

The Reinsurance Section Presents

# Life and Annuity Reinsurance Seminar

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# Life and Annuity Reinsurance Seminar

OVERVIEW OF REINSURANCE AND MARKET

**Jeff Katz, FSA, MAAA**

August 14, 2017



**SOCIETY OF  
ACTUARIES®**

# Professional Development

- The SOA believes in good faith that the presentation being made today satisfies the definition of structured education under the Society of Actuaries' CPD requirements and an organized activity under the American Academy of Actuaries' US Qualification Standards.
- Each actuary must determine the number of credits that are applicable to them as job-relevant skills under the SOA's CPD requirements or hours of relevant continuing education under the AAA's US Qualification Standards.
- The material contained in this presentation has been prepared solely for informational purposes. This information is based on sources believed to be reliable, but we do not represent as to its accuracy or its completeness. The content of this presentation is intended to provide a general guide to the subject matter. Specialist advice should be sought about your specific circumstances.

# Overview of LEARN

SOA Reinsurance Section Council

Education Initiative

Began in 2009

First presentation in 2010

Twenty – seven states, Bermuda and Trinidad sessions to date

# Life Reinsurance Introduction



# Types of Reinsurance

## What is Reinsurance?

- Insurance purchased by an insurance company to cover all or part of certain risks on policies issued by that company

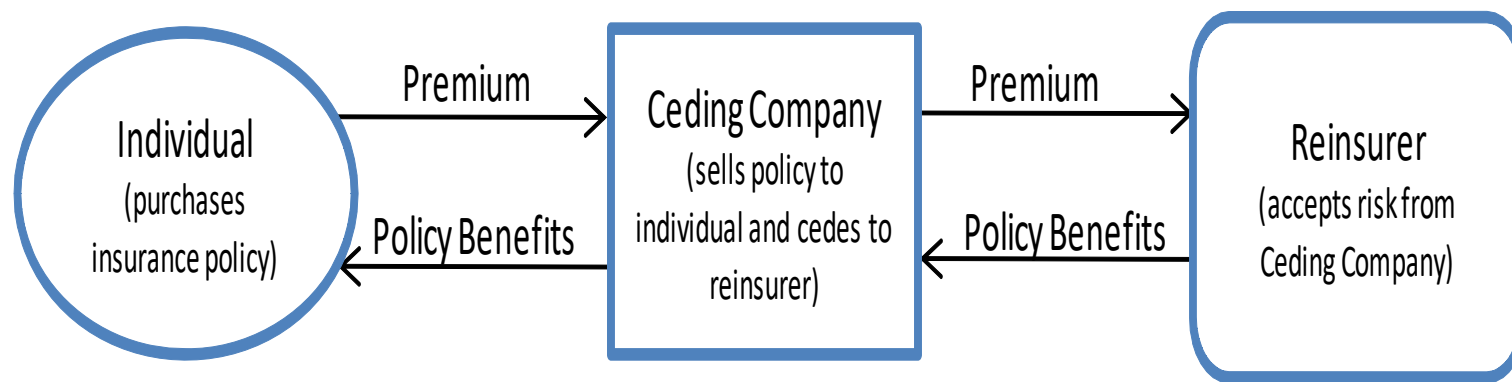
## Definitions

- Ceding company: An insurer which underwrites and issues an original policy to an insured and transfers (cedes) a portion of the risk to a reinsurer
- Reinsurer: A company that contractually accepts a portion of the ceding company's risk
- Reinsurance Intermediary: Agent or broker to ceding company that facilitates placing and binding of reinsurance with reinsurer.
- Retrocessionaire: A reinsurer's reinsurer.

# Types of Reinsurance

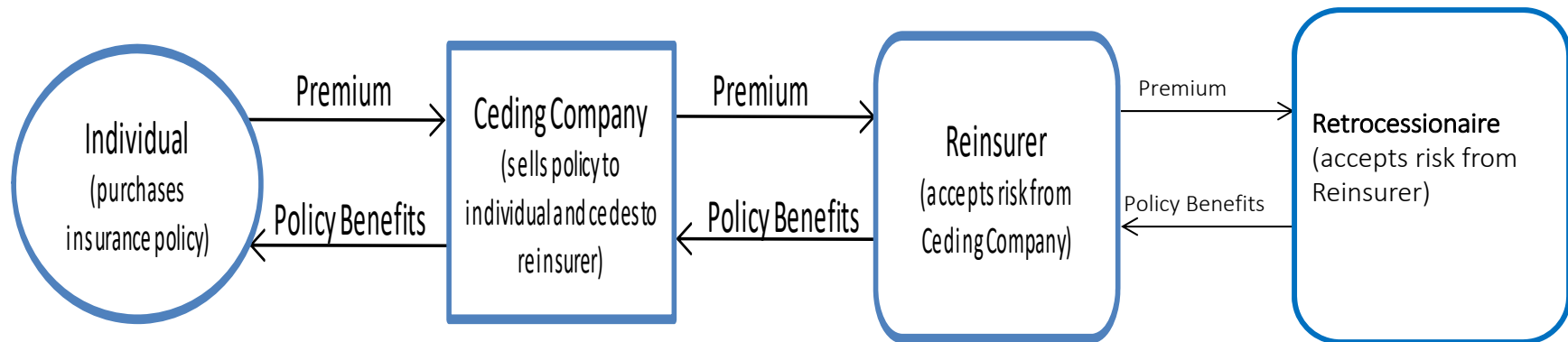
## Typical Reinsurance Structure

- The ceding company sells a policy to an individual and transfers a portion of the risk to the reinsurer



# Life Reinsurance Initial Topics

## Typical Reinsurance Structure with Retrocession





# Types of Reinsurance

## Why Reinsurance?

- Mortality/Morbidity Risk Transfer: Ceding Company only retains risk up to a certain limit (called retention limit) or as a percentage (called quota share)
- Lapse or Surrender Risk Transfer: Mainly used for products with large first year commissions
- Investment Risk Transfer: Utilize benefits of reinsurer's investment facilities or to shift part of risk to reinsurer
- New Business Financing: Shift costs of acquiring business to reinsurer
- Mergers and Acquisitions: Increase capital through transferring risk of an inforce block
- Underwriting Assistance: Reinsurers can assist with complicated cases and provide facultative reinsurance
- Entering New Markets: Utilize reinsurer's expertise
- Divesting a Product Line: Reinsure inforce business to exit certain businesses

John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition

# Types of Reinsurance

## Why Reinsurance? (continued)

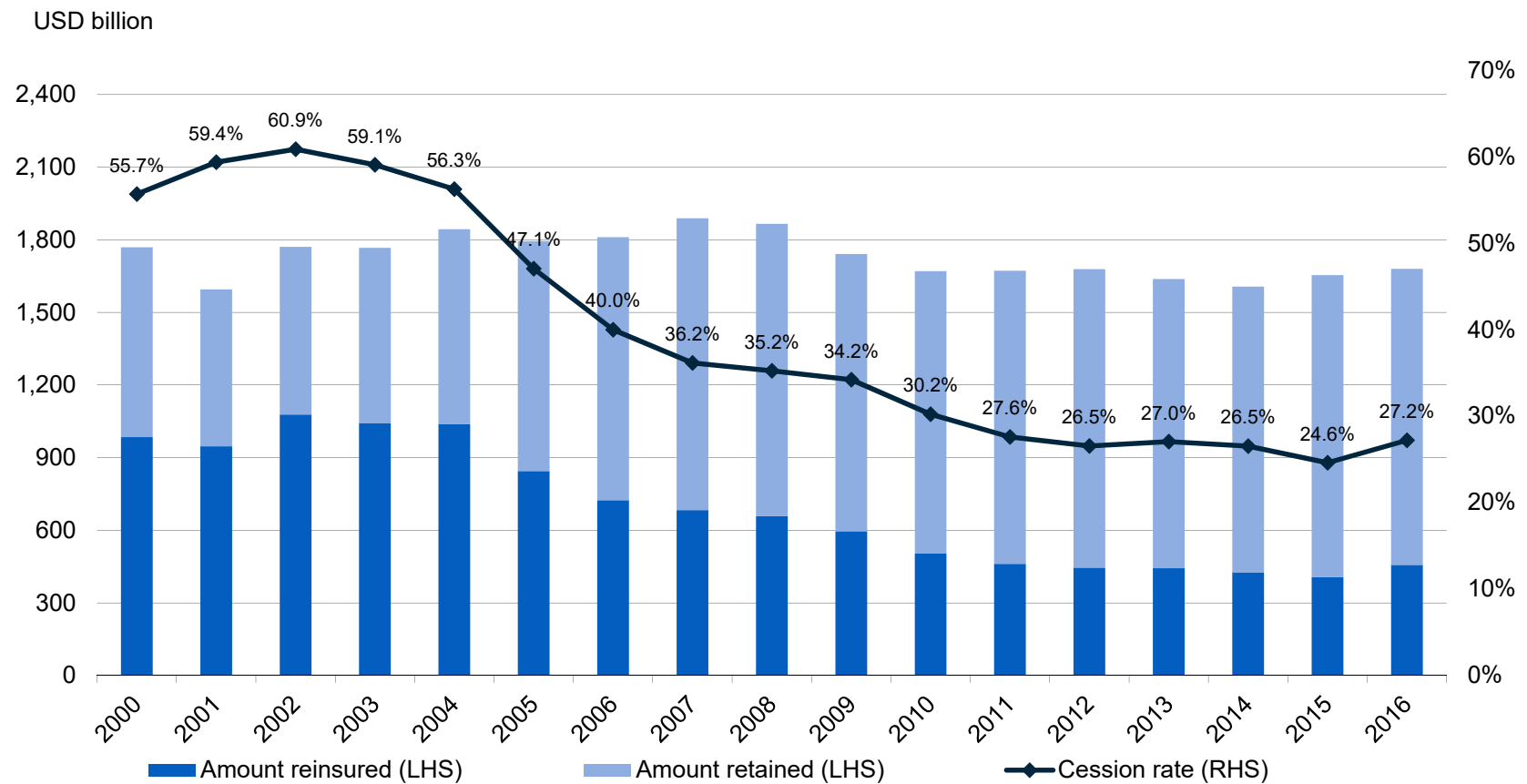
- Increase Profitability of Product: Differences in cost structures between cedant and reinsurer could cause the product to be more profitable when reinsured
- Financial Planning/Capital Management: May need to increase capital levels through reinsurance
- Reduce Volatility of Returns: Reinsurance can reduce the cedant's exposure to large claims
- Tax Planning: Done to maintain Life/non-Life status or utilize an expiring tax loss carry-forward
- Enterprise Risk Management: Reduce concentration of risk or utilize a reinsurer's lower cost of capital

John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition

# US Life Reinsurance Market



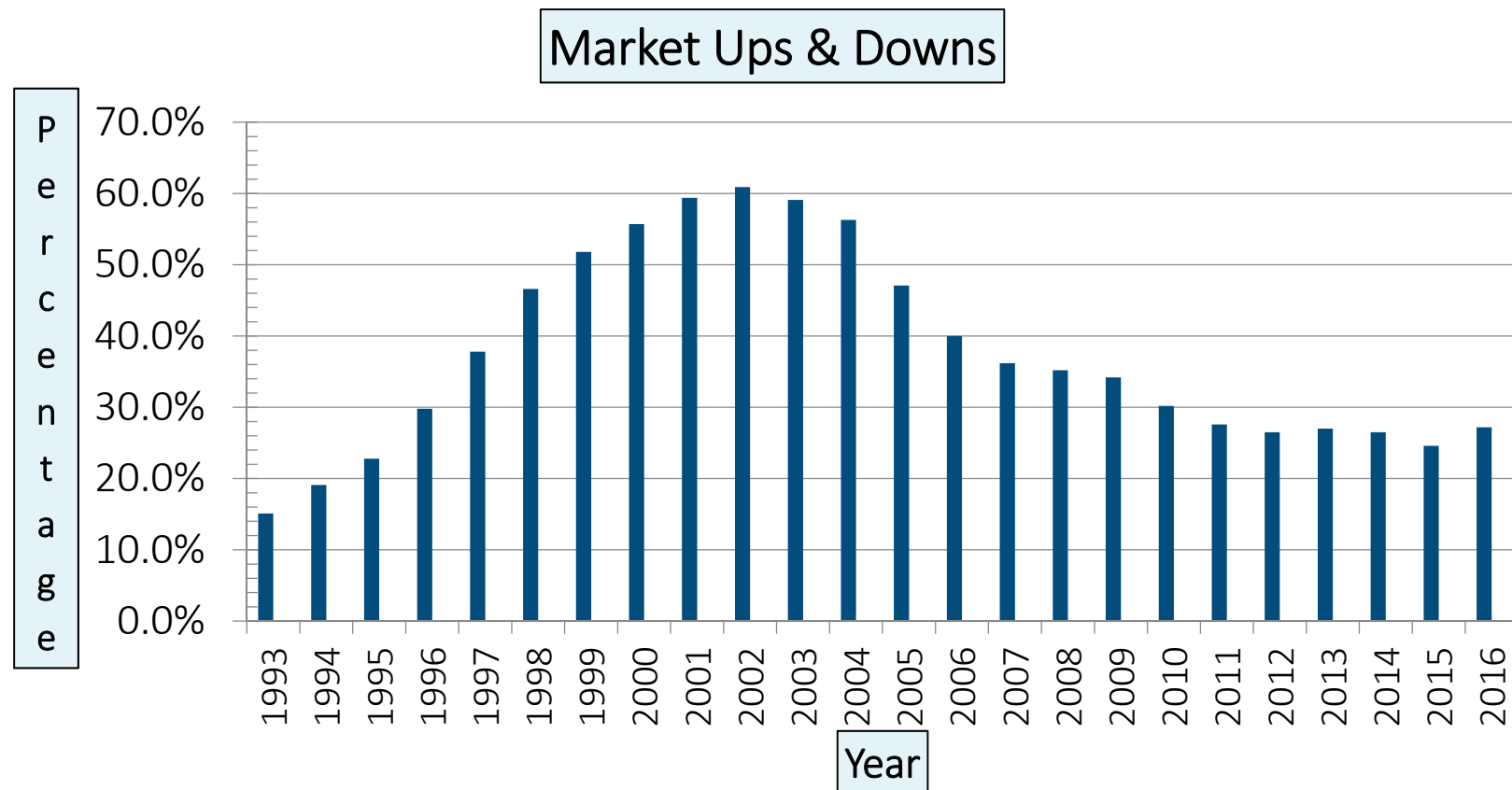
# US Ordinary Life NB Cession Rates (recurring business)



Note: Cession rates on new recurring ordinary life business

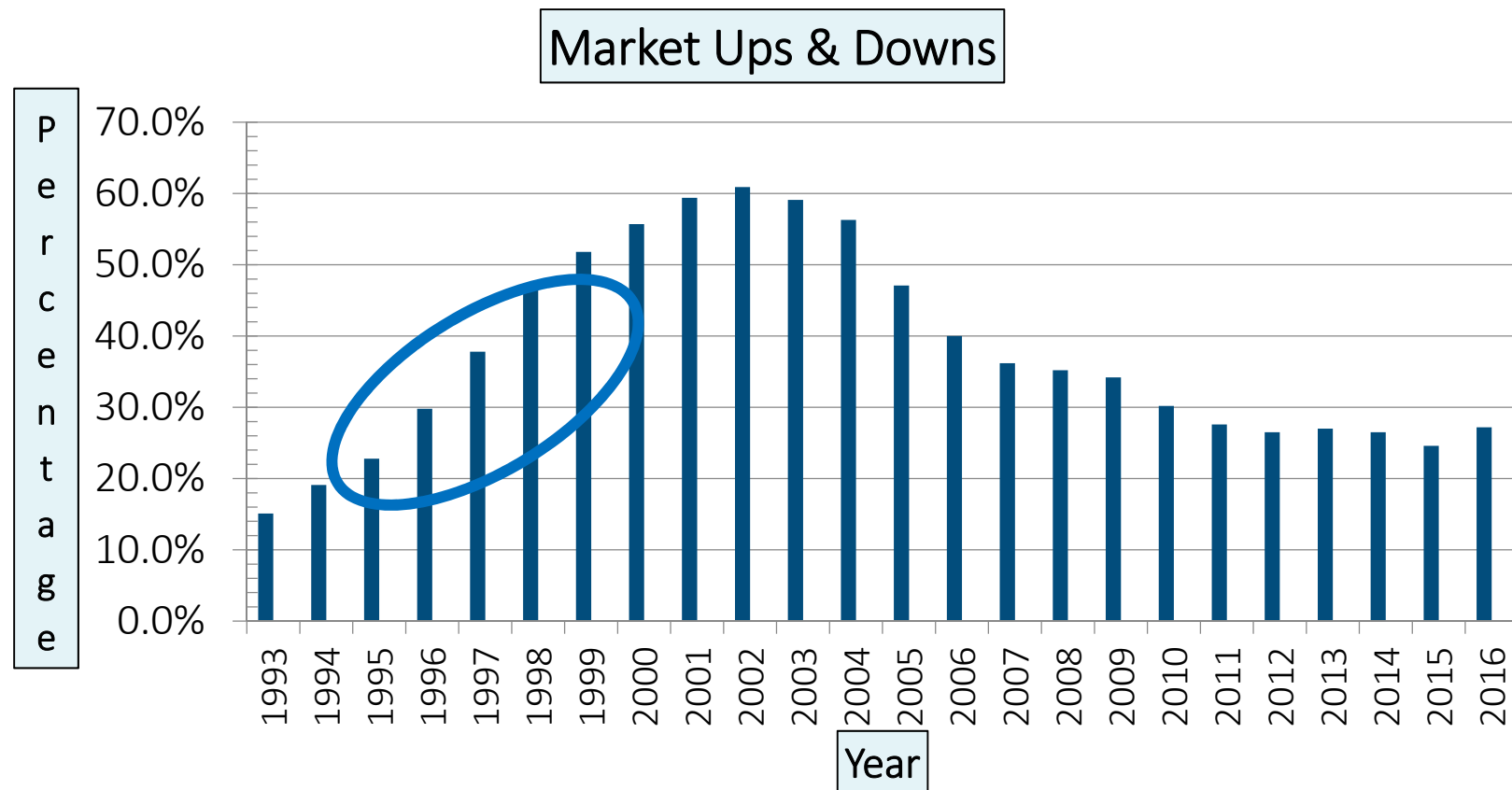
Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

# Reinsurance Market: Cession Rate



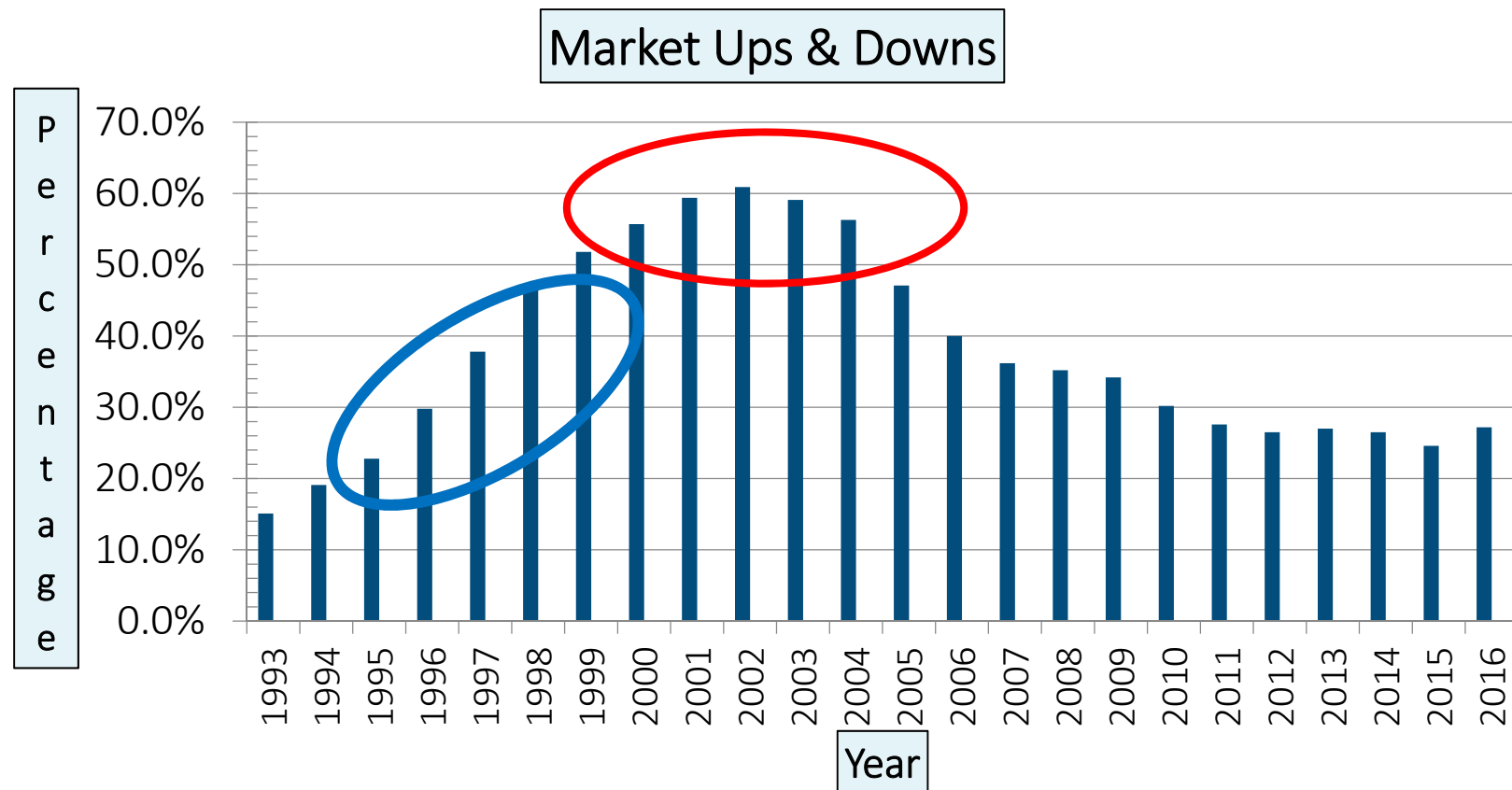
Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

# Reinsurance Market: Cession Rate



Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

# Reinsurance Market: Cession Rate



Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

# US Life Reinsurers

## 2016 Recurring New Business

Reinsurer	Premium Volume \$M	Share	Change from 2015
SCOR Global Life	100,545	22.0%	3,574
Swiss Re	84,384	18.5%	4,106
RGA Re*	84,052	18.4%	15,980
Munich Re (US)	79,906	17.5%	6,725
Hannover Life Re	55,855	12.2%	15,189
Canada Life	17,454	3.8%	6,849
Aurigen	17,233	3.8%	-2,142
General Re Life	9,140	2.0%	-859
Optimum Re (US)	8,792	1.9%	606

\*RGA Re values represent combined reinsurance sales for RGA Re Company (United States) and RGA Re (Canada).

Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"



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Top 5:  
88.6%  
market  
share

\*RGA Re values represent combined reinsurance sales for RGA Re Company (United States) and RGA Re (Canada).

Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

# Types of Reinsurance



# Types of Reinsurance

## Coinsurance

- Reinsurance coverage ceded to the reinsurer on an individual policy is in the same form as that of the policy issued to the policyholder
- “Same form” means that the ceding company and reinsurer are exposed to the same risks, they are essentially sharing the responsibility of insuring the policy, hence the name co-insurance.
- Since the cedant generally continues to maintain the policy administration, the reinsurer will allocate a portion of the premium to return to the cedant to cover a portion of these administration expenses.
- In addition to covering the administration expenses, the reinsurer will also return a portion of the premium to the cedant to cover agent commissions and underwriting expenses.
- The total returned premium is called an expense allowance.
- The absolute level of the expense allowance can vary from reinsurer to reinsurer
- The larger the expense allowance, the more attractive the reinsurance quote

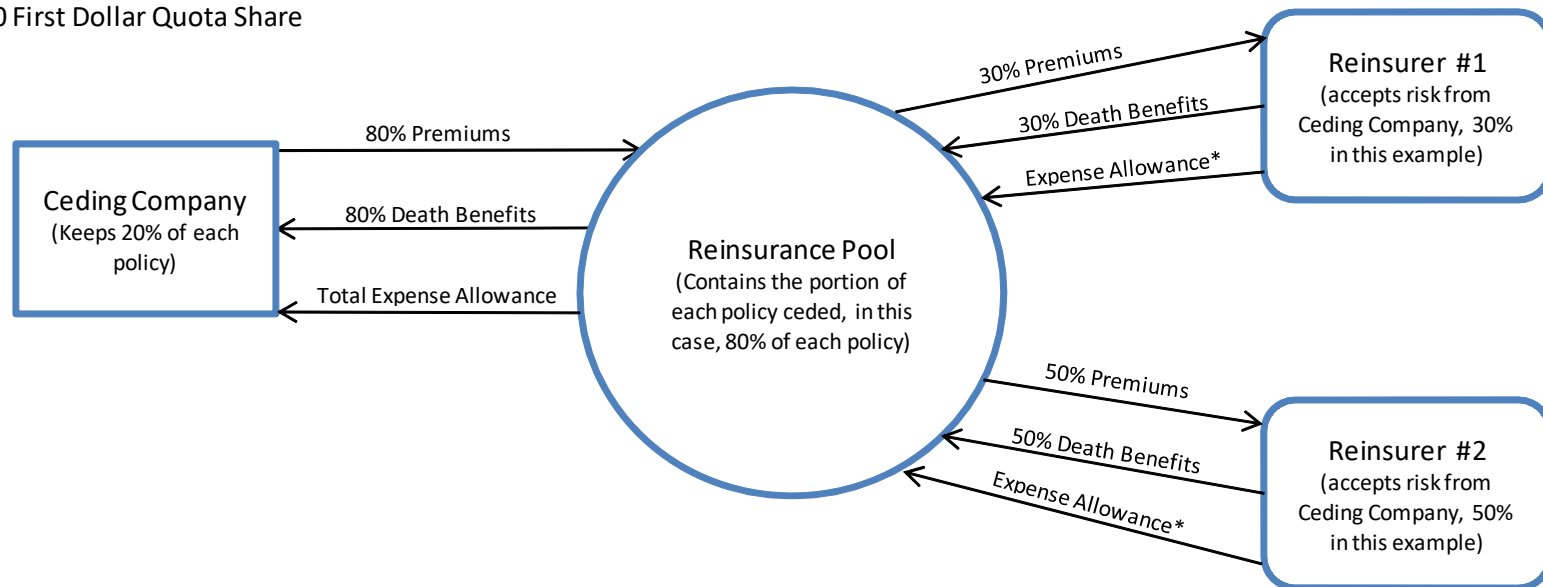
John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition

# Types of Reinsurance

## Coinsurance

- Typical arrangements are for term life insurance where the cedant retains a percentage of each policy and sends the rest of the policy to several other reinsurers through the use of a “pool.”

Coinsurance Example  
80/20 First Dollar Quota Share



\*The expense allowances will often vary by reinsurer.

# Types of Reinsurance

## Yearly renewable term (YRT)

- Reinsurance coverage for which the premium rates are not directly related to the premium rates of the original plan of insurance
- The premium rates are typically set as a percentage of an industry mortality table and are multiplied to the Net Amount at Risk (NAAR)
- NAAR is defined as the excess of the death benefit of a policy over the policy reserve
- Since a mortality rates generally increase each year, the premium rates per \$1,000 will be increasing
- There is generally not an expense allowance
- The reinsurers reserves under a YRT arrangement are typically much smaller than those produced under a coinsurance arrangement (to be explained in the reserve section)
- YRT is generally thought of as “mortality only” reinsurance and is one of the cheapest forms of mortality risk transfer

John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition

# Types of Reinsurance

## YRT (continued)

- Can easily be utilized for any type of life contract
- Actual rates charged to the cedant are only guaranteed for one year, and the reinsurer has the right to increase rates
- Utilizes a reinsurance pool concept without an expense allowance
- One alternate version of YRT is called zero-first year premium (ZFY)
  - In ZFY reinsurance, no premium is paid to the reinsurer
  - This helps cedants recover a portion of first-year acquisition costs

John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition

# Other Reinsurance Types

## Modified Coinsurance (Modco) Arrangements

- Same as the coinsurance plan, except ceding company retains the assets with respect to all the policies reinsured
- Establishes and retains the total reserves on the policies
- The assuming company (reinsurer) is paid the gross investment income on the assets retained by the ceding company.
- Periodic settlements are made between the two companies for premiums collected and for death benefits, surrenders, dividends, etc., at the end of the year
- Reinsurer is charged by the ceding company for its proportionate part of the increase in reserves on the reinsured policies.
- This modification removes one of the major disadvantages of strict coinsurance in that the original insurer's assets are not diminished.

# Other Reinsurance Types

## Funds Withheld Arrangements

- A provision in a reinsurance treaty under which some or all of the premium due the reinsurer, usually an unauthorized reinsurer, is not paid but rather is withheld by the ceding company
- Either to enable the ceding company to reduce the provision for unauthorized reinsurance in its statutory statement or to be on deposit in a loss escrow account for purposes of paying claims.
- The reinsurer's asset, in lieu of cash, is funds held by or deposited with reinsured companies.



# Life Catastrophe Covers

## Multi-Life Warrantees vs. Clash Covers

### Multi-Life Warranty

- An excess of loss reinsurance agreement with cedant purchasing protection whereby one event results in multiple death claims (e.g., plane crash).

### Clash Cover

- An excess of loss reinsurance agreement with cedant purchasing protection in case one death results in multiple death claims (e.g., reinsurer reinsures multiple ceding companies and the one individual is insured under multiple policies by multiple insurance companies).

## Catastrophe Coverages

- Large Limit and Retention
- Type of “event” limited by hours clause
- Per Occurrence coverage rather than Per Risk
- The Reinstatement issue

# Inforce Reinsurance

## Inforce vs. New Business

### Inforce Reinsurance

- Reinsurance agreement on a block of existing business where all policies were written and inforce previous to the effective date.

### New Business Reinsurance

- Reinsurance agreement which may or may not have policies inforce at inception, but is open to covering new policies written after the effective date.

# Inforce Reinsurance

## Differences in Pricing and Treaty Documentation

### Pricing

- Additional data will often be available for inforce blocks of business allowing for more precise pricing and modeling efforts.
  - Historical trends on the obligations including premium, claims and surrenders
  - Experience studies for mortality, morbidity, persistency, and production
  - Historical portfolio yields (earned and credited)
  - Term Conversion Experience
  - Statutory Income and Income by source

### Treaty Documentation

- Potential for customization of treaty provisions based on whether or not the agreement is open to new business.
  - Incurred but Not Reported amounts
  - Effective dates of coverage for inforce and new business production
  - Caps on new business production - reserves or face amounts
  - Financial Triggers

# Inforce Reinsurance

## What are the Concerns of a Regulator?

### Solvency

- Potential concerns that the cession of a large block could materially affect, either favorably or unfavorably, the capital position of either party

### “Fronting”

- To the extent that all of the business or all of a certain product line of a company is being ceded, certain jurisdictions impose limitations and or requirements around the reporting and nature of such transactions.

### Bulk Reinsurance

- Inforce reinsurance is subject to additional insurance law in some jurisdictions which governs the approval process necessary to cede large books of business under certain conditions.

# Reinsurance Regs and Resources



# Major Regulations

- Credit for Reinsurance Model Law
- Credit for Reinsurance Model Regulation, with SSAP 61 for clarification
- Life and Health Reinsurance Agreements Model Regulation, with SSAP 62 & Appendix A-791
  - Probably the most relevant and clearest standards
  - Strangely, not applicable to YRT
- Reinsurance Intermediary Model Act
- Risk-Based Capital for Insurers Model Act
- Assumption Reinsurance Model Regulation
- Insurer Receivership Model Act (insolvency)
- Consider
  - Different variations by state
  - Need to stay current
  - May be advisable to discuss with state of domicile prior to entering into significant agreements

# Reinsurance Links/Resources

- [http://www.reinsurance.org/About Reinsurance/Glossary of Reinsurance Terms.html](http://www.reinsurance.org/About%20Reinsurance/Glossary%20of%20Reinsurance%20Terms.html)
- [http://media.swissre.com/documents/The Essential Guide to Reinsurance EN.pdf](http://media.swissre.com/documents/The%20Essential%20Guide%20to%20Reinsurance%20EN.pdf)  
    [iPad Application](#)
  - [http://www.swissre.com/library/Apps/The essential guide to reinsurance app.html](http://www.swissre.com/library/Apps/The%20essential%20guide%20to%20reinsurance%20app.html)
- [http://media.swissre.com/documents/SRCM The Fundamentals of ILS web.pdf](http://media.swissre.com/documents/SRCM%20The%20Fundamentals%20of%20ILS%20web.pdf)
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- <http://www.soa.org/Research/Research-Projects/Life-Insurance/Life-Reinsurance-Treaty-Construction.aspx>
- NAIC Model Reg – Credit for Reinsurance - <http://www.naic.org/store/free/MDL-785.pdf>



# Reinsurance Boot Camp

JEFF KATZ

August 14, 2017



# Session Introduction

Who is this guy?

- Name
- Rank
- Credentials
- Experience
- LEARN

Don't Wait:  
ASK!

# Risk Transfer



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# Risk Transfer

## Identifying and Defining Risk Transfer

*Risk Transfer is the equitable transfer of all significant risks and responsibility for payment of future benefits, from the cedant in exchange for reserve credit, to the reinsurer in exchange for compensation.*

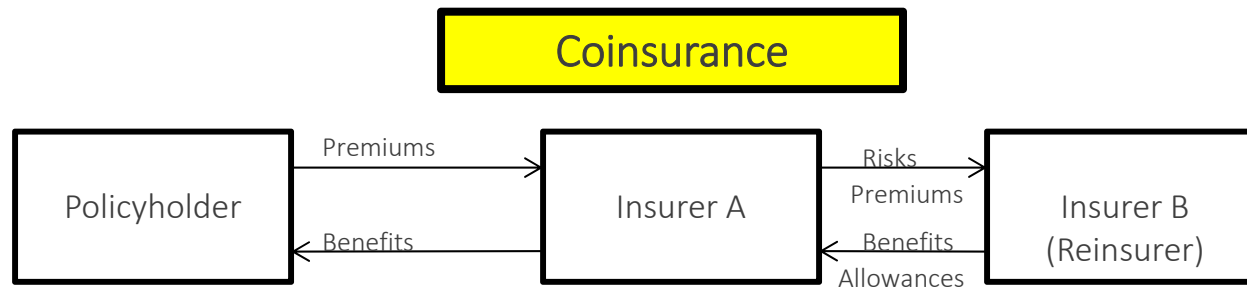
- Identifying what constitutes appropriate or sufficient risk transfer is a problem for both regulators and companies alike.
- Definition is often left to the discretion of the state regulator, resulting in disagreement and potential inconsistency.
- Some states have implemented specific regulations or legislation to address the issue, but it is difficult to define all situations in advance.

# Risk Transfer

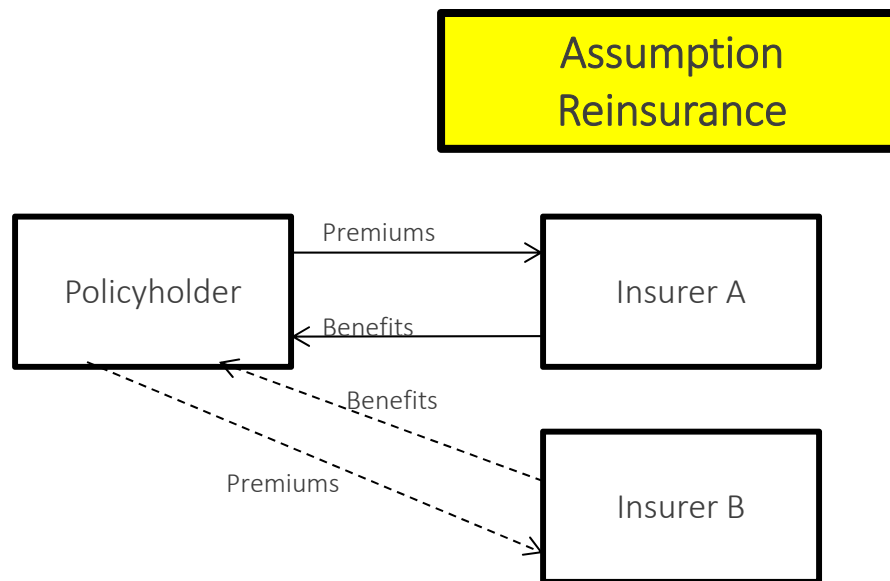
## Life & Health Reinsurance Agreements Regulation

- Initially out of scope:
  - A. Assumption reinsurance
  - B. YRT reinsurance
  - C. Certain non-proportional reinsurance, such as stop-loss or catastrophe

# Example: indemnity reinsurance

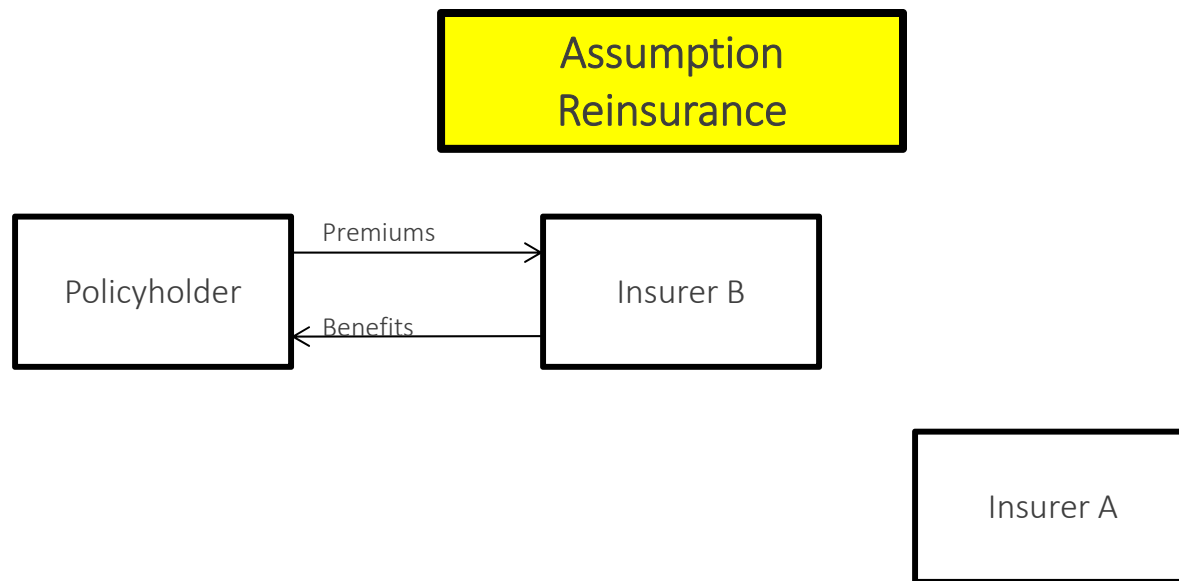


# Example: assumption reinsurance





# Example: assumption reinsurance



# Risk Transfer

## Life & Health Reinsurance Agreements Regulation

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# Risk Transfer

## Life & Health Reinsurance Agreements Regulation

- SSAP 61 and Appendix A-791 add YRT requirements

Will elaborate on each specific risk transfer requirement

# Risk Transfer

## Life & Health Reinsurance Agreements Regulation

- Initially out of scope:
  - A. Assumption reinsurance
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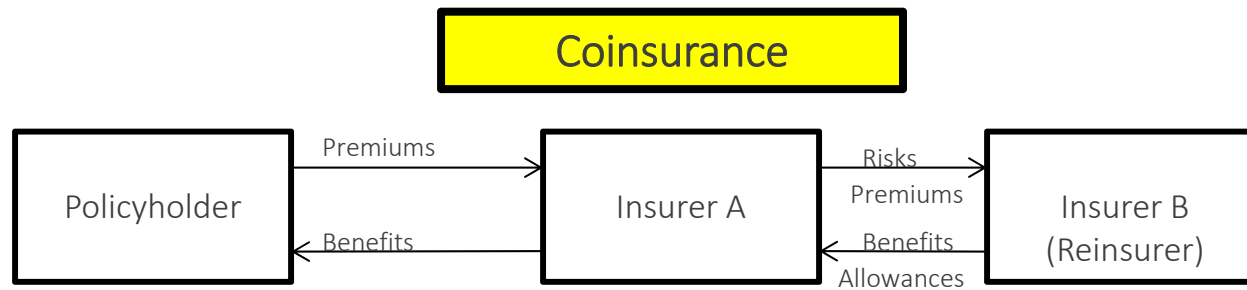
# Risk Transfer

## Statutory Requirements

- In order for a ceding company to take statutory reserve credit, the reinsurance agreement must meet the following requirements:
  1. Renewal expense allowances to the ceding company by the reinsurer must be sufficient to cover anticipated renewal expenses of the ceding company on the portion of the business reinsured. (In some jurisdictions, a liability may be established for the present value of the shortfall.)

Does not apply  
to YRT

# Example: indemnity reinsurance



# Risk Transfer

## Example

1. Cedent estimates renewal expenses of 5% for renewal commissions, 2% for premium tax, and 3% for other expenses such as claims handling, administration, and financial reporting. Renewal allowances must be at 10% to meet risk transfer requirements. If they are less than 10%:
  - A. If state permits shortfall reserve, can take reserve credit, but shortfall reserve effectively reduces reserve credit impact.
  - B. If not, no reserve credit.

# Types of Reinsurance

## Coinurance: Think "Partnership"

- Reinsurance coverage ceded to the reinsurer on an individual policy is in the same form as that of the policy issued to the policyholder
- "Same form" means that the ceding company and reinsurer are exposed to the same risks, they are essentially sharing the responsibility of insuring the policy, hence the name co-insurance.
- Since the cedant generally continues to maintain the policy administration, the reinsurer will allocate a portion of the premium to return to the cedant to cover a portion of these administration expenses.
- In addition to covering the administration expenses, the reinsurer will also return a portion of the premium to the cedant to cover agent commissions and underwriting expenses.
- The total returned premium is called an expense allowance.
- The absolute level of the expense allowance can vary from reinsurer to reinsurer
- The larger the expense allowance, the more attractive the reinsurance quote

John E. Tiller, *Life, Health, & Annuity Reinsurance*, Third Edition



# Risk Transfer

## Statutory Requirements

2. Reinsurer cannot deprive cedant of surplus or assets (for example, by termination of in force reinsurance) automatically upon the occurrence of some event (except for nonpayment of reinsurance premiums or other amounts due.)

Applies to YRT

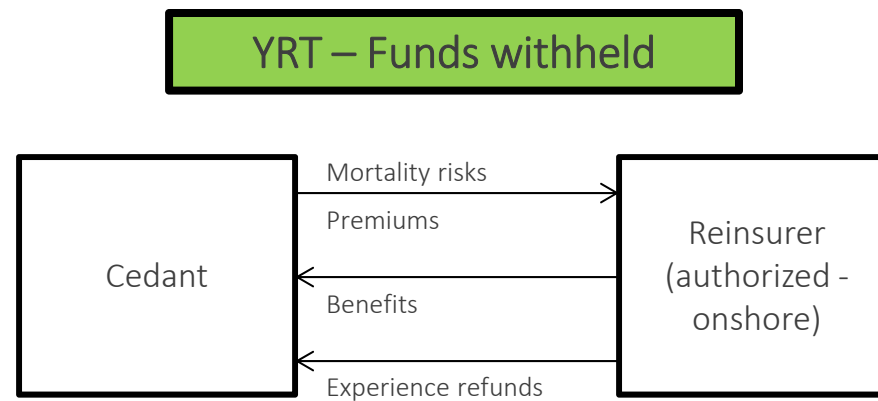
# Risk Transfer

## Statutory Requirements

3. Reinsurer cannot require the ceding company to reimburse the reinsurer for negative experience under the agreement. Offsetting experience refunds against current and prior years' losses or payment of an amount equal to the current and prior years' losses upon voluntary termination by the ceding company shall not be considered such reimbursement.

