

# Introduction to Reinsurance

SEMINAR ON REINSURANCE STUDENT PROGRAM

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## Agenda

- Who am I?
- Insurance vs. Reinsurance
- Types of Reinsurance
- Functions of Reinsurance
- Role of the Actuary

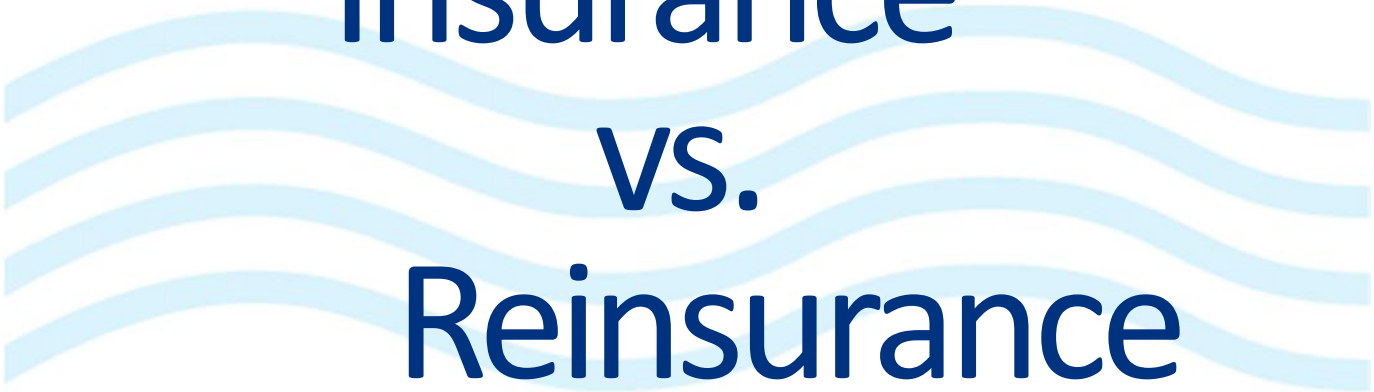
Who am I?



## Daniel E. Fernandez, FCAS, MAAA



- Education
  - B.S. in Economics, University of Pennsylvania, Wharton School of Business, 2010
- Internship
  - Endurance Re in NYC – Summer 2008 and 2009
- Career
  - Berkley Re America (a W.R. Berkley Company), 2010-2014
  - Navigators, 2014-Current
- Volunteer
  - CAS Diversity Committee
  - CAS Committee on Reinsurance Research
- Extracurricular
  - Co-Founder and Member of Board of Directors, Organization of Latino Actuaries (OLA)
  - Member of Board of Trustees, Summer on the Hill



# Insurance vs. Reinsurance

# Insurance

The insurer insures the **individual** or the **corporation**.



Personal Insurance



Commercial Insurance

# Reinsurance

The reinsurer insures the **insurance company**.



## Reinsurance Placement Mechanisms



Direct



Broker





# Types of Reinsurance

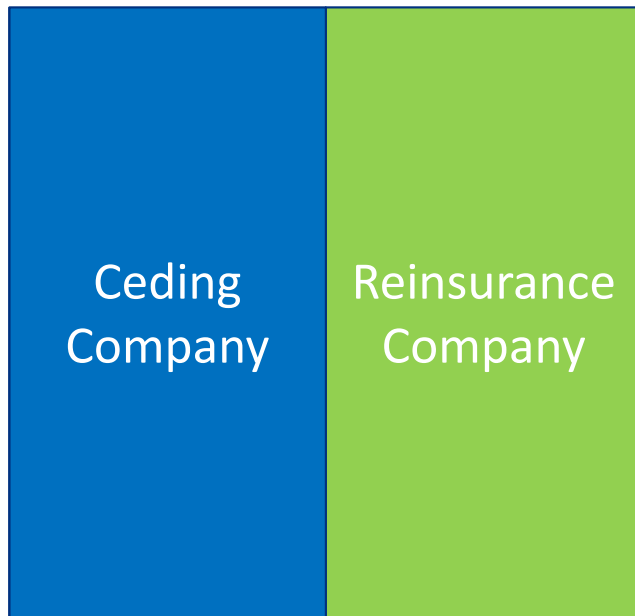
## Treaty Reinsurance

- Covers a book or a class of business
- Cession is obligatory
- Automatic reinsurance
- Insured policies are unknown at inception, but become known subsequently
- Typical uses:
  - Provide stability
  - Insured risks are homogeneous
  - High volume of risks

