volatility
- > Correlation Among Segments

ROE Only Has Meaning For Total Portfolio

Why Consider This?

1. Complete framework that can handle both current approaches and future expansions
2. Accessible underlying philosophy
3. Reflects fundamental indivisibility of company capital
4. More realistic financial analogue than imputed equity flows = Letter of Credit
5. Ties to Finance Dept by using external required capital formulas
6. Adjusts for degree of risk reflected in external required capital formulas
7. Risk preferences are explicit
8. Reflects capacity occupation, volatility, risk preferences and correlations

Thank you for your attention

This material has been
submitted to ASTIN Bulletin
Copies of working paper, presentations,
and demo model available from
Don.Mango@GE.com



imagination at work