Applies to YRT

# Example: RBC Relief



# Risk Transfer

## Statutory Requirements (cont.)

4. No termination or automatic recapture, in full or in part, can be scheduled in the treaty.

Applies to YRT

# Risk Transfer

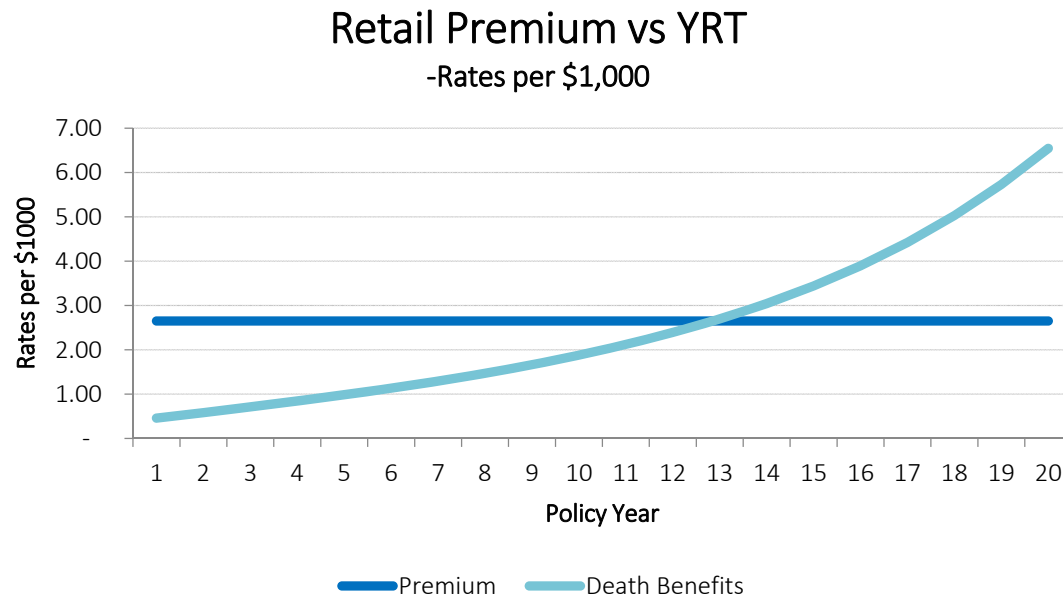
## Statutory Requirements (cont.)

5. Reinsurance payments must only come from income realized by the reinsured policies. (Reinsurance premiums should not exceed direct premiums collected by the ceding company.)

Does not apply  
to YRT

# Retail Premium vs YRT

For Permanent Life products, retail premium is level  
YRT rates follow pattern of mortality/death benefits



# Risk Transfer

## Statutory Requirements (cont.)

6. The treaty must transfer all the significant risks of the reinsured business. Such risks include: morbidity, mortality, lapse, credit quality, reinvestment, and disintermediation.
  - See chart in regulation

Does not apply  
to YRT

**Risk categories:**

- (a) Morbidity
- (b) Mortality
- (c) Lapse

This is the risk that a policy will voluntarily terminate prior to the recoupment of a statutory surplus strain experienced at issue of the policy.

- (d) Credit Quality (C1)

This is the risk that invested assets supporting the reinsured business will decrease in value. The main hazards are that assets will default or that there will be a decrease in earning power. It excludes market value declines due to changes in interest rate.

- (e) Reinvestment (C3)

This is the risk that interest rates will fall and funds reinvested (coupon payments or monies received upon asset maturity or call) will therefore earn less than expected. If asset durations are less than liability durations, the mismatch will increase.

- (f) Disintermediation (C3)

This is the risk that interest rates rise and policy loans and surrenders increase or maturing contracts do not renew at anticipated rates of renewal. If asset durations are greater than the liability durations, the mismatch will increase. Policyholders will move their funds into new products offering higher rates. The company may have to sell assets at a loss to provide for these withdrawals.

+ - Significant    0 - Insignificant



## RISK CATEGORY

	a	b	c	d	e	f
Health Insurance - other than LTC/LTD*	+	0	+	0	0	0
Health Insurance - LTC/LTD*	+	0	+	+	+	0
Immediate Annuities	0	+	0	+	+	0
Single Premium Deferred Annuities	0	0	+	+	+	+
Flexible Premium Deferred Annuities	0	0	+	+	+	+
Guaranteed Interest Contracts	0	0	0	+	+	+
Other Annuity Deposit Business	0	0	+	+	+	+
Single Premium Whole Life	0	+	+	+	+	+
Traditional Non-Par Permanent	0	+	+	+	+	+
Traditional Non-Par Term	0	+	+	0	0	0
Traditional Par Permanent	0	+	+	+	+	+
Traditional Par Term	0	+	+	0	0	0
Adjustable Premium Permanent	0	+	+	+	+	+
Indeterminate Premium Permanent	0	+	+	+	+	+
Universal Life Flexible Premium	0	+	+	+	+	+
Universal Life Fixed Premium	0	+	+	+	+	+
Universal Life Fixed Premium dump-in premiums allowed	0	+	+	+	+	+

\*LTC = Long Term Care Insurance

LTD = Long Term Disability Insurance

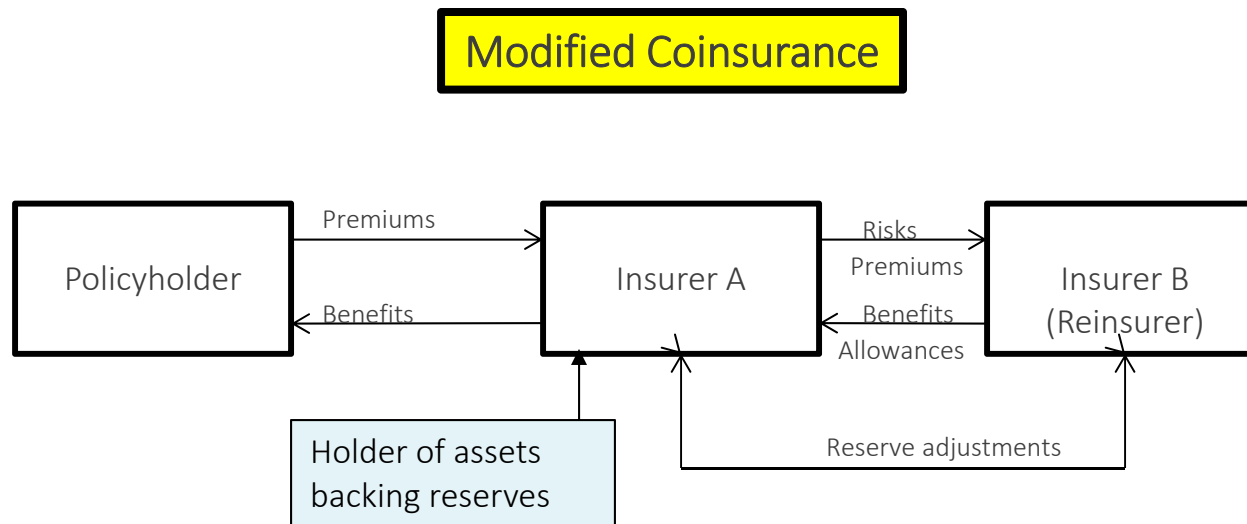
# Risk Transfer

## Statutory Requirements (cont.)

7. For business with significant asset risk, underlying assets must either be transferred to the reinsurer or legally segregated by the ceding company. (Some specified health and life business assets may be held by ceding company without segregation.)

Does not apply  
to YRT

# Example: indemnity reinsurance



# Risk Transfer

## Statutory Requirements (cont.)

8. Settlements made at least quarterly.

Applies to YRT

# Risk Transfer

## Statutory Requirements (cont.)

9. Ceding company must not be required to make representations or warranties that are not reasonably related to the business reinsured.
10. Ceding company must not be required to make representations or warranties about the future performance of the business reinsured.

Applies to YRT

# Risk Transfer

## Statutory Requirements (cont.)

11. The reinsurance agreement should not be entered into for the principal purpose of producing significant surplus aid, typically on a temporary basis, while not transferring all the significant risks inherent in the business reinsured (i.e. the expected liability to the ceding company remains unchanged.)

Applies to YRT

# Risk Transfer

## Statutory Requirements (cont.)

### Requirement for written agreements

- Written documentation executed no later than as of date of financial statement
- Letter of intent replaced by treaty or amendment within 90 days
- Entire Agreement clause
- Changes by written and executed amendments

# Credit for Reinsurance





# Reserve Credit Security

## What risk does reinsurance introduce?

- Recall that the purpose of reserves is to help the insurance company honor its commitments to the policyholder
- When a reinsurance arrangement is entered, the insurance company transfers a portion of the risk to the reinsurer
- Even though a portion of the risk is transferred, the insurance company is still liable to the policyholder
- This is true even in the event of a reinsurer insolvency
- Because the reserve provides additional protection to the policyholder, the insurance company needs to have certainty that it can access the assets backing the reserve in the event of a reinsurer insolvency

# Reserve Credit Security

## What does Reserve Credit mean?

- When an insurance company sells a policy to a policyholder, it will need to hold a reserve to ensure payment of death benefits
- When the insurance company cedes a portion of the risk through reinsurance, the insurance company will be able to reduce the amount of reserves it needs to hold, given that certain conditions are met by the reinsurer
- Example: Assume that the insurance company enters into a 80/20 First Dollar Quota Share coinsurance arrangement.
  - If the reinsurer has met certain requirements, the insurance company can offset the liability it needs to hold to \$200
  - If the reinsurer has not met the requirements, the insurance company will not be able to reduce its required reserve and will hold \$1,000.

Policy Reserve without Reinsurance	\$	1,000
Reinsurer's Reserve - 80% First-Dollar Quota Share Coinsurance		<u>800</u>
Ceding Company Reserve - with Reserve Credit		200
Ceding Company Reserve - without Reserve Credit		1,000

# Reserve Credit Security

## NAIC Model Act on Credit for Reinsurance

- Establishes conditions that a reinsurer must meet in order for a domestic ceding company to take credit for reinsurance, either as an asset or as a reduction in liability for reinsurance ceded.
- Credit is allowed under the following conditions:
  - Reinsurer is licensed in the state
  - Reinsurer is accredited as a reinsurer in the state.
  - Reinsurer is domiciled and licensed in a state that has substantially similar standards as the Model Act
  - Reinsurer maintains a trust for the payment of claims
- If any of the above items are not met, credit can be taken if:
  - The insurance contract was written in a jurisdiction where such reinsurance is required by law
  - The reinsurer agrees to submit to a US court in the event that it fails to perform
  - The reinsurance contract utilizes a funds withheld arrangement
  - The reinsurer provides a clean, irrevocable, unconditional letter of credit by a qualified US institution

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Authorized/Unauthorized Reinsurer

- Authorized Reinsurer
  - Either licensed or accredited in the ceding company's state of domicile or a state with substantially similar laws as the ceding company's state.
  - Licensing: Obtain a certificate of authority from the state that specifies the lines of business that the company is licensed to write.
  - Accreditation: (all 4 must be met)
    - Meets the financial conditions of the ceding company's state of domicile
    - Is licensed in one state
    - Submits to that state's jurisdiction
    - Senior management is of acceptable character

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Authorized/Unauthorized Reinsurer

- Unauthorized Reinsurer
  - Neither licensed or accredited in the ceding company's state of domicile
  - State Regulatory Concerns
    - No jurisdiction over unauthorized reinsurers
    - Difficult to enforce contractual reinsurance benefits
    - No control over the financial condition of unauthorized reinsurers
    - Upon reinsurer insolvency, the ceding company's financial position could be severely impaired

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Authorized/Unauthorized Reinsurer

- Unauthorized Reinsurer
  - As stated in the Model Act, unauthorized reinsurers are required to provide security through:
    - Assets in Trust or escrow accounts
    - Letters of credit
    - Funds withheld
  - This additional security allows ceding companies to take credit for the reserves that the reinsurer is contributing

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Reserve Credit Security Provided by Unauthorized Reinsurers

- Assets in Trust and Escrow Accounts
  - The beneficiary , normally the ceding company, must have a right to withdraw assets from the trust account at any time without notifying the reinsurer
  - Assets deposited in the trust must be valued according to their current market value
  - The assets must consist of only the following:
    - Cash
    - Certificates of Deposit
    - Investments as specified by the individual State's Insurance Code
  - The reinsurance agreement may state that the trust assets could be withdrawn only for reimbursing the ceding company for amounts due from the reinsurer

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Reserve Credit Security Provided by Unauthorized Reinsurers

- Letters of Credit
  - A letter of credit (LOC) is a document issued by a qualified bank on the orders of one party which provides that the beneficiary will be able to withdraw funds up to a specified limit
  - Rules covering the use of letters of credit in reinsurance vary from state to state
  - Section 11 of the Credit for Reinsurance Model Regulation state that LOCs must be:
    - Clean: Beneficiary only needs to present a demand for payment
    - Unconditional: There can be no further qualifications outside of the letter of credit
    - Irrevocable: Can be modified only with consent of both parties
    - Evergreen: The LOC will renew automatically unless the issuing bank gives advance written notice of non-renewal

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition



# Reserve Credit Security

## Reserve Credit Security Provided by Unauthorized Reinsurers

- Funds Withheld Reinsurance
  - This is a form of reinsurance where the assets are left on deposit with the ceding company
  - These assets on deposit can originate from amounts due to the reinsurer or from a deposit from the reinsurer
  - The amount of the deposit should be at least equal to the reserve credit to be taken
  - This is an acceptable form of security since the ceding company has control of the assets

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## New Category: Certified Reinsurers

- Historically, 100% collateral requirement imposed on unauthorized reinsurers
- Revised model act reduced requirement for certain reinsurers
- Must be in a qualified jurisdiction (e.g., Switzerland)
- Reduction in collateral based on financial strength rating

John E. Tiller, *Life, Health, and Annuity Reinsurance*, Third Edition

# Reserve Credit Security

## Proposed NAIC Model Regulation 786 Collateral Requirements

- The commissioner shall allow credit for reinsurance ceded by a domestic insurer to an assuming certified (re)insurer...
- The credit allowed shall be based on security held...in accordance with a rating assigned to the (re)insurer by the commissioner...

Rating	Security Required
Secure – 1	0%
Secure – 2	10%
Secure – 3	20%
Secure – 4	50%
Secure – 5	75%
Vulnerable – 6	100%

# Reserve Credit Security

## Proposed NAIC Model Regulation 786 Collateral Requirements

- The assuming (re)insurer must maintain financial strength ratings from **two or more** rating agencies acceptable to the commissioner...
  - Standard and Poor's
  - Moody's Investor Service
  - Fitch Rating
  - A. M. Best Company, or
  - Any other Nationally Recognized Statistical Rating Organization

# Reserve Credit Security

## Proposed NAIC Model Regulation 786 Collateral Requirements

- The maximum rating assigned will correspond to the financial strength (FS) rating...the lowest such FS rating received from the two or more rating agencies will determine the maximum rating assigned by the commissioner

Rating	Best's	S & P	Moody's	Fitch
Secure - 1	A++	AAA	Aaa	AAA
Secure - 2	A+	AA+, AA, AA-	Aa1, Aa2, Aa3	AA+, AA, AA-
Secure - 3	A	A+, A	A1, A2	A+, A
Secure - 4	A-	A-	A3	A-
Secure - 5	B++, B+	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	BBB+, BBB, BBB-
Vulnerable - 6	B, B-, C++, C+, C, C-, D, E, F	BB+, BB, BB-, B+, B, B-, CCC, CC, C, D, R	Ba1, Ba2, Ba3, B1, B2, B3, Caa, Ca, C	BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, DD

# Reserve Credit Security

## Proposed NAIC Model Regulation 786 Collateral Requirements

- Other noteworthy provisions
  - Certified reinsurer must be licensed in a qualifying jurisdiction
    - Acceptable reinsurance regulatory system, etc.
    - Reciprocity for US reinsurers
    - Determination made by Commissioner
  - Applies to affiliate transactions
  - Applies to reinsurance agreements after the effective date
  - May be restricted to business not previously ceded

# Reserve Credit Security

## Proposed NAIC Model Regulation 786 Collateral Requirements

- In case of a downgrade...the commissioner shall assign a new rating in accordance...
  - Meet the security requirements of the new rating **for all business**
- In the case of an upgrade...the commissioner shall assign a new rating in accordance...
  - Meet the security requirements of the **new rating on prospective basis**
  - Maintain security requirements of **previous rating for all contracts in force**
- What happens to intervening reserve credit for reinsurance in the case of downgrade?
  - Current language implies the ceding company **can not take reserve credit until security requirements are met**
  - Would require reposting of reserves and capital
  - NY language gives commission discretion to allow ceding company to continue to take reserve credit as long as reinsurer can meet benefit obligation

Questions?



# *2017 Life and Annuity Reinsurance Seminar*

***TREATY PROVISIONS – TODAY AND TOMORROW***

August 14, 2017



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# RAPA

- Reinsurance Administration Professionals Association
- In existence in some form for over 25 years
- Started as a small group meeting prior to CRC
- Now legal, non-profit organization with 120 members
- Works on promoting education, standards, communication with reinsurance admin community and industry in general
- Develops course content with LOMA, publishes standards on data and reporting, auditing
- Reinsadmin.org

# Agenda

- Current areas of activity
- Future directions

# Treaties today

- Lawyers
  - Used to be peripheral, consulted on an exception basis
  - Integral part of treaty production
  - Some companies treaty production housed in Legal area
- Much more legal document
  - Structure
  - Contents
  - Language

# Treaties today

- Greater discipline
  - No more napkins from the bar
  - No more treaties pending for years
  - Supporting documentation exists
  - RFP's
  - Tighter internal and external regulations
  - Improved record-keeping and access
- Better production process
  - Standards
  - Communication
  - Controls

# Treaty Developments

- Regulatory

- ☐ FATCA

- ☐ Foreign Account Tax Compliance Act
    - ☐ Wording largely settled
    - ☐ Complications with other jurisdictions

- ☐ OFAC

- ☐ Office of Foreign Assets Control
    - ☐ Wording largely settled
    - ☐ Complications from other jurisdictions
    - ☐ Operationally still in flux

- ☐ Confidentiality/Privacy

- ☐ Wording largely settled

# Current areas of activity

## ☐ Errors & Omissions

- ☐ Reinsurer-driven
- ☐ Clearer definition of coverage
- ☐ Coverage limitations
- ☐ Time limits
- ☐ Based on experience

## ☐ Areas of negotiation

- ☐ Exclusions
- ☐ Interest
- ☐ Financial impact
- ☐ Audit requirement

# Current areas of activity

## ☐ Jumbo Limits/Breaches

- ☐ Override E&O language
- ☐ Based on reinsurer experiences
- ☐ Seeks to protect the reinsurer and retrocessionaire from over-exposure
- ☐ Provides potential support for the ceding company within process and coverage parameters
- ☐ Capacity limitations
- ☐ “Knowledge” limitations



# Current areas of activity

## ☐ Financial Impairment

- ☐ Developed from Insolvency wording
- ☐ Provides rights to the ceding company upon trigger(s)
  - ☐ Solvency ratios
  - ☐ Ratings
- ☐ Provides options to the ceding company
  - ☐ Recapture
  - ☐ Increased security
  - ☐ Alteration to premium payments
- ☐ Provides options to the reinsurer
  - ☐ Cure period
  - ☐ Other security
  - ☐ Transfer to another company

# Current areas of activity

## ☐ Areas of negotiation

- ☐ Cure period
- ☐ Recapture fee
- ☐ Trigger levels
- ☐ Recapture scope

# Current areas of activity

## Rate Guarantee

- ☐ Current standard wording says not guaranteed
- ☐ May reference deficiency reserves
- ☐ Capped at the valuation premium
- ☐ Limitations have been added over time
  - ☐ All YRT business
  - ☐ All similar business – defined
  - ☐ Following a direct premium increase
- ☐ Ceding company options on increase
  - ☐ Recapture
  - ☐ Recapture fee

# Emerging issues

- ☐ New CSO table

- ☐ Some ages/durations already above the rate

- ☐ Logistical and economic issue

- ☐ PBR

- ☐ Impact unknown

# Future directions

- ☐ Healthy negotiation on treaties
  - ☐ Financial impairment
  - ☐ Recapture
  - ☐ Rate Guarantees
- ☐ Greater complexity – Product , treaty structure, reporting, analysis
- ☐ Continued development as a professional, legal contract
  - ☐ But its an operational guide too

# SOCIETY OF ACTUARIES

## Antitrust Compliance Guidelines

Active participation in the Society of Actuaries is an important aspect of membership. While the positive contributions of professional societies and associations are well-recognized and encouraged, association activities are vulnerable to close antitrust scrutiny. By their very nature, associations bring together industry competitors and other market participants.

The United States antitrust laws aim to protect consumers by preserving the free economy and prohibiting anti-competitive business practices; they promote competition. There are both state and federal antitrust laws, although state antitrust laws closely follow federal law. The Sherman Act, is the primary U.S. antitrust law pertaining to association activities. The Sherman Act prohibits every contract, combination or conspiracy that places an unreasonable restraint on trade. There are, however, some activities that are illegal under all circumstances, such as price fixing, market allocation and collusive bidding.

There is no safe harbor under the antitrust law for professional association activities. Therefore, association meeting participants should refrain from discussing any activity that could potentially be construed as having an anti-competitive effect. Discussions relating to product or service pricing, market allocations, membership restrictions, product standardization or other conditions on trade could arguably be perceived as a restraint on trade and may expose the SOA and its members to antitrust enforcement procedures.

While participating in all SOA in person meetings, webinars, teleconferences or side discussions, you should avoid discussing competitively sensitive information with competitors and follow these guidelines:

- **Do not** discuss prices for services or products or anything else that might affect prices
- **Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- **Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- **Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
- **Do** alert SOA staff and/or legal counsel to any concerning discussions
- **Do** consult with legal counsel before raising any matter or making a statement that may involve competitively sensitive information.

Adherence to these guidelines involves not only avoidance of antitrust violations, but avoidance of behavior which might be so construed. These guidelines only provide an overview of prohibited activities. SOA legal counsel reviews meeting agenda and materials as deemed appropriate and any discussion that departs from the formal agenda should be scrutinized carefully. Antitrust compliance is everyone's responsibility; however, please seek legal counsel if you have any questions or concerns.