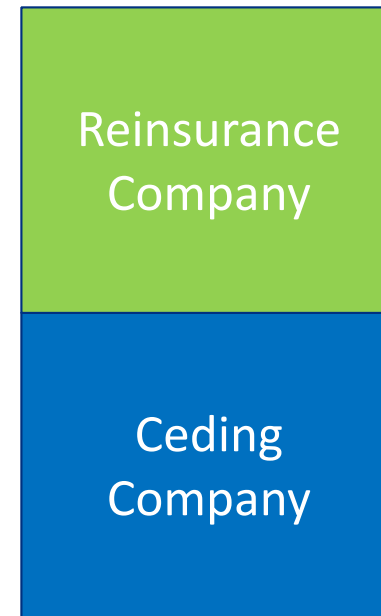
## Facultative Reinsurance

- Covers a specific or an individual risk
- Cession is optional
- The reinsurer retains the right to accept or reject each risk
- The one insured/policy is known to the reinsurer at inception
- Typical uses:
  - Insure unique/hazardous exposures
  - Insure large exposures
  - Insure a particular class or risk excluded from a treaty

## Types of Reinsurance



Proportional



Excess of Loss

## Proportional: Quota Share

- A fixed percentage of every risk is ceded to the reinsurer
- Reinsurer pays ceding commission to insurance company to cover expenses
- Can be tailored to add contractual features that limit losses to the reinsurer or vary the commission based on the level of loss activity

## Proportional: Surplus Share

- The percentage ceded for each risk is based on:
  - Insured Value
  - Retained Line
  - Reinsured amount
- Used mostly for larger risks
- Typically used for property insurance
- Reinsurer pays ceding commission to insurance company to cover expenses
- Can be tailored to add contractual features that limit losses to the reinsurer or vary the commission based on the level of loss activity

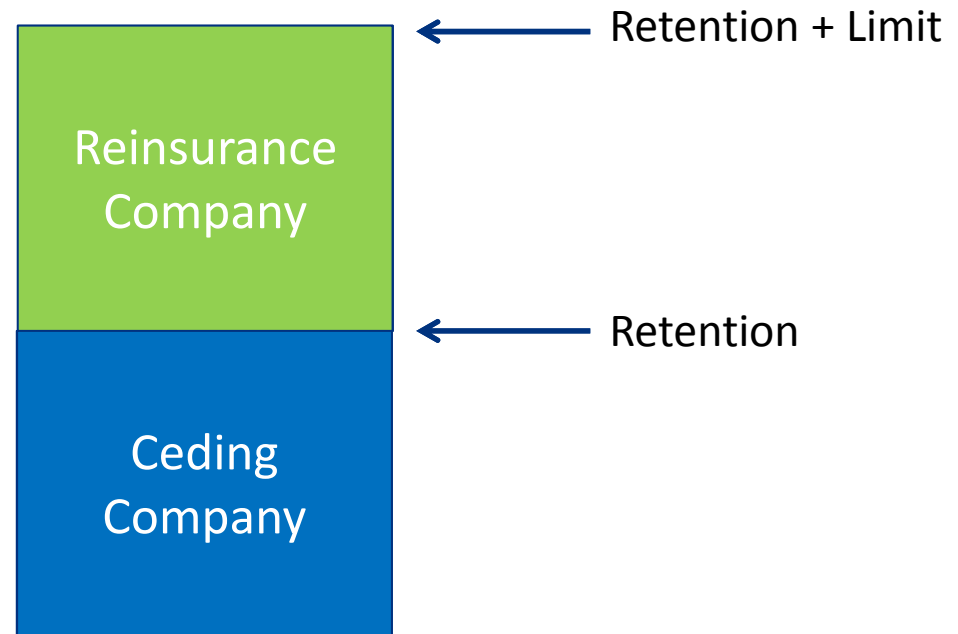
## Surplus Share Example

Retained Line: \$100,000  
 1st Surplus: 4 lines (\$400,000)

Risk	Insured Value	1st Surplus		1st Surplus Percent
		Retained Portion	Reinsured Portion	
1	50,000	50,000	0	0%
2	100,000	100,000	0	0%
3	250,000	100,000	150,000	60%
4	500,000	100,000	400,000	80%
5	1,000,000	100,000	400,000	40%
6	10,000,000	100,000	400,000	4%

## Excess of Loss: Per Risk

- The subject loss is defined to be the sum of all claims arising from one covered loss event or occurrence for a single subject policy
- Example:
  - Commercial Building
  - \$8M Insured Value
  - \$6M Loss
  - \$5M Retention
  - \$5M Limit
  - What is the reinsured loss?



## Excess of Loss: Per Occurrence

- The subject loss is defined to be the sum of all claims arising from one covered loss event or occurrence for all subject policies.
- Example:
  - Tornado fully destroys 25 homes worth \$400K each
  - \$5M Retention
  - \$5M Limit
  - What is the reinsured loss?



## Excess of Loss: Aggregate/Stop Loss

- The subject loss is the accumulation of all subject losses during a specified time period, usually one year.
- Popular for agriculture insurance companies
- Example:
  - 2017 Loss Ratio = 120%
  - Retention = 100%
  - Limit = 50%
  - Premium = \$1M
  - What is the reinsured loss?



# Functions of Reinsurance

## Functions of Reinsurance

- Capacity
- Catastrophe Protection
- Stabilize Loss Experience
- Surplus Relief
- Facilitate Withdrawal From a Market Segment
- Provide Guidance

## Capacity

- Reinsurance allows insurance companies to offer higher policy limits while maintaining a manageable risk level
- Net retained loss per policy can be kept in line with amount of surplus
  - State regulations may prohibit more than a certain percentage of surplus on any one loss exposure
- Smaller insurers can compete with larger insurers

## Catastrophe Protection

- Minimize the financial impact from large events such as hurricanes, earthquakes, tornadoes, wildfires, and more.

- Excess of Loss
- Quota Share
- Securitization (Cat Bonds)



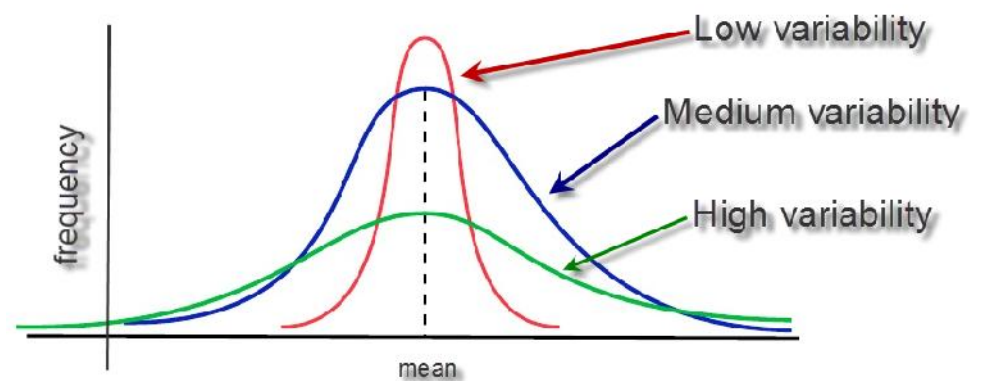
## HIM

- Hurricane Harvey
  - Made landfall on 8/25/17
  - Estimated Insured Loss of \$17.1B
- Hurricane Irma
  - Made landfall on 9/6/17
  - Estimated Insured Loss of \$18.7B
- Hurricane Maria
  - Made landfall on 9/19/17
  - Estimated Insured Loss of \$25.3B

RETIRED STORM NAME	REPLACEMENT NAME IN 2023
<b>HARVEY</b>	<b>HAROLD</b>
<b>IRMA</b>	<b>IDALIA</b>
<b>MARIA</b>	<b>MARGOT</b>