## Presentation Disclaimer

*Presentations are intended for educational purposes only and do not replace independent professional judgment. Statements of fact and opinions expressed are those of the participants individually and, unless expressly stated to the contrary, are not the opinion or position of the Society of Actuaries, its cosponsors or its committees. The Society of Actuaries does not endorse or approve, and assumes no responsibility for, the content, accuracy or completeness of the information presented. Attendees should note that the sessions are audio-recorded and may be published in various media, including print, audio and video formats without further notice.*

# Reinsurance Administration

## **PRESENTER:**

GREG LAROCHELLE

HEAD, RISK REPORTING & REINSURANCE

RBC INSURANCE

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CHAIR, RAPA



**SOCIETY OF  
ACTUARIES®**



# SOCIETY OF ACTUARIES

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# Introduction



# Overview

- Administration of reinsurance treaties is often under-appreciated, but is vital to their long-term health and effectiveness for both parties. As products and reinsurance structures continue to evolve against the backdrop of legacy treaties, reinsurance administration challenges have increased. This session will discuss common challenges, current control and reporting standards, and suggestions for future consideration.

## Agenda

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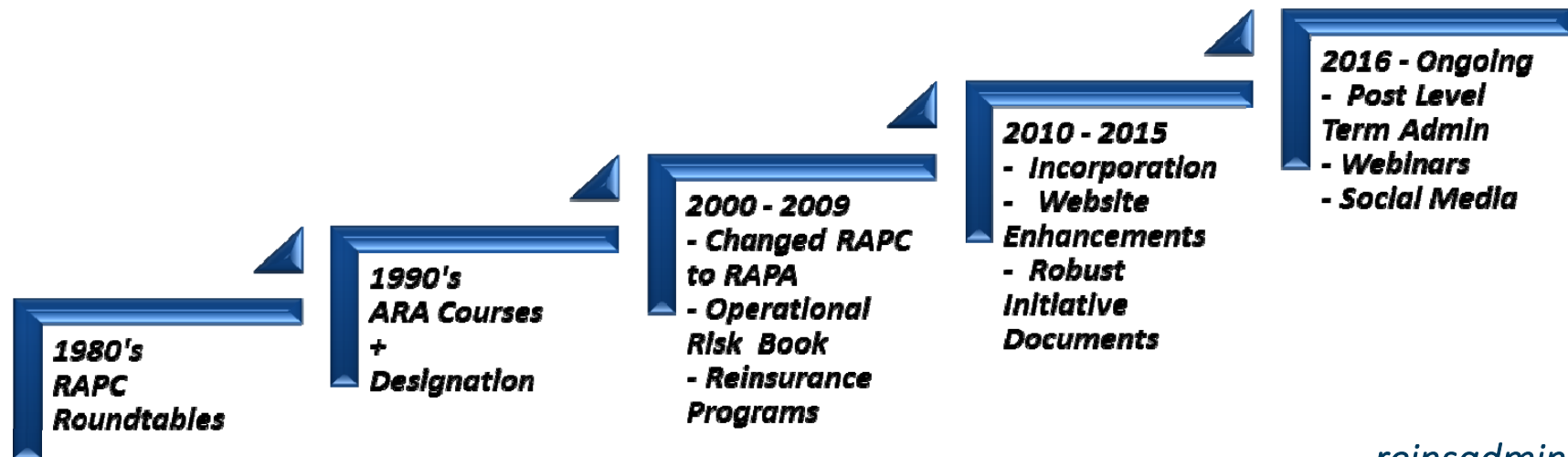
- **Industry Reinsurance Administration Resources** [reinsadmin.org](http://reinsadmin.org)
- **Reinsurance Administration Role**
- **Historical Administration Issues**
- **Best Practices**
- **Uses and Importance of Quality Data**
- **Current Issues & Challenges**
- **Future Outlook**

# Industry Reinsurance Administration Resources



## Reinsurance Administration Professionals Association “RAPA”

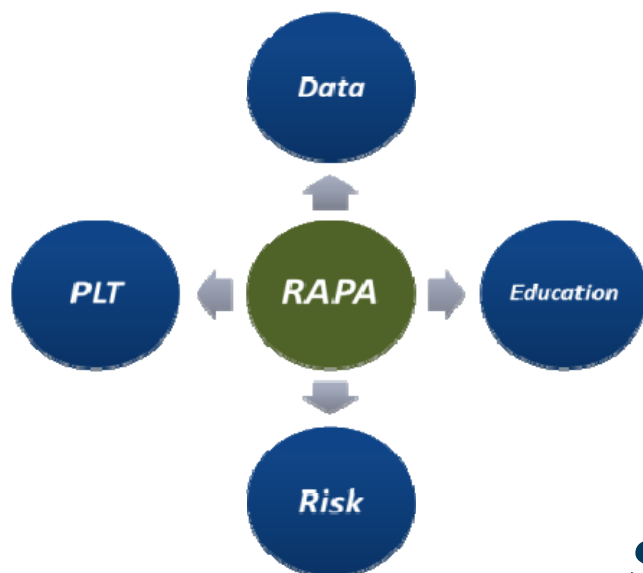
- **Non-profit association with ~120 members**
  - Direct writers, Reinsurers, Retrocessionaires, Vendors
- **Develops and promotes education, standards, and forums for reinsurance admin community and industry in general**
- **Develops course content with LOMA, publishes standards on data and reporting, auditing**



[reinsadmin.org](http://reinsadmin.org)

### Initiatives

*Standards, Workflows, Best Practices*



### Training & Resources

*New hires, designations, handbooks*



ARA™ Associate, Reinsurance Administration™

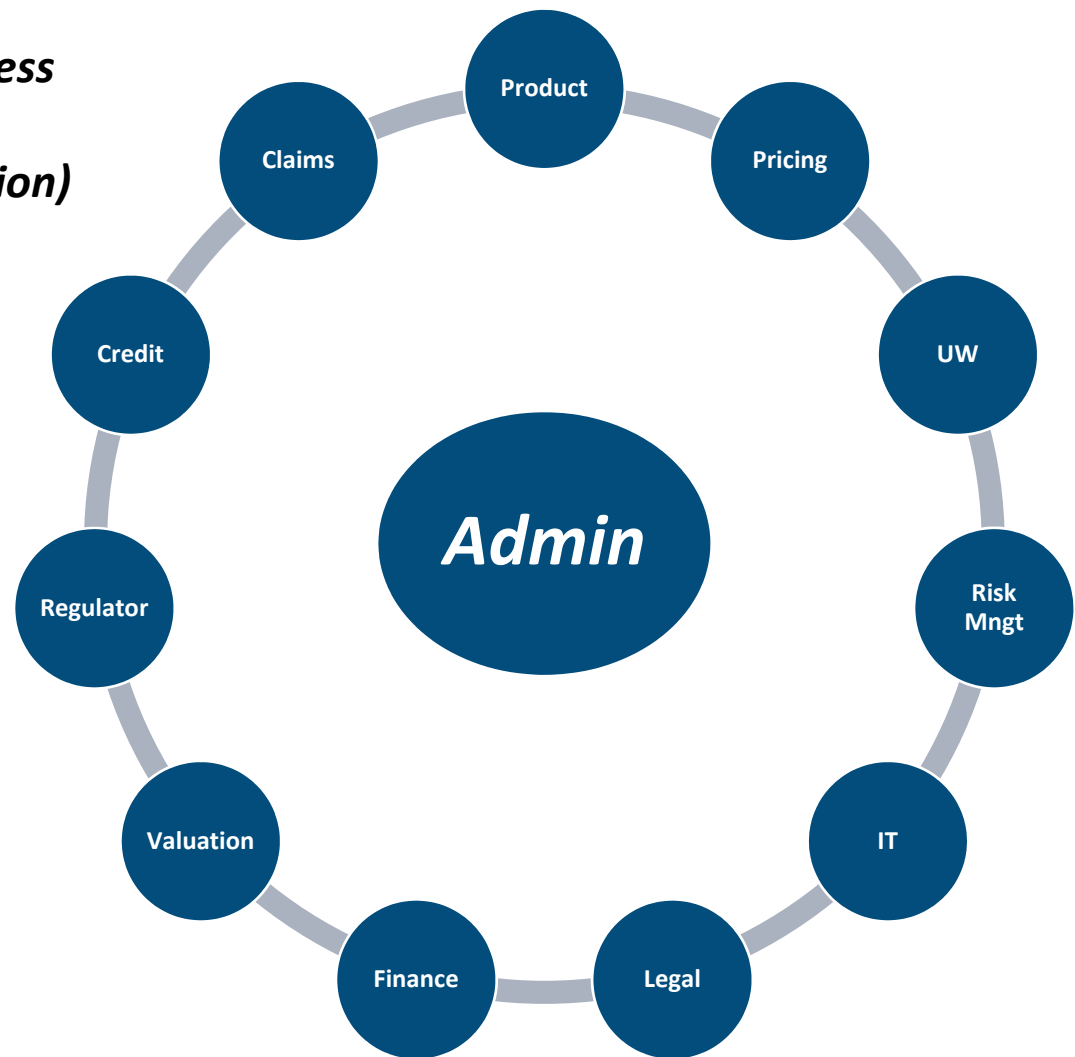
### *Supplement to Reinsurance*

- Reinsurance Overview
- Reinsurance Operations Overview
- Reinsurance Basics
- Supplement to the Reinsurance Basics



## Reinsurance Administration – Evolution of role

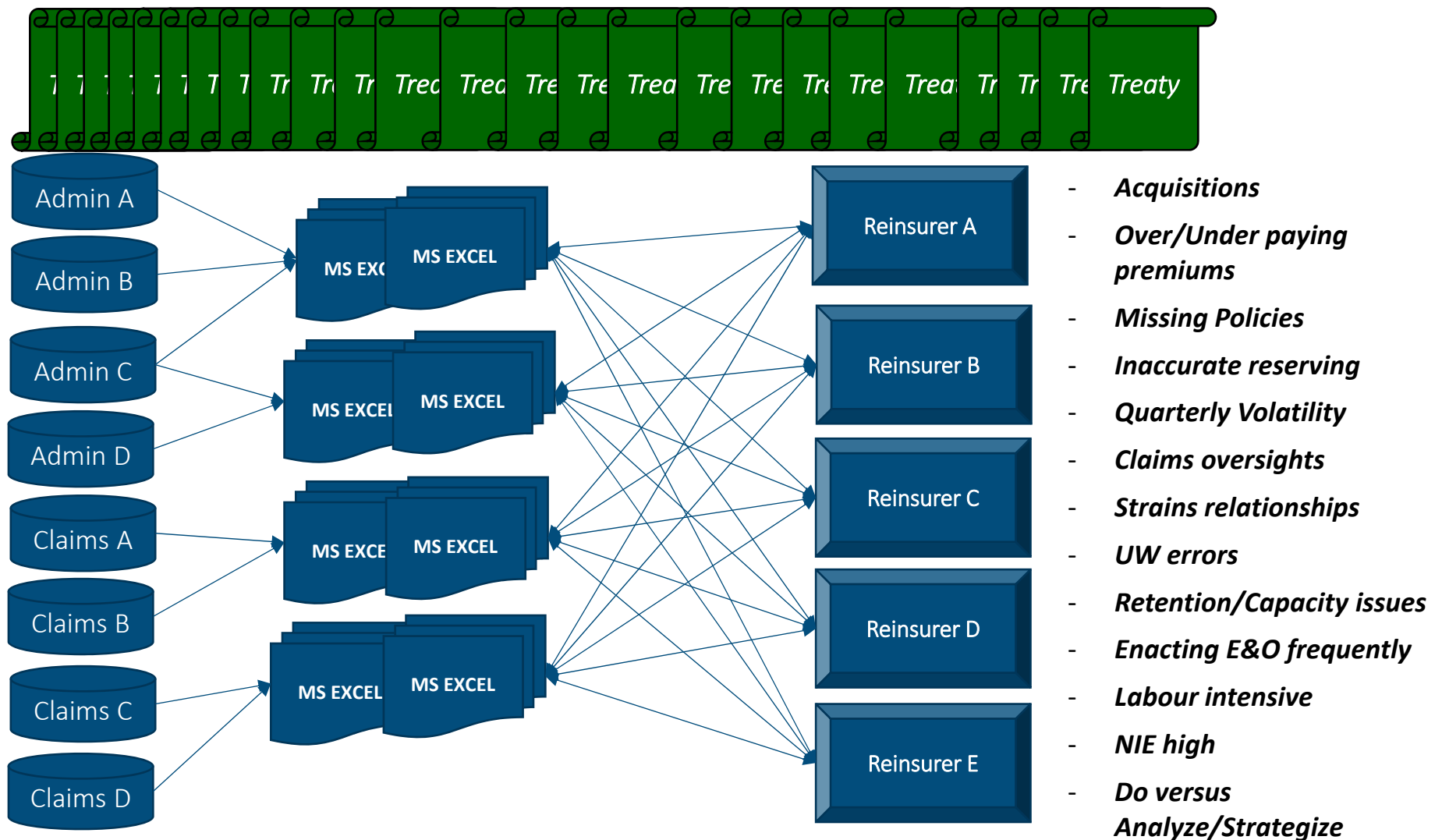
- *Significant portfolio for the business*
- *Key to business strategy (innovation)*
- *Admin from “Cradle to Grave”*
- *Increased Governance (Policy)*
- *Errors can be costly (PV impacts)*
- *“Scorecard” reinsurers (credit)*
- *Active Management (Strategy)*
- *Accounting/Accruals*
- *Systems (automation, controls)*



# Historical Administration Issues



# Reinsurance Administration....not so long ago...



# Best Practices



# Planning & Coding Treaties

Letter of Intent

Treaty

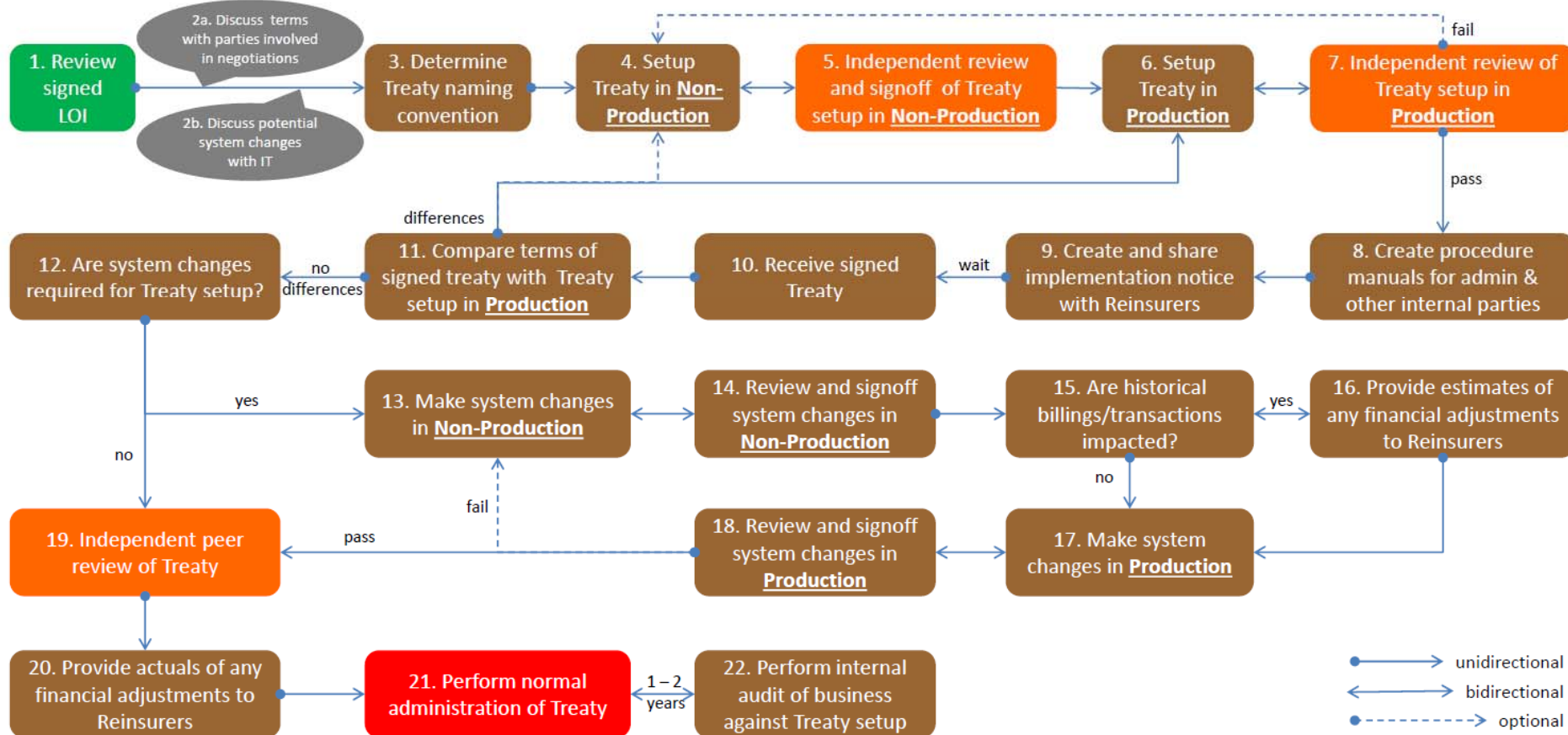
System Set-Up

Procedures Manual

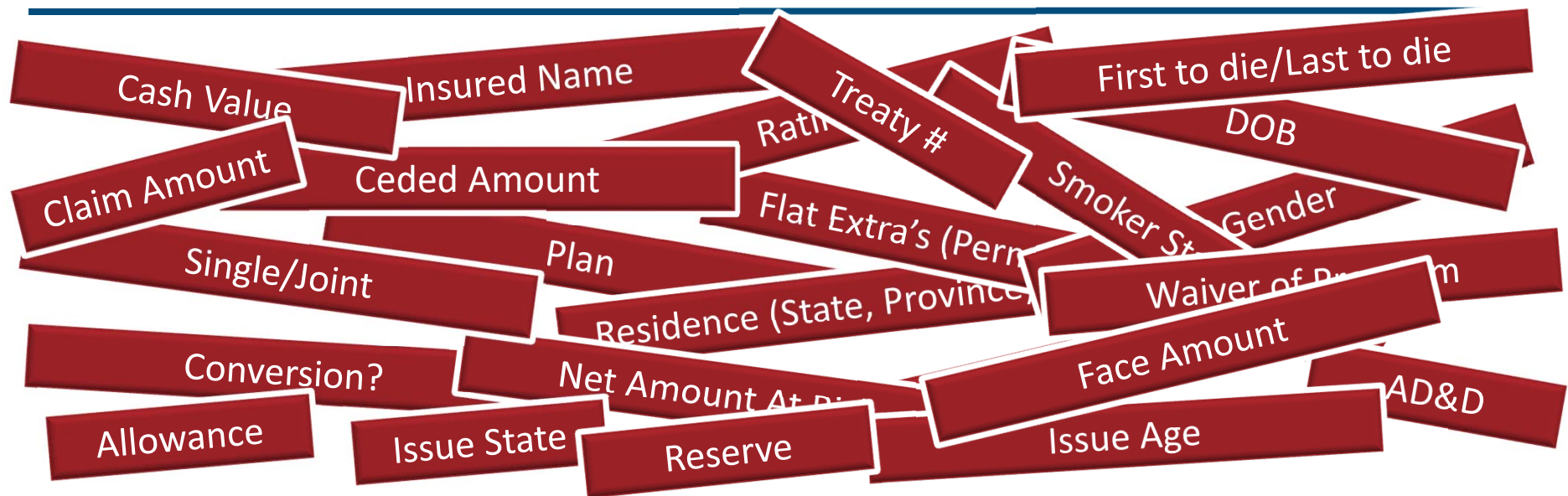
Peer Review /Audit



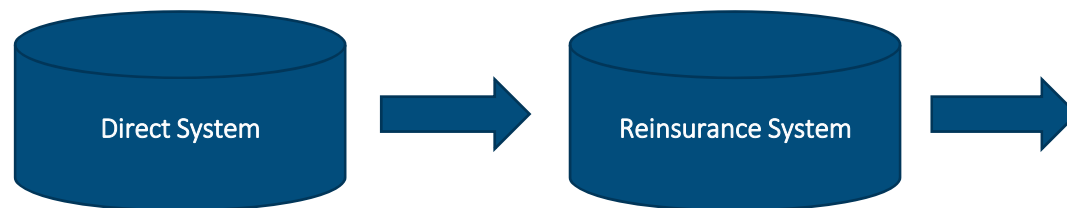
## Treaty Implementation Workflow



## Lock Down Reinsurer Data Requirements & Translation

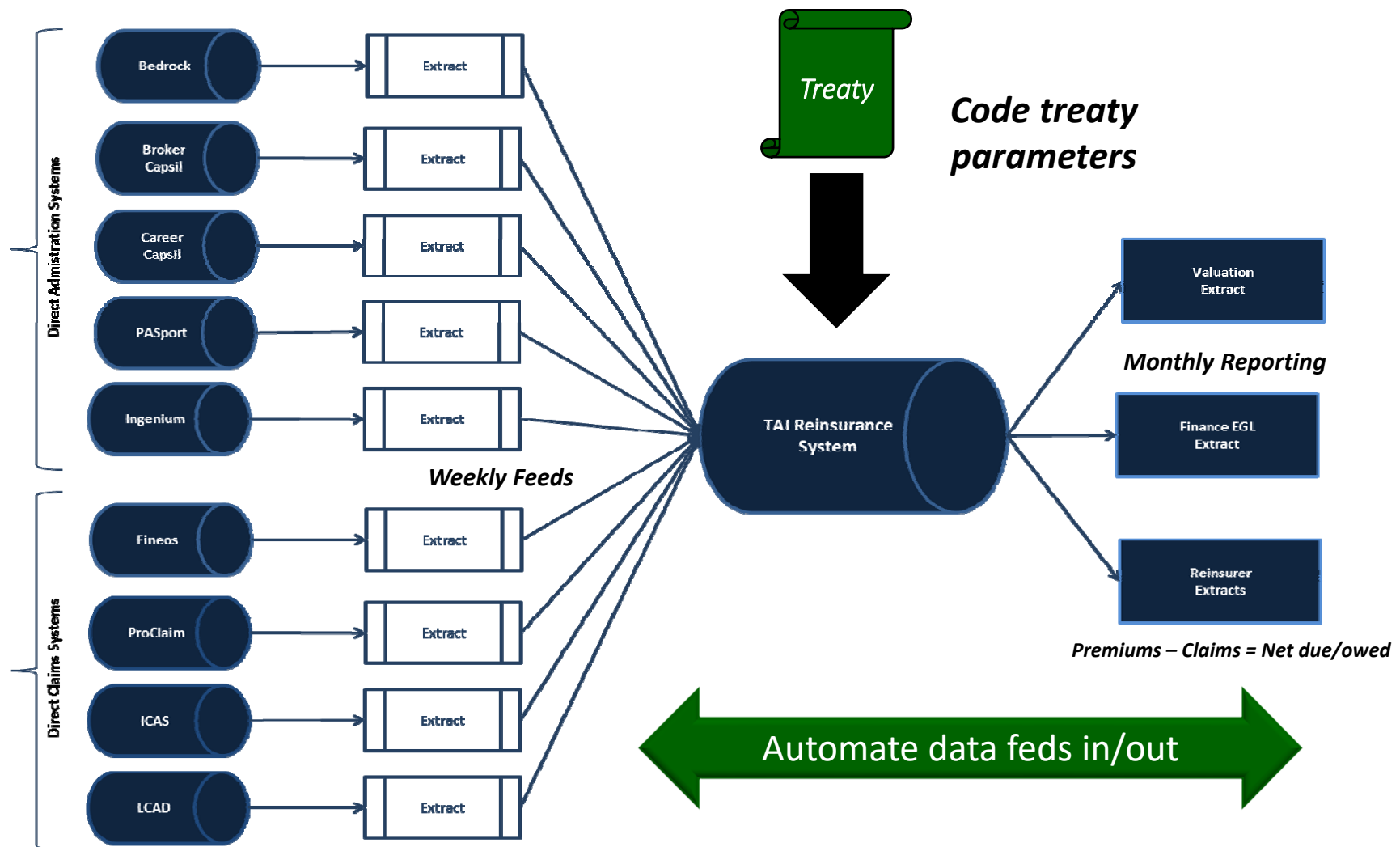


### *Required Data & Mapping Tables*



Field Names	Data Record
Name	John Smith
DOB	01/31/1970
Plan	Term 100
Face Amount	10,000,000
Reinsured	9,000,000
Treaty	ABC123

# Premium & Claims Administration – Automation



# Current Issues & Challenges





## System still can't do everything....

---

Reinsurance System

- Majority of business is automated
- Manual Processing
  - Facultative, Conversions, Special Quotes
  - Other Errors, Legal Settlements, etc

MS EXCEL

- Profit Sharing
- Modified Coinsurance

MS ACCESS

- Lapse/Other Experience
- Credit/Unlicensed

Narratives  
& Exhibits

- Group, Annuity
- Catastrophe

- *Need for reconciliation with reinsurers*

- *Cost too much to automate*

- *Termination not viable*

- *Time/Priorities*

## Common Issues – Facultative (non-integrated systems)



Reinsurer A

Reinsurer B

Reinsurer C

Reinsurer D

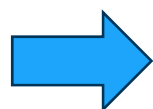
- Underwriter works with reinsurers
- Determines reinsurer(s) placement and amount

Reinsurer A

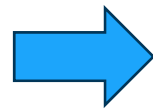
*\$10,000,000 - 100% reinsured, Do not keep any retention*



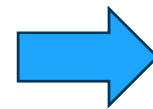
UW system



Admin system



Reins system



Reinsurer D

*\$10,000,000*

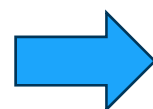
*Incorrect Coding - Manual*

Reinsurer A

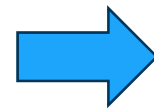
*\$10,000,000 - 100% reinsured; Do not keep any retention*



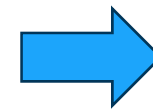
UW system



Admin system



Reins system



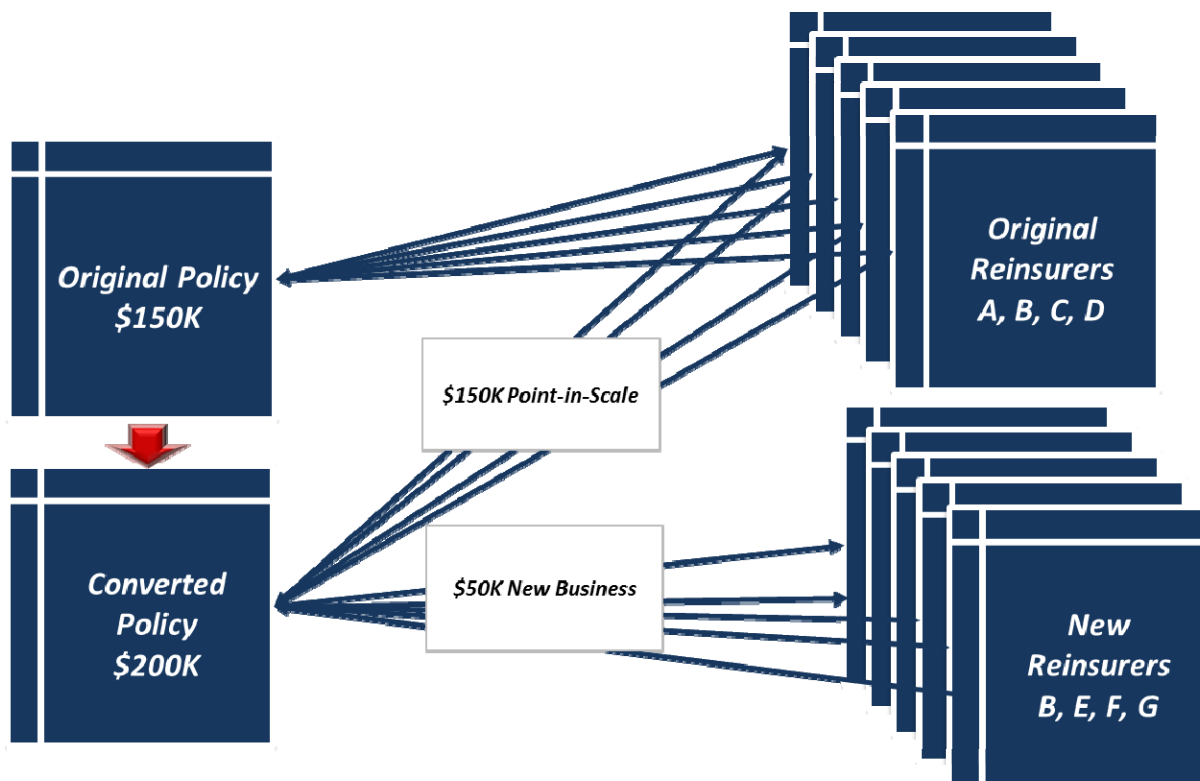
*\$9,000,000*

Reinsurer A

*Timely feedback from reinsurers is key*

## Common Issues - Conversions

- Follow the original policy/amount (or at least try)
- Point-in-scale premium rate appropriate for the insured's original issue age and current duration.



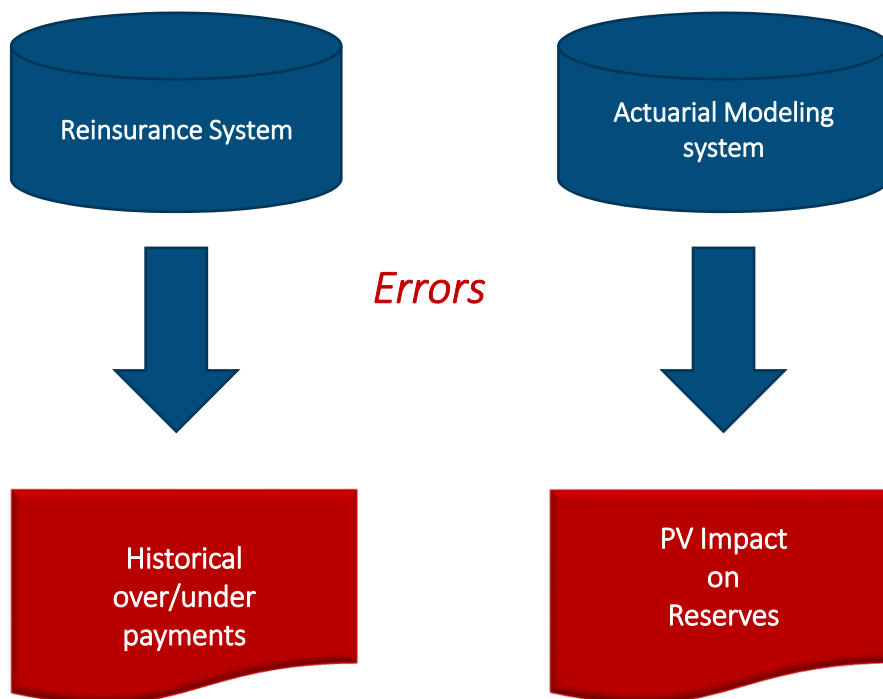
### Conversion Matrix



<http://reinsadmin.org/initiatives/>

## Common Issues – Incorrect Treaty Parameters

- Premiums (Direct/Reinsurance Rates)
- Allowances
- Taxes
- Retention (Excess vs Quota Share)
- Recapture Eligibility
- Reinsurer Share %
- Cash Values
- Reserves (decrements)
- Benefit Eligibility (WP/AD&D)
- YRT vs Coinsurance
- Flat Extra's
- Joint Method
- Joint Age Basis
- Issue/Resident State
- ROP on Surrender/Death
- Recapture
- Plan Codes
- Minimum Cessions
- Treaty Effective dates (vs application date)



# Uses and Importance of Quality Data



## Uses and Importance of Quality Data (aside from Treaty compliance)



### ***Studies***

- Experience Studies (Mortality, Morbidity, Lapse, etc)
- Data Mining
- Predictive Analytics



### ***Assumptions***

- Best Estimates
- Trends
- Abnormalities



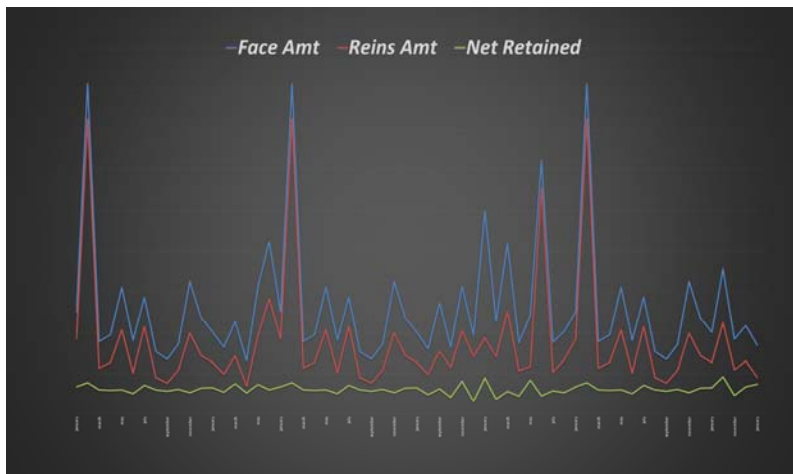
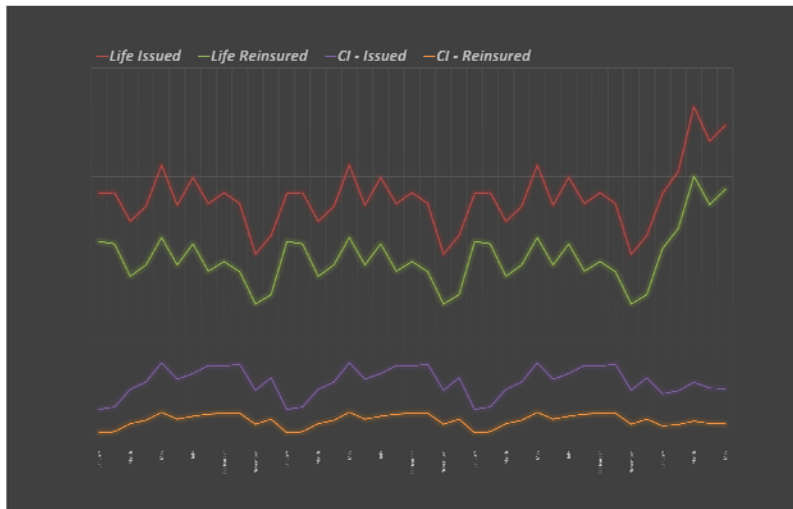
### ***Financial Reporting***

- Income Statements
- Appointed Actuaries Report
- Regulators

# Trending, Controls, Reports & Strategy



# Trending Analytics



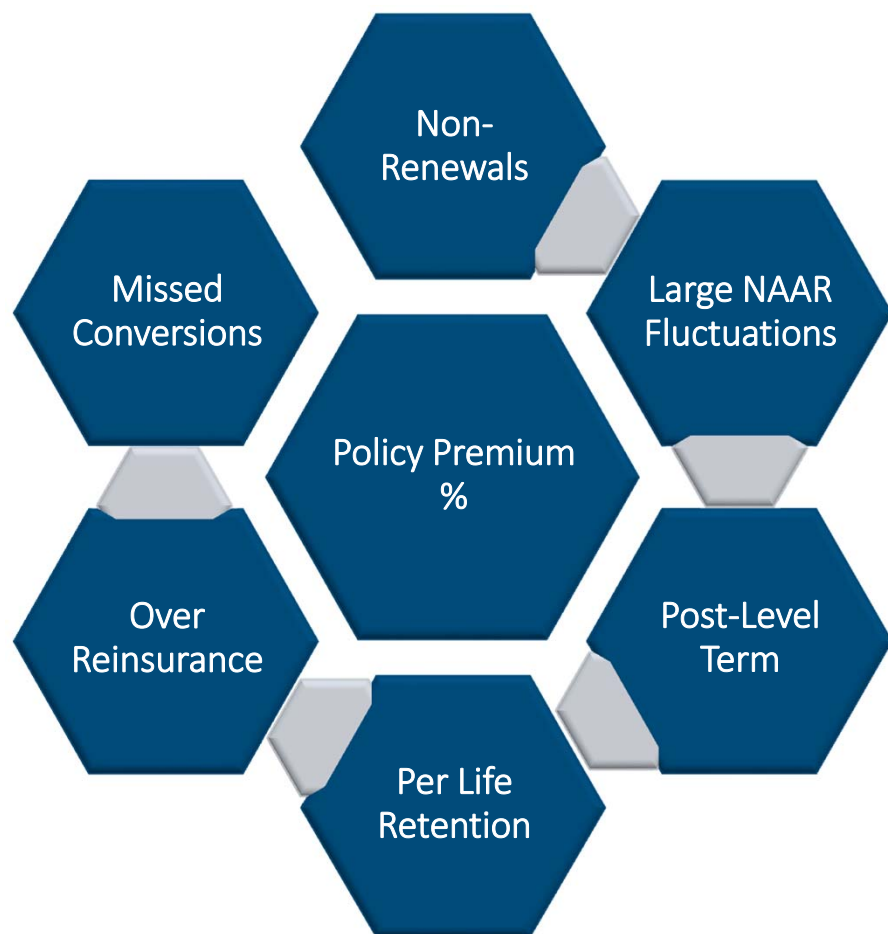
## Continuous Analysis of Portfolio

- Premium
- Claims
- New Business
- Terminations
- Product View
- Treaty View
- Reserves

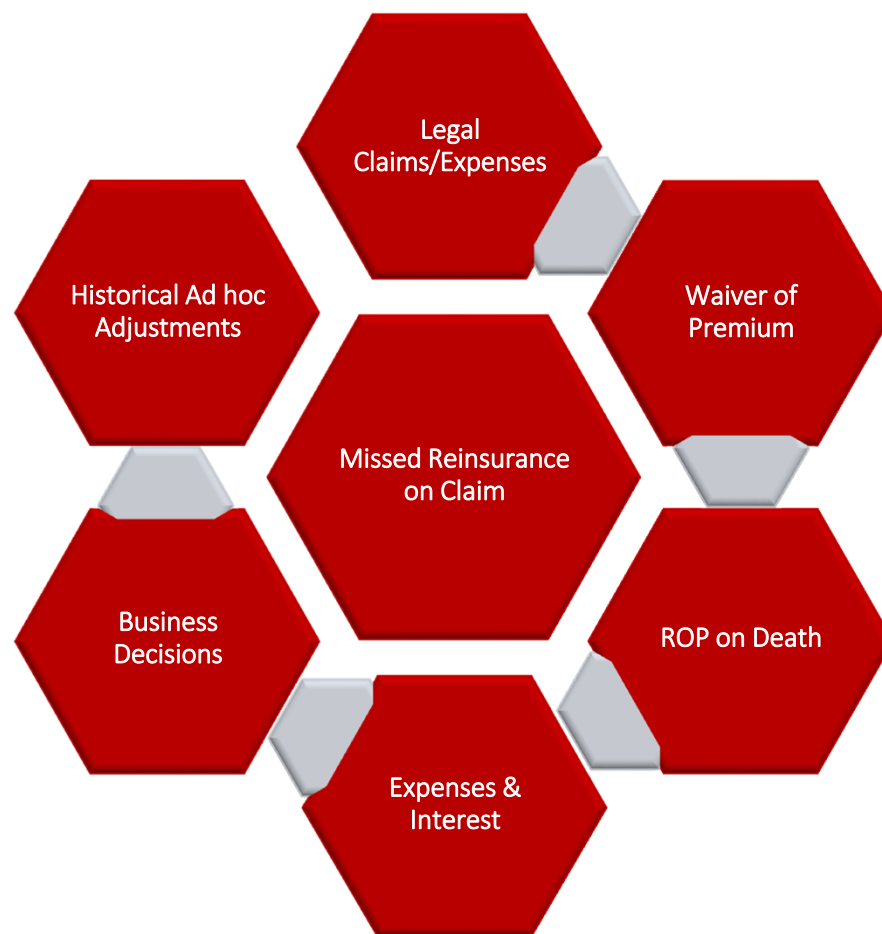


## Control Reports - Examples

### *Premiums*



### *Claims*



## Keys to Success – Strategic Planning

---

- ***Communicate:*** Documentation & Mapping
  - Reinsurers, valuation, finance
- ***Resourcing:*** Adequate & Knowledgeable staff
  - Varying position levels and experience
- ***Stakeholder:*** Engage early and on an on-going basis
  - New products, IT initiatives/upgrades, UW, etc
- ***Data Requirements:*** Obtaining adequate level of detail required to execute
  - Smoker status, gender, plan, treaty, etc
- ***Workflow/Gantt chart:*** Ensure proper timing and roles/responsibilities
  - Expected Product launch/Re-price, reinsurance lead of the project



## Future of Reinsurance Administration

---

- Reinsurance Administration involved early in new treaty negotiations
  - Realistic
  - Cost/Benefit/Timing
- Manual  $\Rightarrow$  Automation
- Improved Analysis
  - Loss Ratios & Results y-o-y
  - By Reinsurer, Treaty, Product
- Automating Premium Audits
- Recaptures
  - Streamline legacy admin
  - Other
- Increased Thought Leadership in managing portfolio
- Innovation/AI



## Keys to Success – Strategic Planning

---

### Join us in celebrating RAPA's 20<sup>th</sup> Anniversary in St. Petersburg, Florida

Sunday, October 22<sup>nd</sup> – Tuesday, October 24<sup>th</sup>

#### The Vinoy Renaissance Resort & Golf Club

501 5th Avenue N.E.  
St. Petersburg, FL 33701



For reservations visit our website:

Reservation Toll Free #: 1-888-789-3090

Use group code:

"RAPA 2017 Fall Conference"

[ReInsAdmin.org](http://ReInsAdmin.org)

**Register online today!**



# Questions?



# 2017 Life and Annuity Reinsurance Seminar

**Timothy Paris, FSA, MAAA**

**Ruark Consulting LLC**

Reinsurance of Policyholder Behavior Risk  
August 14, 2017



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	Variable Annuities	Fixed Indexed Annuities
Source: LIMRA		
Gross Sales (p.a.)	~\$150 billion	~\$100 billion
Net Sales (p.a.)	~\$0 billion	?
% Qualified	65%	55%
% Guaranteed Living Benefit	77%	68%



The background is a dark blue field with a complex, low-poly geometric pattern. A large, lighter blue circle is centered on the page, creating a focal point. Thin, light blue lines intersect to form a grid-like structure across the entire image.