## Stabilize Loss Experience

- Protect the insurance company's surplus against shocks from large, unpredictable losses
- Retain smaller, predictable claims
- Underwriting and financial effects of large claims or accumulations of claims can be spread out over many years
  - Decreases probability of financial ruin for the insurance company



## Surplus Relief

- Due to conservative statutory accounting principles, insurance companies are to maintain acceptable premium to surplus ratios
- For growing companies, this may limit the business they can write
- Proportional contracts provide the most benefit since the ceding commission that the reinsurer pays the insurance company is a direct benefit to surplus



## Facilitate Withdrawal From a Market Segment

- The insurance company may want to withdraw from a market segment that is unprofitable, undesirable, or does not fit into the strategic plan

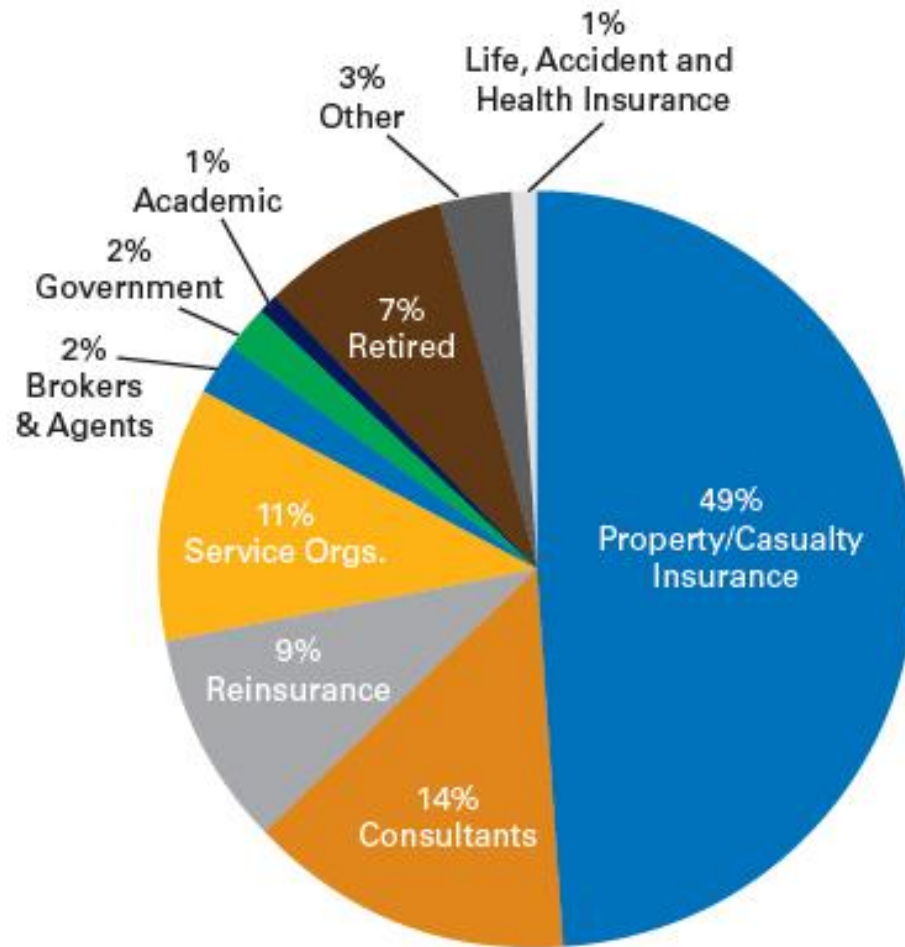
## Provide Guidance

- Reinsurers work with a wide variety of insurers and consequently accumulate a great deal of expertise
  - Underwriting
  - Marketing
  - Pricing
  - Loss Prevention
  - Claims Handling
  - General Issues & Trends



# Role of the Actuary

## CAS Members by Type of Employment



## Experience Rating

- Using historical losses to estimate the losses in the prospective period

## Exposure Rating

- Using industry loss curves to estimate the losses in the prospective period using underlying exposures, independent of the insurance company's claims experience
- Use a weighted combination of experience and exposure rating to determine final estimated losses