# Overview of VA Industry Experience

# VA Industry Data

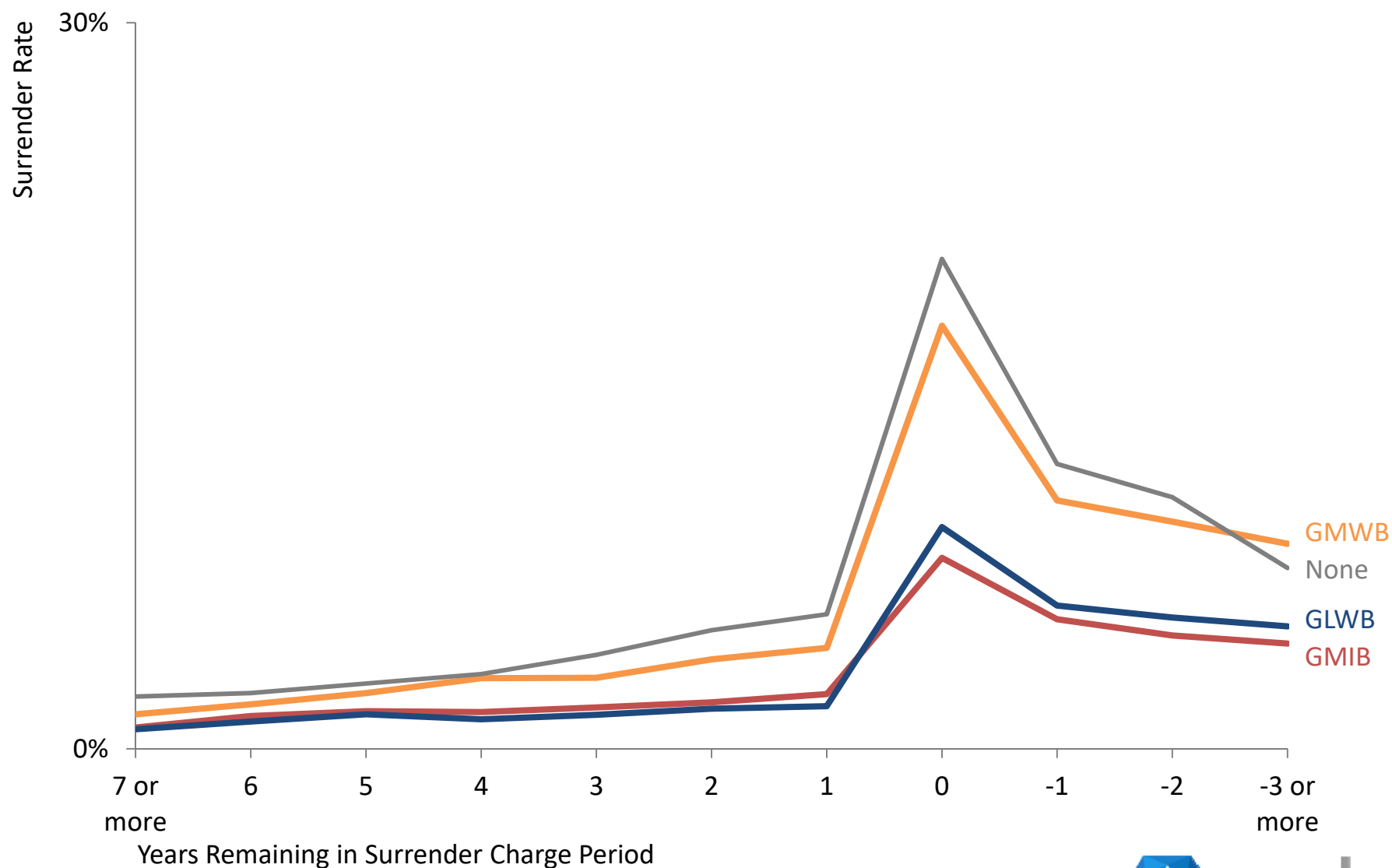
22 participating companies

2008 to present

68 million contract years of exposure

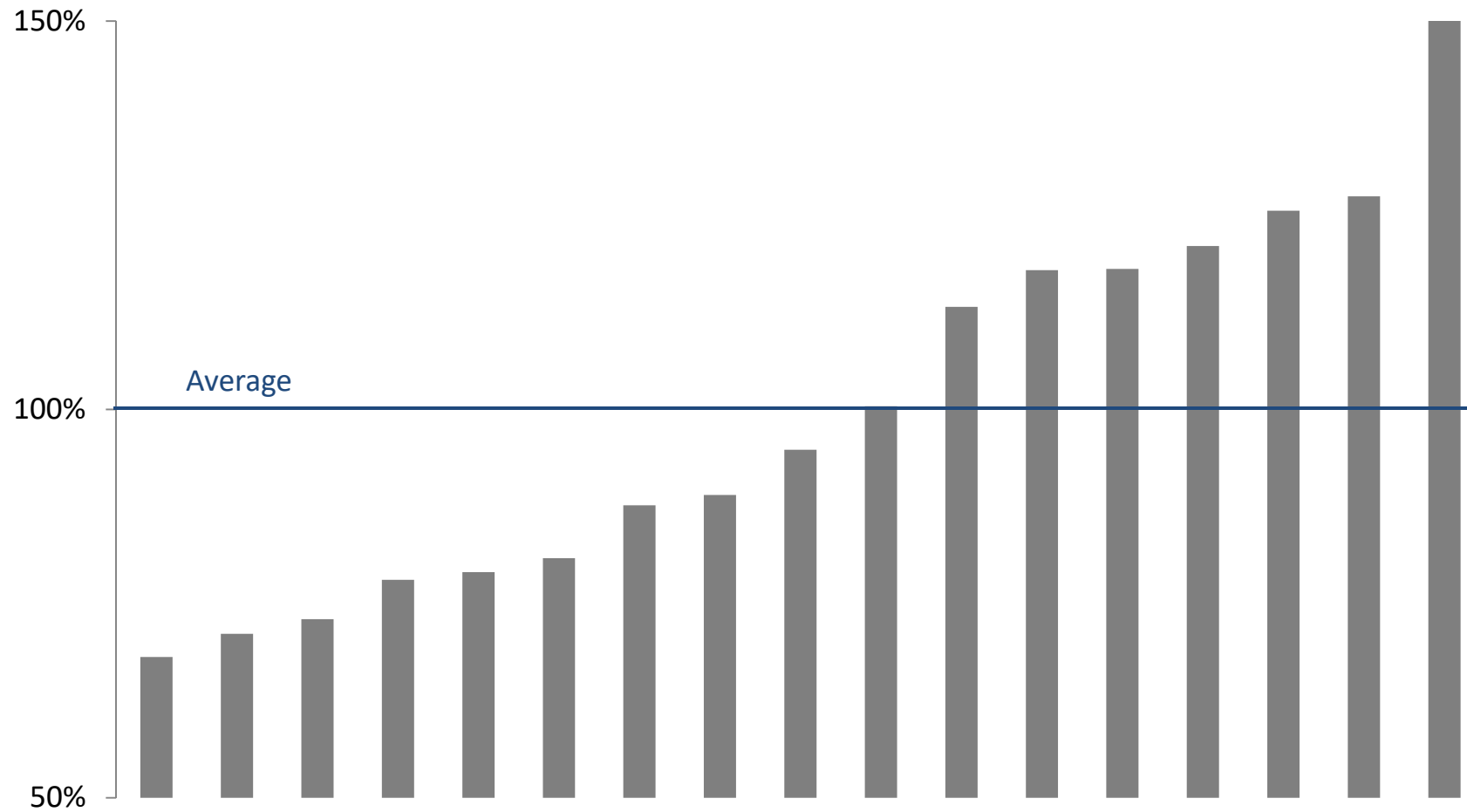
+22% from last year

# Surrenders vary by living benefit type

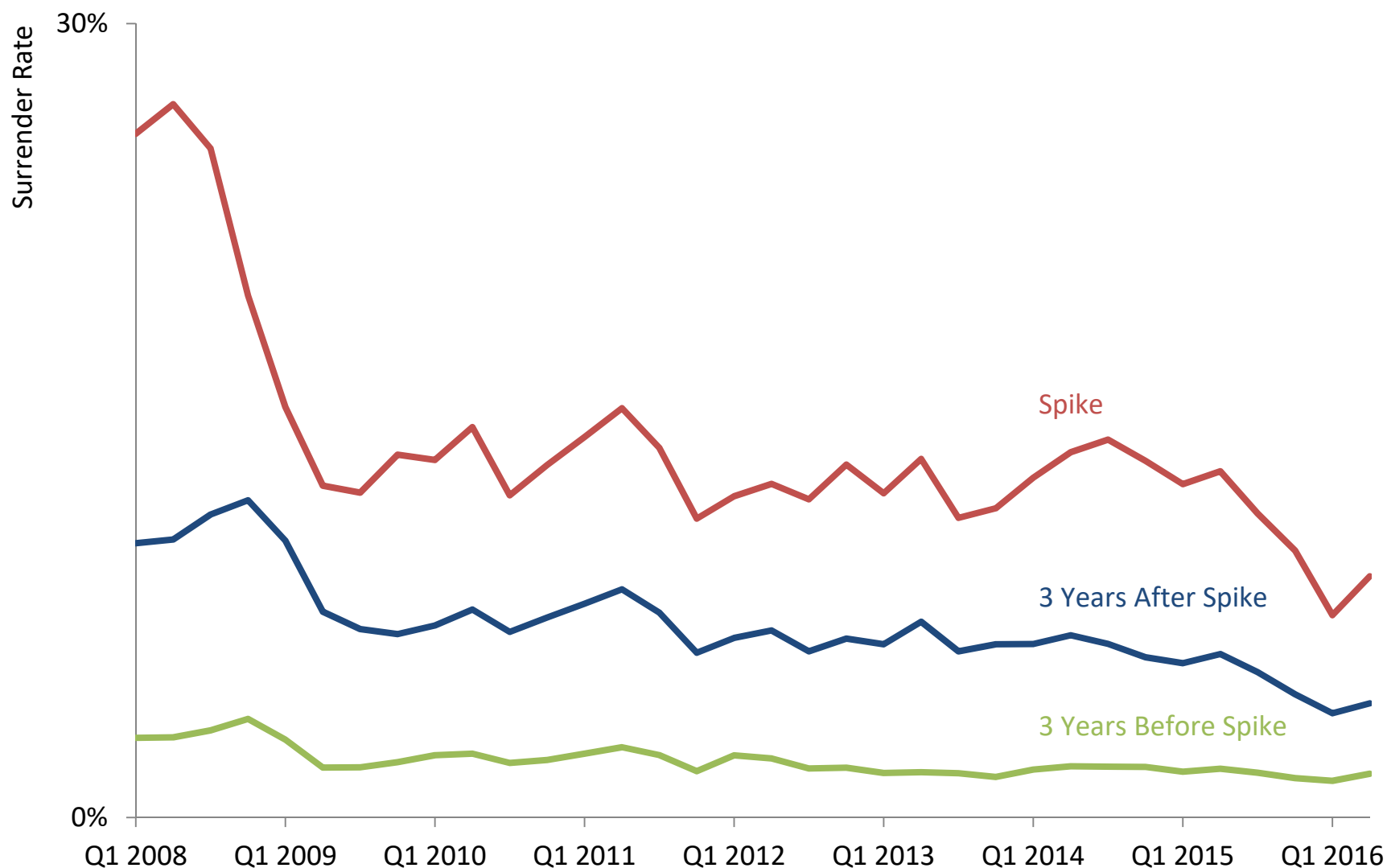


# Experience varies by company, but why?

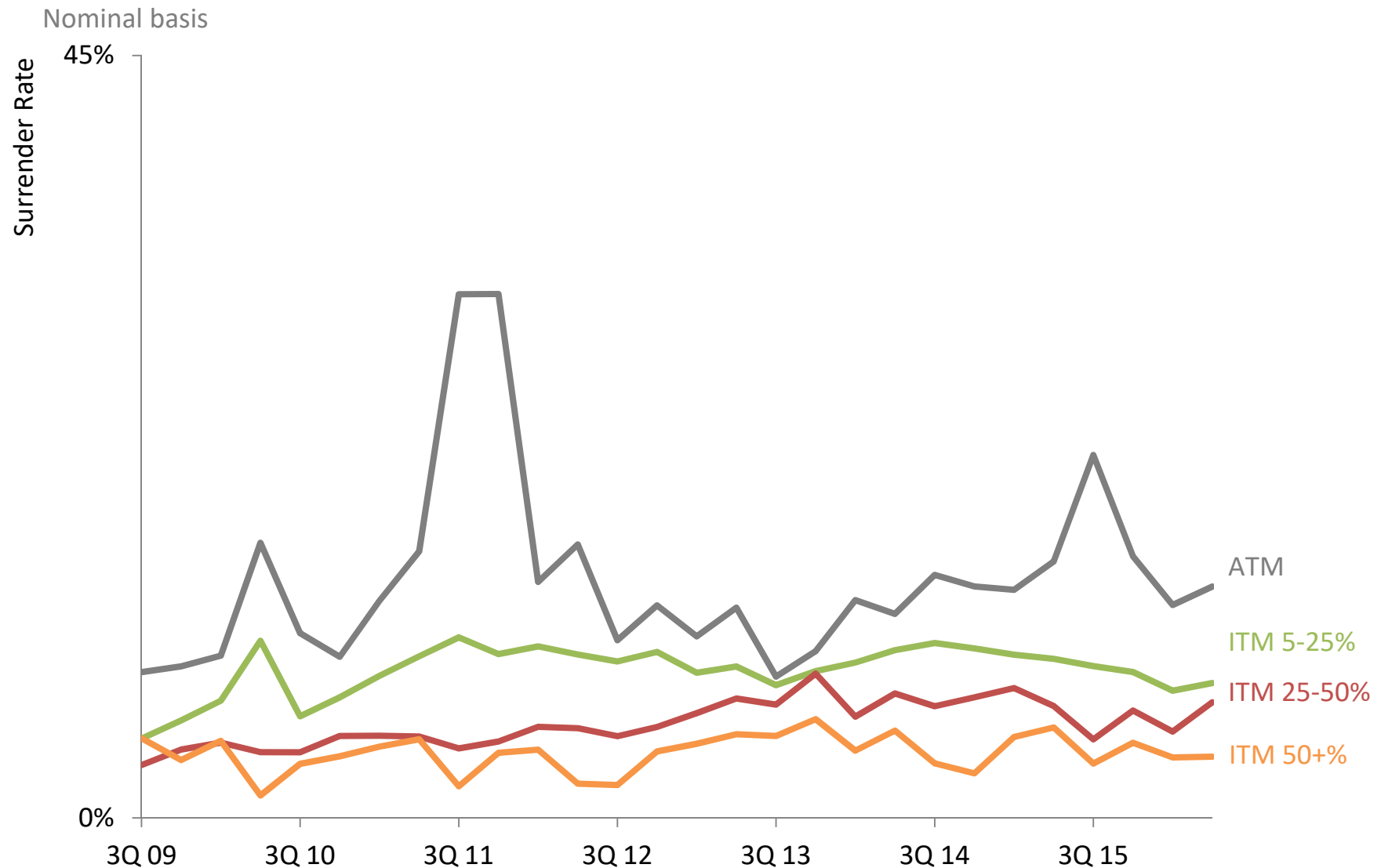
GLWB, Normalized by Years Remaining in Surrender Charge Period



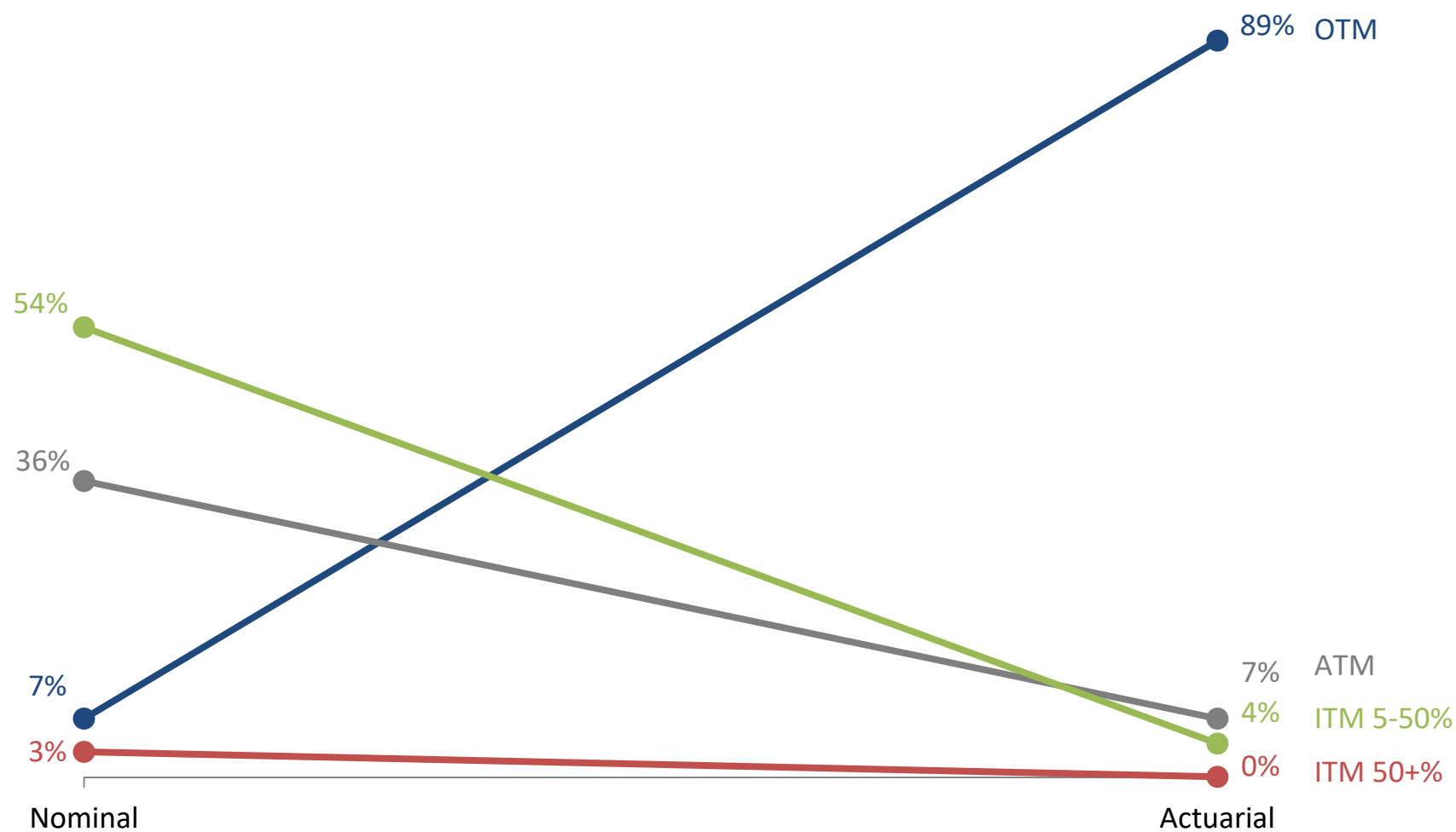
# Surrenders have decreased since the crisis



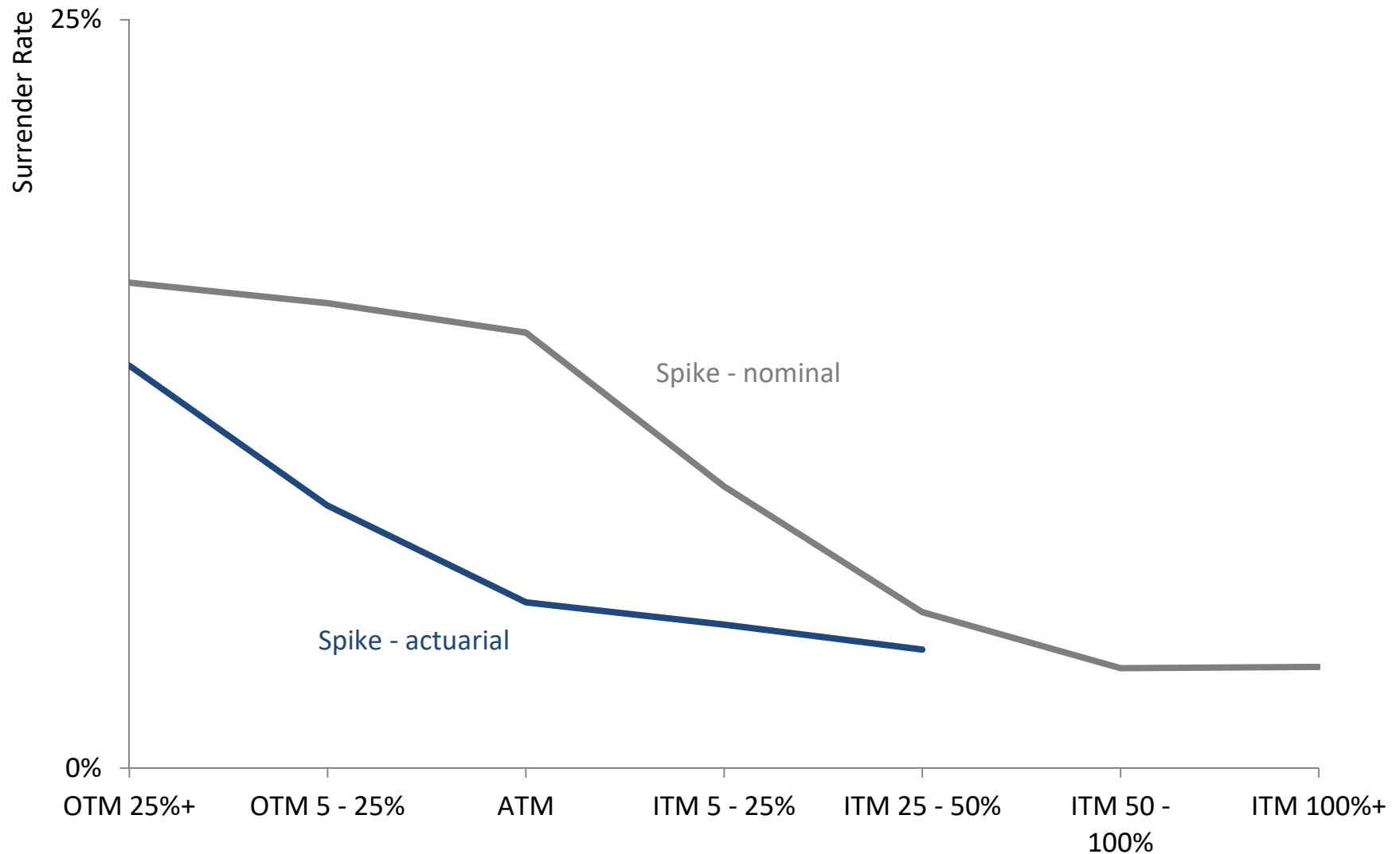
# However, a different trend for GLWB “spike”



# Most GLWBs are actuarially out-of-the-money

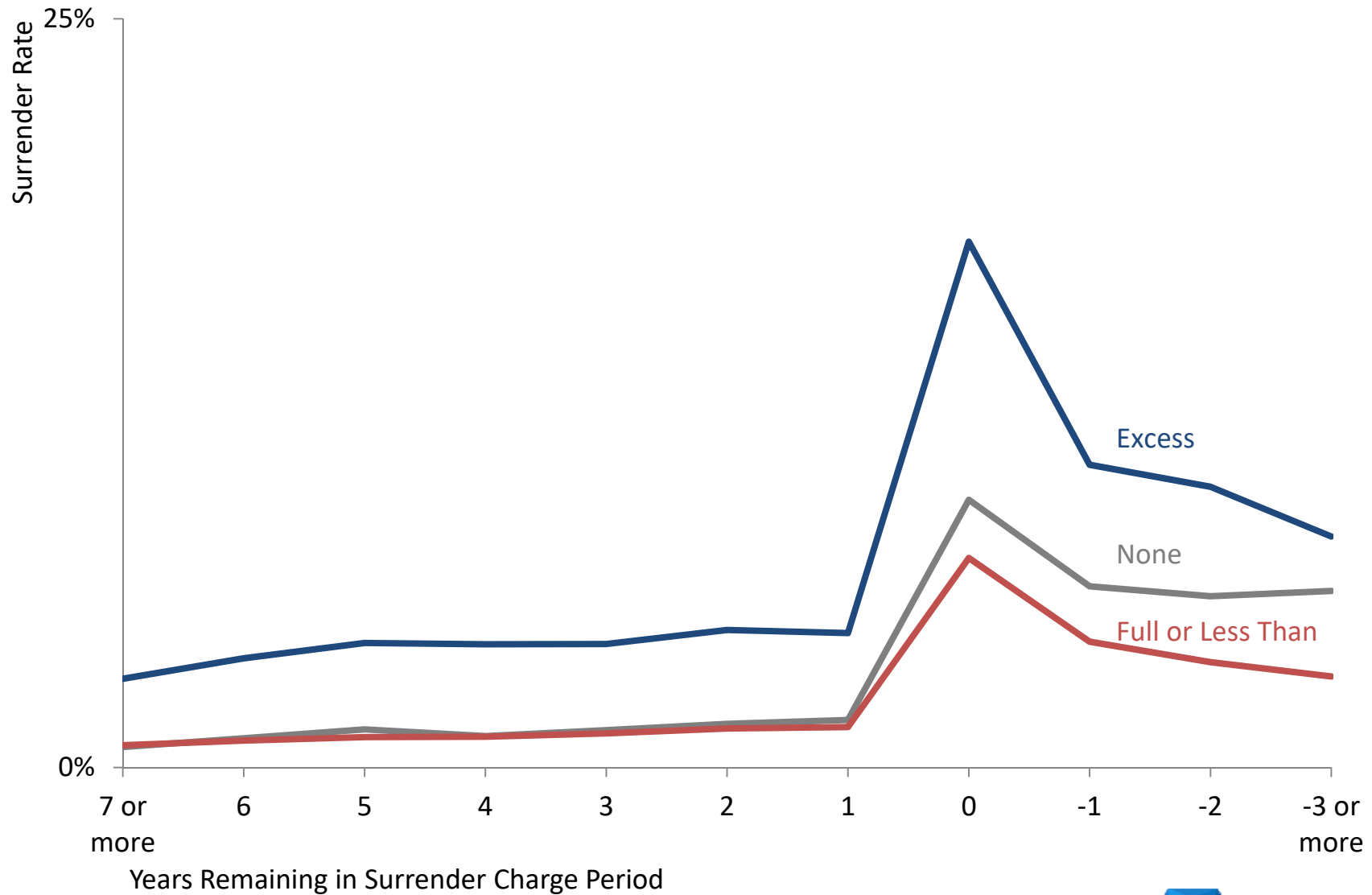


# GLWB moneyiness basis matters



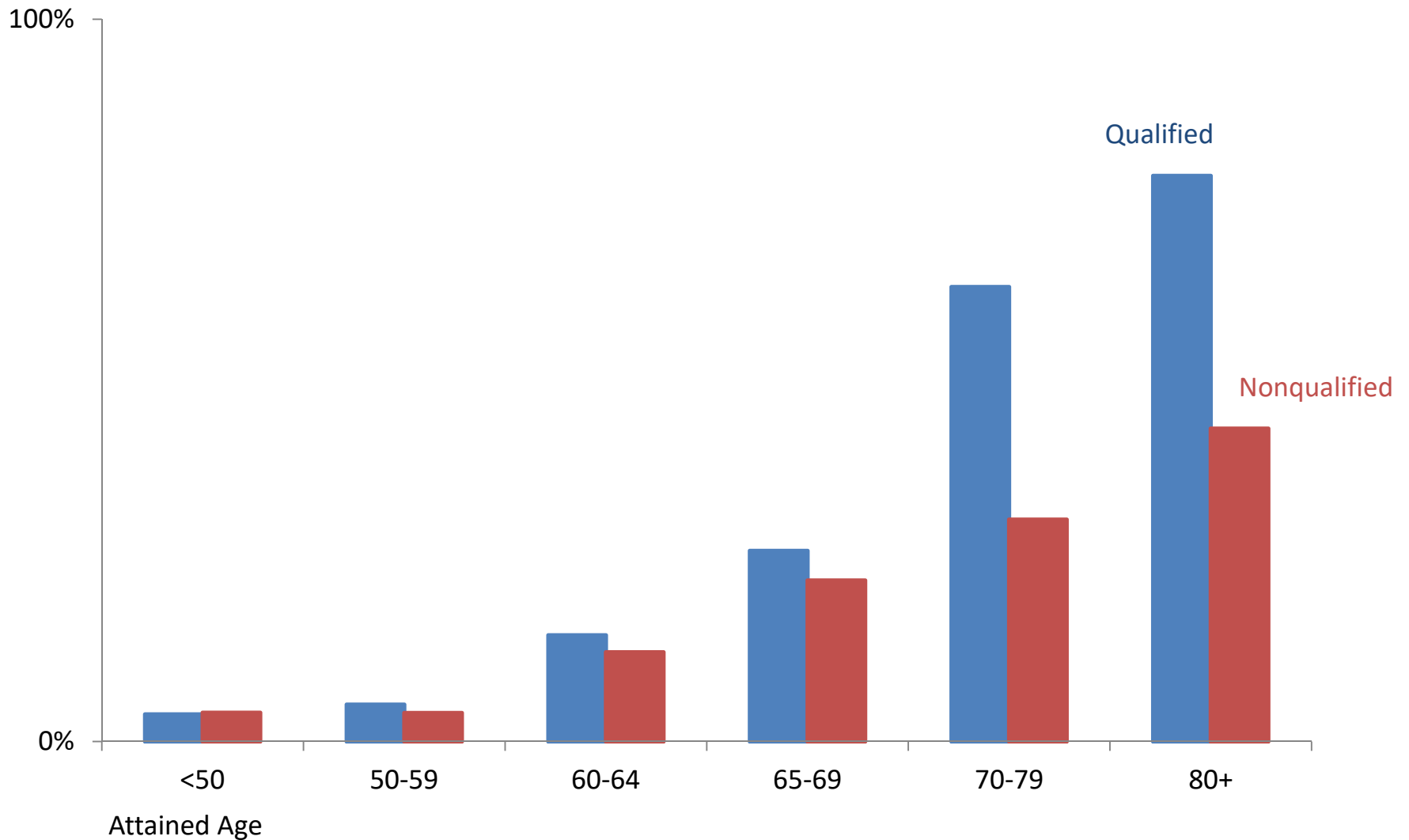


# GLWB income utilization affects surrenders



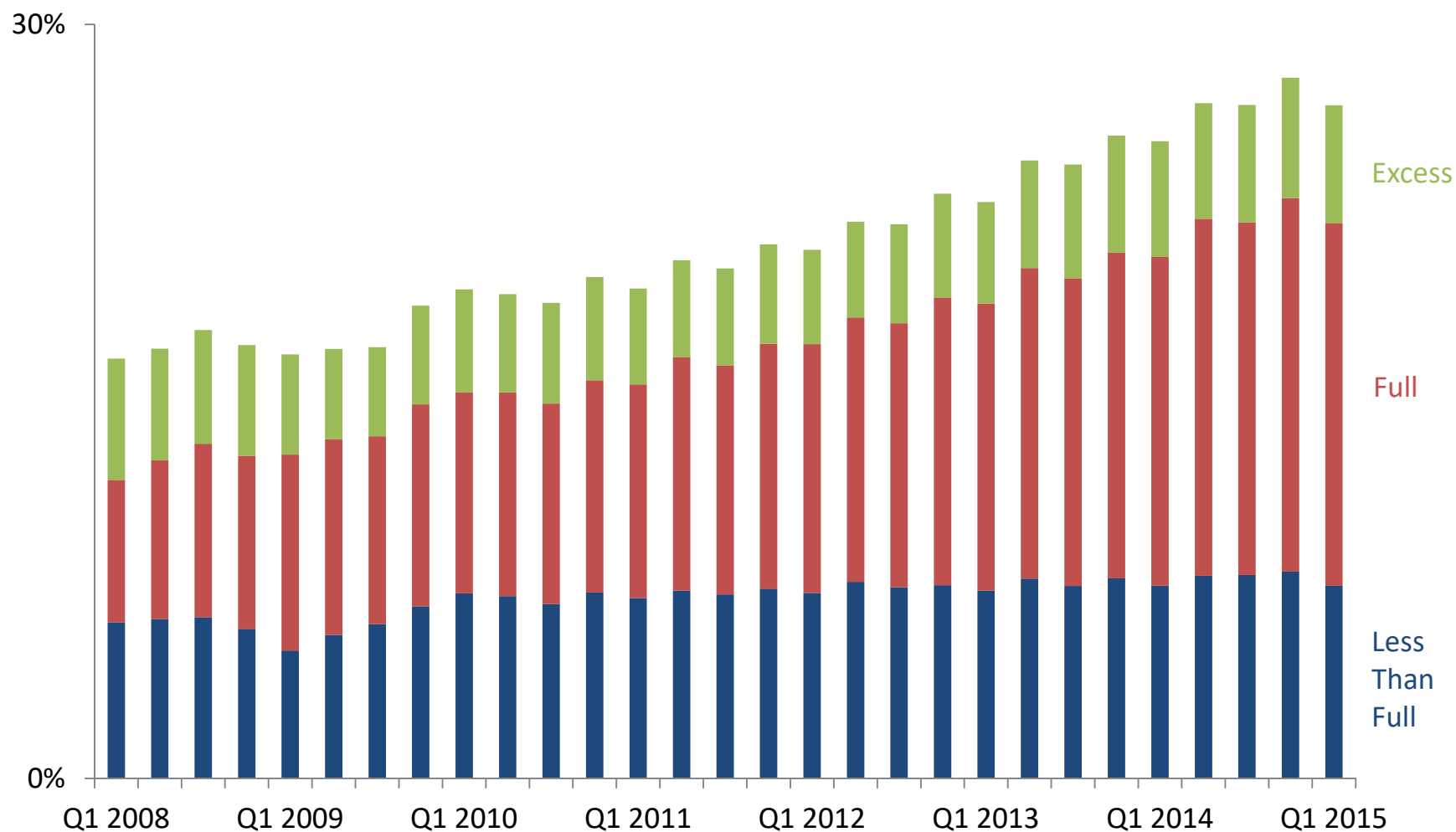
# Income utilization varies by age and tax status

GLWB Partial Withdrawal Frequency



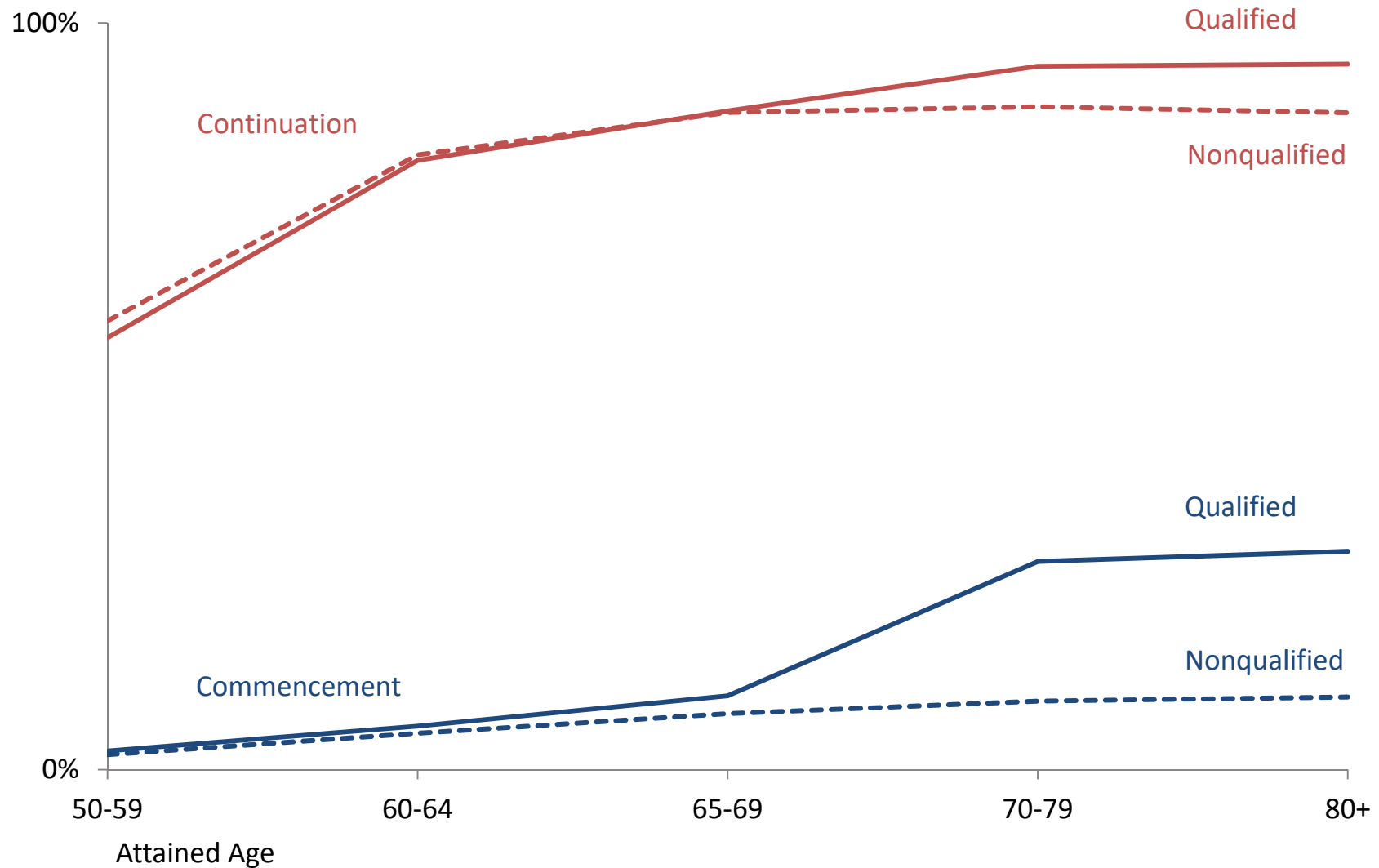
# Income utilization efficiency has increased

GLWB Partial Withdrawal Frequency and Amounts



# Income commencement is the key question

GLWB Partial Withdrawal Frequency



The background is a solid dark blue color. Overlaid on this are several thin, light blue lines that intersect to form a network of triangles and polygons of various sizes. The lines are more densely packed in some areas, creating a subtle geometric pattern.

# Overview of FIA Industry Experience

# FIA Industry Data

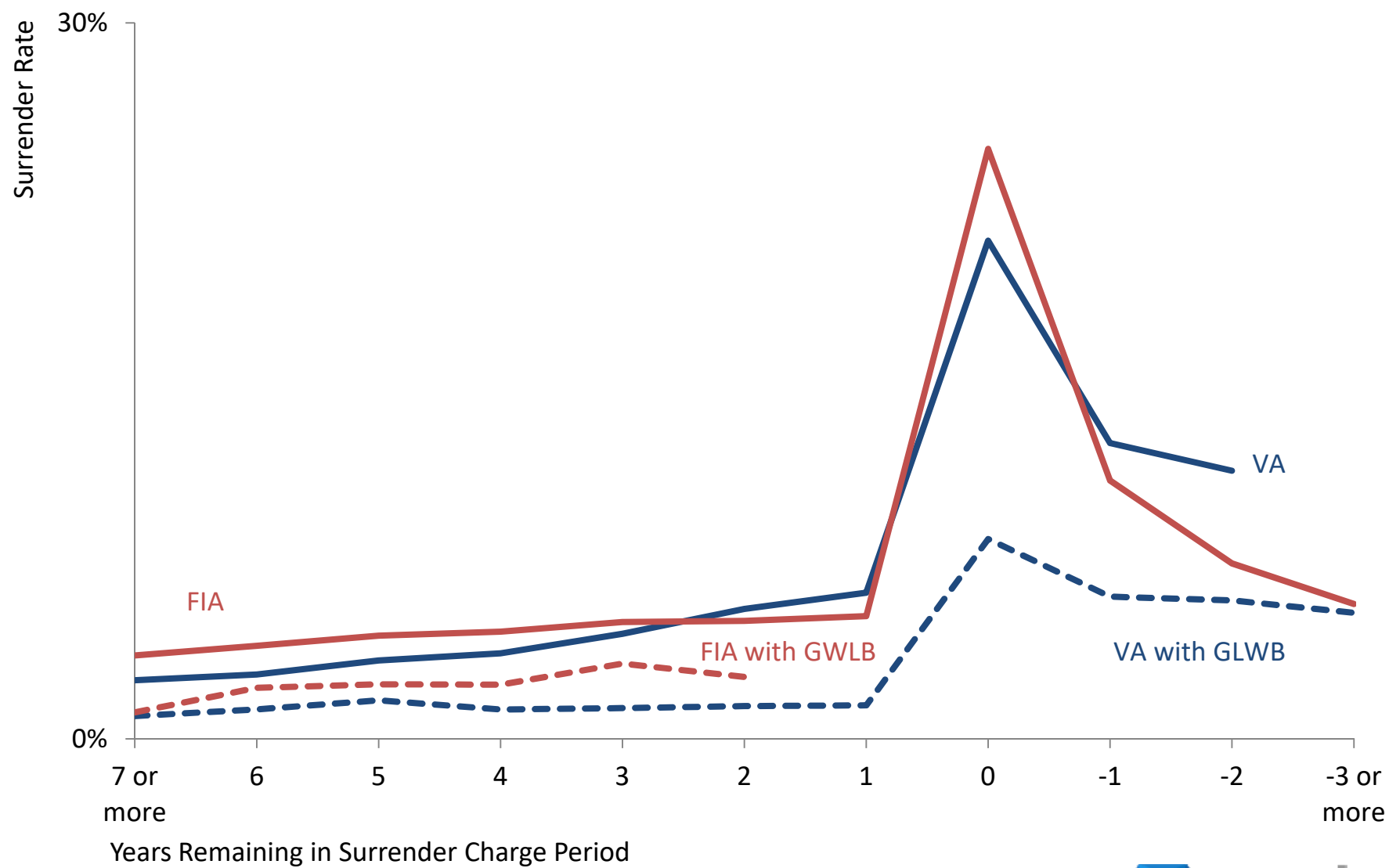
12 participating companies

2007 to present

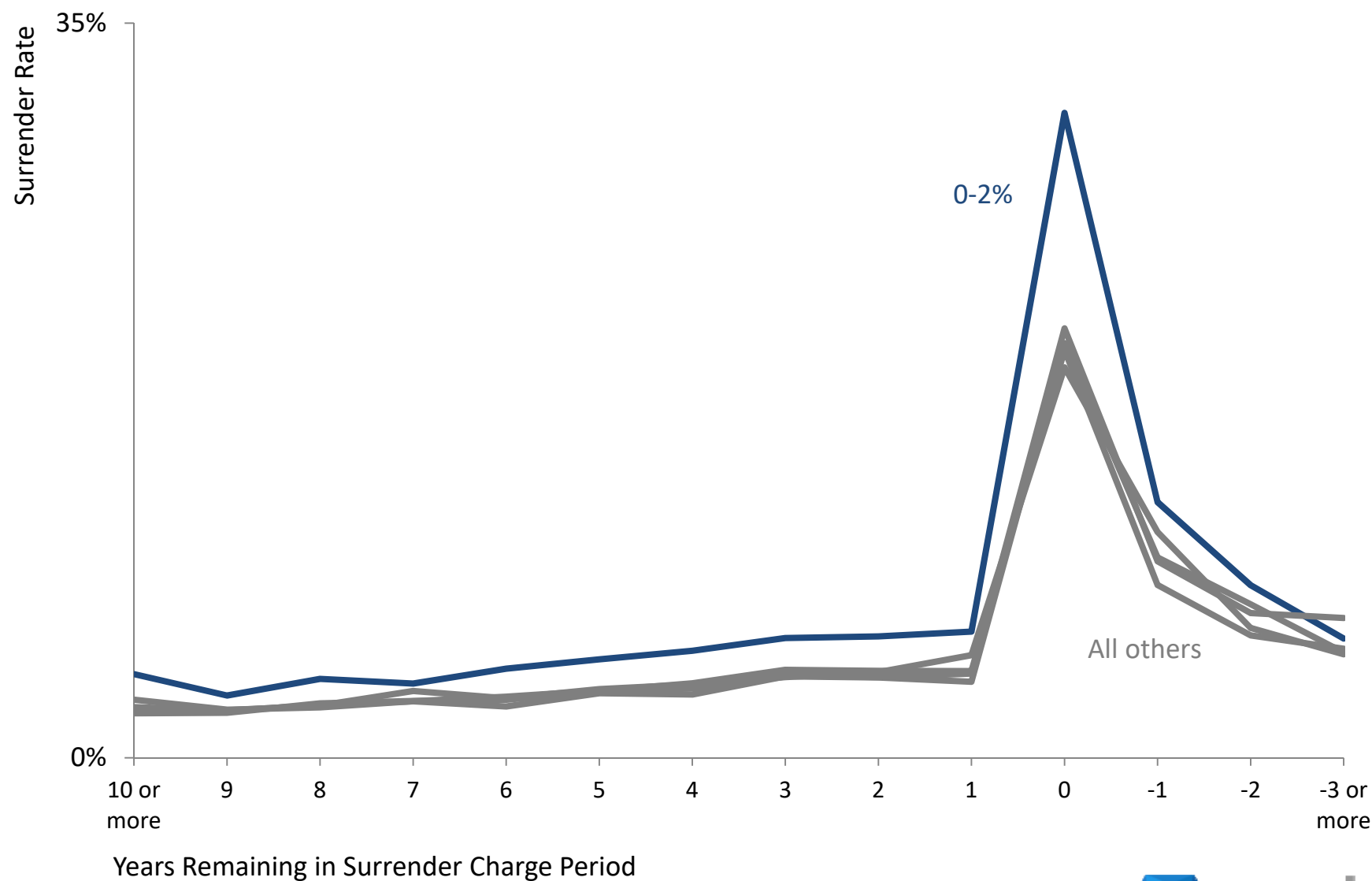
13 million contract years of exposure

+30% from last year

# VA and FIA surrenders are lower with GLWB



# FIA surrenders vary based on interest credited





The background is a deep blue with a complex geometric pattern of overlapping triangles and lines. A lighter blue, circular, ethereal glow is centered behind the text.

# Behavioral Analytics Framework



# Model Development

Start with maximum data set (industry)

Extract relevant subset for a company

Develop a model on this basis

Do likewise using only company's data

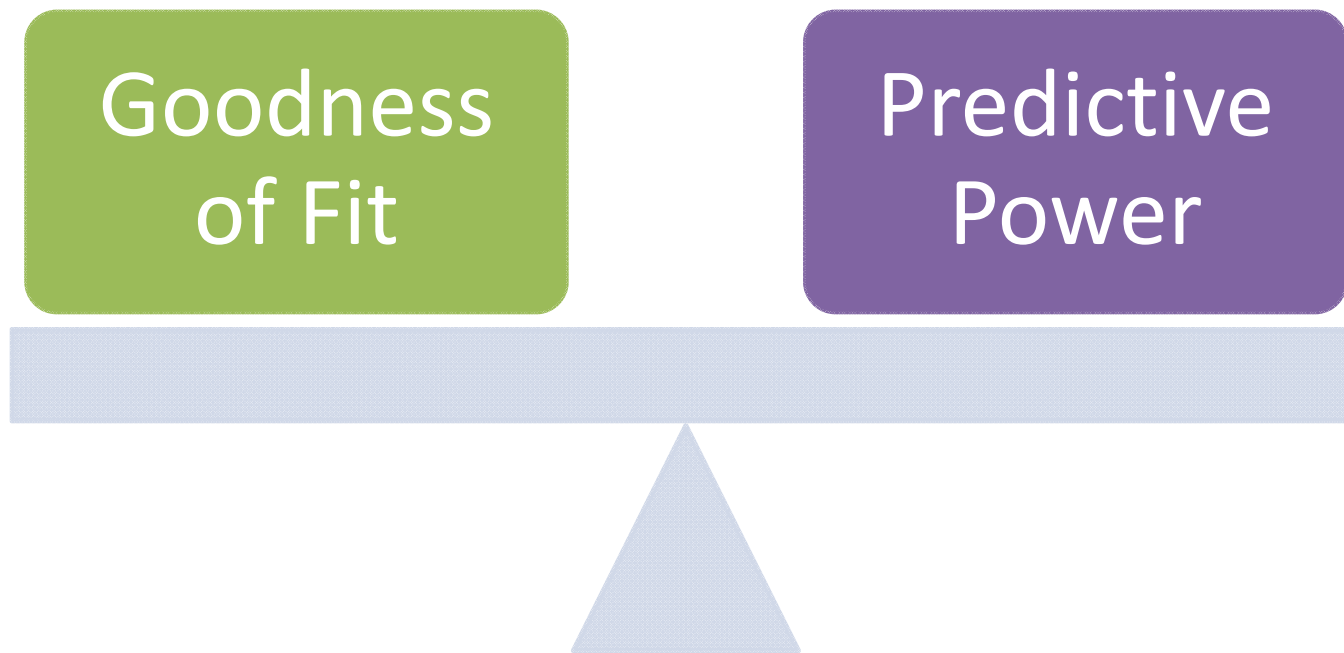
Customize model to reflect both, so that most important factors are included, with stable coefficients, balancing goodness-of-fit and predictive power

You can go far with Generalized Linear Models (GLM)

# Logistic Regression Model

$$\ln\left(\frac{\mu}{1-\mu}\right) = \beta_0 + \sum \beta_i x_i$$

“Log of odds” is a linear function of key factors  
Binary values, such as surrenders or deaths



# Bayesian Information Criterion

Rewards goodness-of-fit to historical data, but penalizes for additional factors used in your model

One of many metrics to help guide your model selection process

# Actual-to-Expected Ratios

“Predictive Power” in the new vernacular

Develop E using train data, compare to A from test data

Out-of-sample, out-of-time, and k-fold cross-validations

Examine in aggregate, by cohorts, and over time

Look at range of outcomes and tails

# Expert Judgment is Vital

Business context, sensibility, materiality, parsimony

Let the data speak

More data usually beats more complex models

Build simple models for complex data, and complex models for simple data



The background is a deep blue with a complex, abstract pattern. It features a network of thin, light blue lines that intersect to form various geometric shapes, primarily triangles and quadrilaterals. Overlaid on this is a darker, more textured pattern of irregular, overlapping shapes that resemble a low-poly mesh or a crystalline structure. The overall effect is a layered, geometric aesthetic.

# Sample Models

## VA Surrenders

Yrs Remaining in  
Surr Chg Period

LB Type and PW  
History

Moneyiness

Contract Size

Interactions

## Using industry data

For each factor coefficient, standard error terms  $\left(\frac{\sigma}{\mu}\right)$  are typically very small  $\sim 1/300$  to  $1/100$ .

Then testing predictive power using 5-fold cross-validation, average A/E errors are also very small  $\sim 1/700$ .

## Using company-only data

In some cases, company-only data is insufficient to even identify the key factors observed in the industry data, or it demonstrates factor coefficient estimates that are not sensible.

Even if they do, the coefficient standard error terms  $\left(\frac{\sigma}{\mu}\right)$  can be 20x larger.

Similarly, the average cross-validation A/E errors can be 10x larger.

# Combining industry and company-only data

A customized combination of industry and company-only data can produce a vastly superior model with much better fit and predictive power.

Such a model should identify and quantify the effects of each additional factor in the presence of the others, and the interactions between them.

Confidence increases with additional data.

# Integration Across Behaviors

Factor		Coefficient
Intercept		-2.0
Years	7	-4.0
	6	...
	...	...
	1	-1.0
	0	Intercept
Remaining in SurrChg Period	-1	-0.5
	-2	...
	-3	-0.8
	...	...
LB Type and PW History	GMDB only	Intercept
	Less than Full	...
	Full	-1.2
	Excess	...
	...	...
Moneyness	OTM	...
	ATM	Intercept
	ITM Band1	...
	ITM Band2	...
	ITM Band3	...
	ITM Band4	-1.0
Size	log (AV)	-0.2

Very important to model behavior on integrated basis

## VA GLWB / GMIB Income Utilization

Attained Age

Tax Status

Historical  
Income  
Utilization

Contract Size

Interactions

# The power of more data

As above, but for GWLB / GMIB income utilization, need to address complexities of frequency and severity relative to guarantee amounts.

	Average A/E Error		
	Less Than	Full	Greater Than
Industry	0.20%	0.30%	0.50%
Company-only	2.80%	1.50%	3.60%
Customized	2.00%	0.70%	3.20%

Customized model using industry data can reduce error by half where it matters most, for Full income utilization.



The background is a deep blue with a complex, abstract pattern of overlapping geometric shapes, primarily triangles and polygons, creating a low-poly or crystalline effect. A large, soft, light blue circular glow is centered in the image, providing a focal point for the text.

# Reinsurance

# Benefits of Behavioral Analytics

Allows for company-level customization from max data set (industry)

Consistent mathematical framework for assumption setting and review/updates

Goes beyond the endless series of reactionary point estimates to quantify range of behavioral values, which can form **the basis of a bespoke reinsurance transaction**

# Advantages

## Ceding Company

Mitigate non-core risks

More predictable  
financials

Improve transparency

Competitive edge

## Reinsurance Company

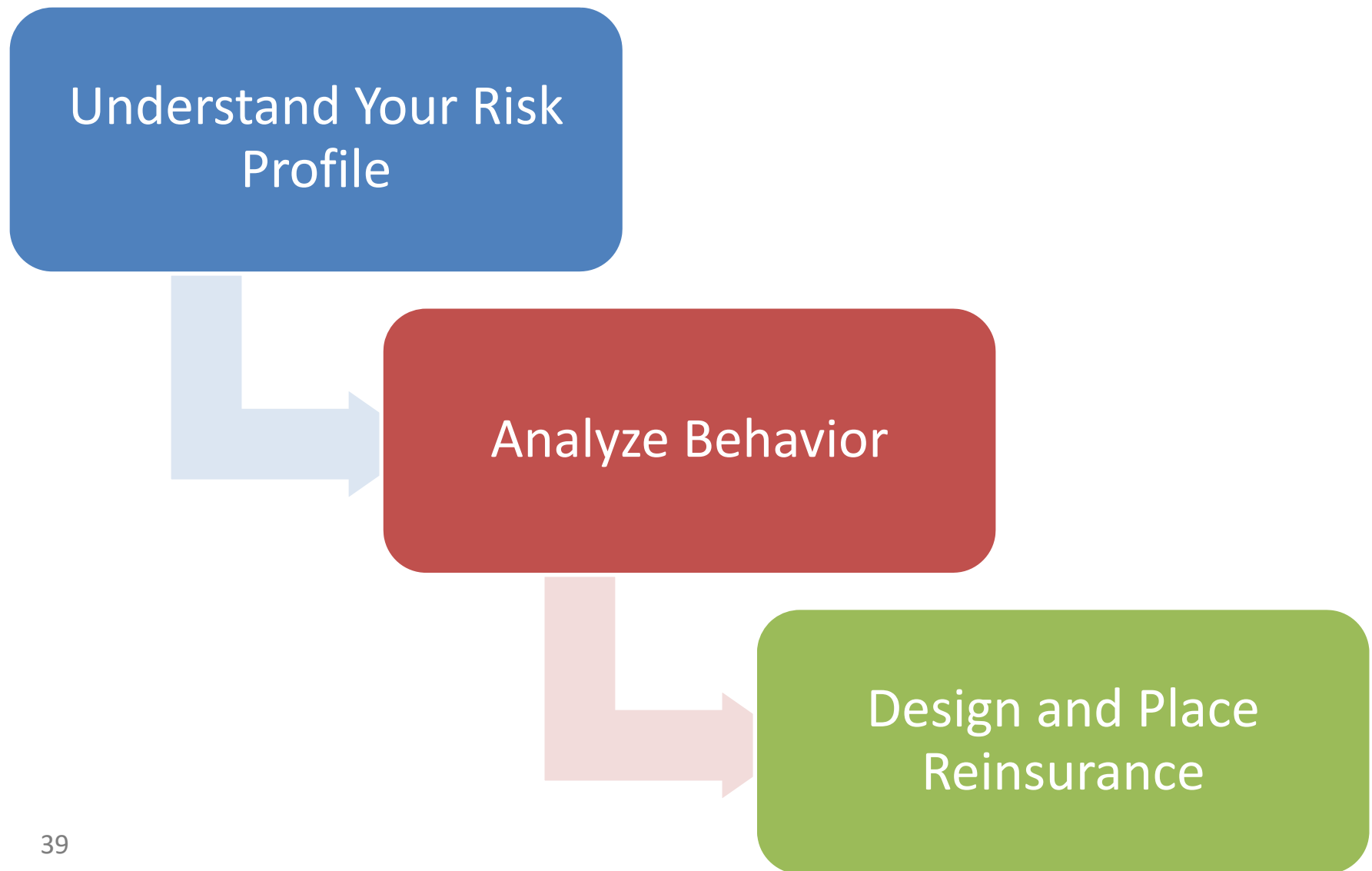
Growth market

Avoid capital markets  
exposure

Manage from first  
principles

Diversified portfolio

# Policyholder Behavior Reinsurance



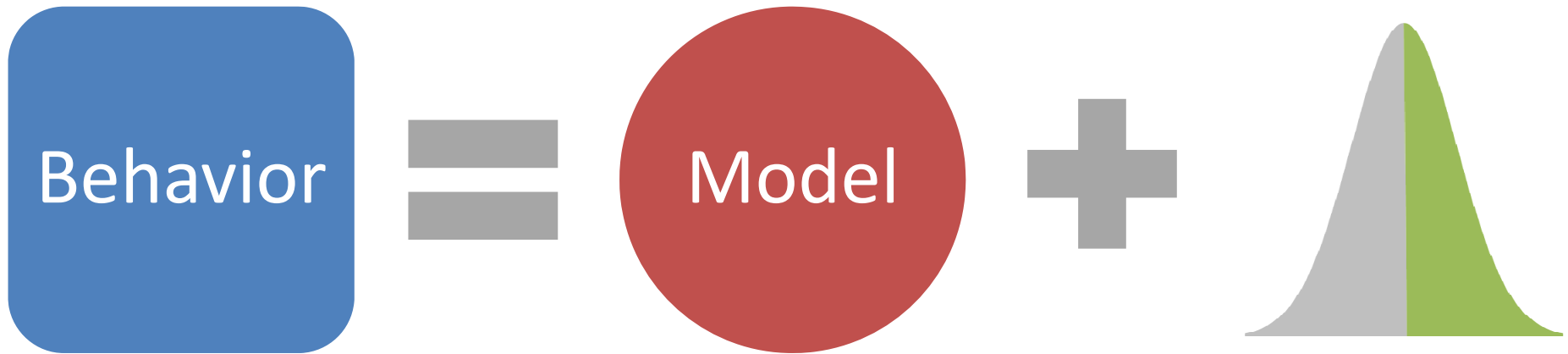
Assumptions



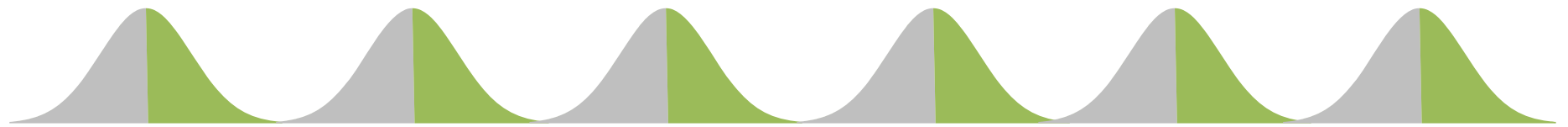
```
graph TD; A[Assumptions] -- blue arrow --> E[Experience]; E -- red arrow --> P[Principles-Based Framework]; P -- green arrow --> A;
```

Principles-  
Based  
Framework

Experience

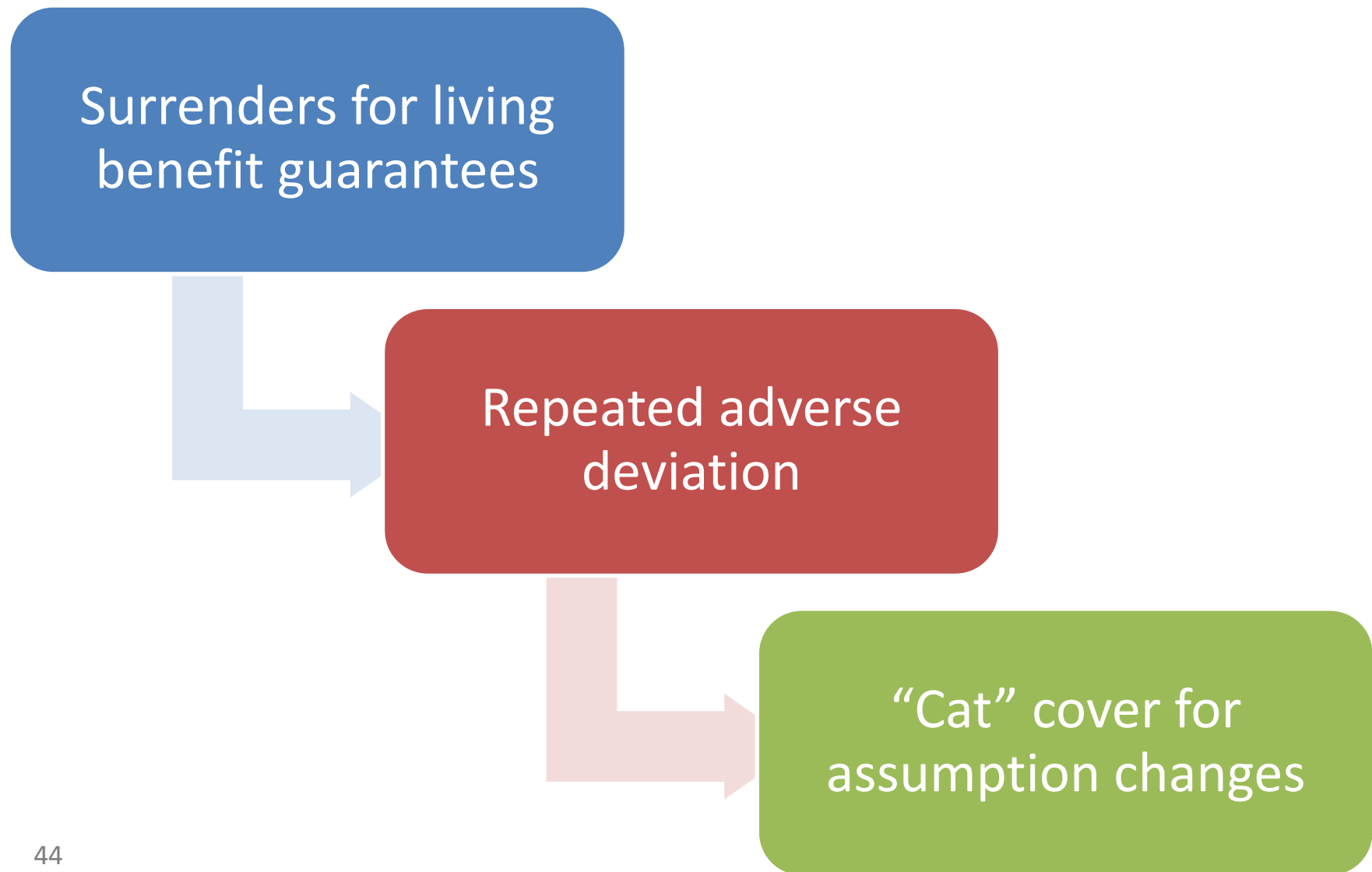








# Policyholder Behavior Reinsurance



# Implementation

The background is a deep blue with a complex, abstract pattern of overlapping triangles and lines, creating a sense of depth and movement. A large, soft, light blue circle is centered in the image, serving as a backdrop for the text.

# Discussion

Expert  
solutions  
for dynamic  
markets.



**RGA**

## **Reserve Financing and Captive Reinsurance**

**Ryan Stevens, FSA, MAAA**  
*VP, Structuring and Product Specialist*  
*Global Financial Solutions*  
*RGA*

**Xueli Zhang, FSA, CFA, MAAA**  
*VP and Actuary*  
*Global Financial Solutions*  
*RGA*

SOA Life & Annuity Reinsurance Seminar  
August 14, 2017



## Audience Questions

- Who has worked on reserve financing transactions?
  - Pre AG 48
  - Under AG 48/New Term and UL Reserve Financing Model Regulation
  - PBR compliant solutions
- What was your biggest hurdle?
  - Regulators
  - Rating agencies
  - Internal sign-offs
  - Solution provider

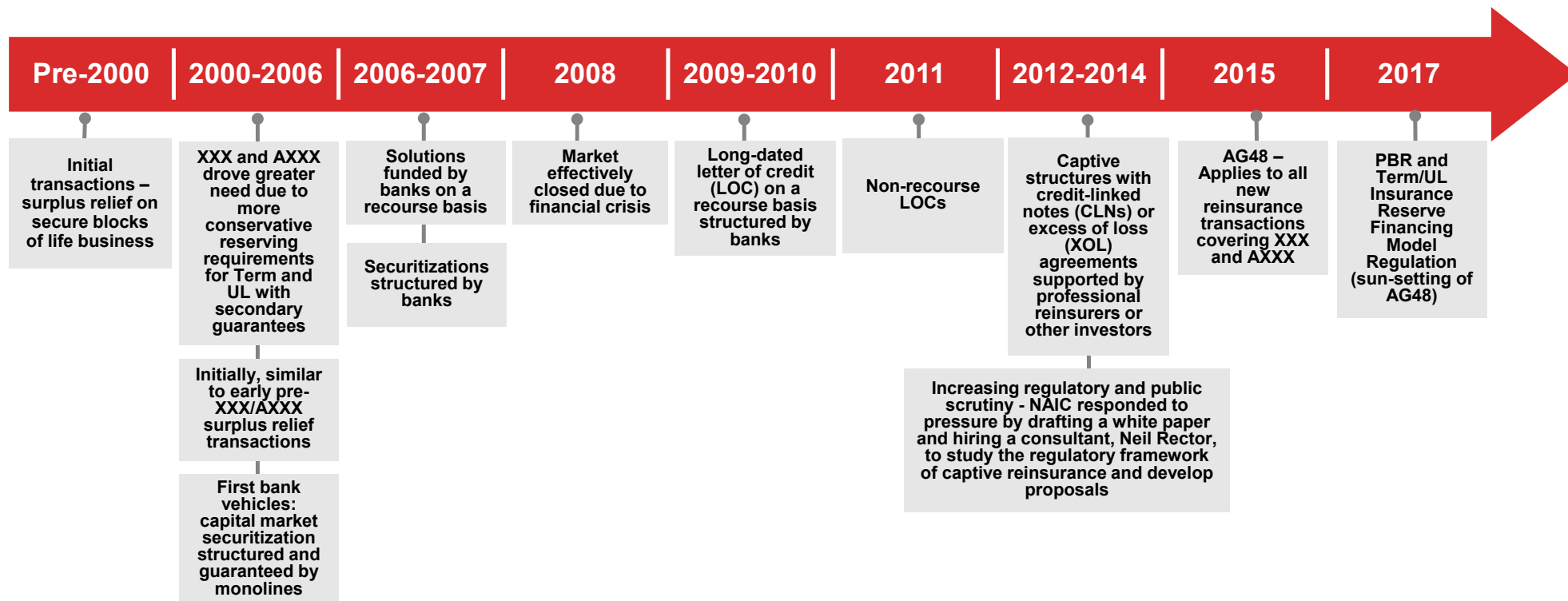


# Agenda

- History of Reserve Financing
- Current State of the Reserve Financing Market
- Captive Reserve Financing Roadmap to Success
  - Getting Started – benefit / cost analysis
  - Internal Engagement
  - External Counterparties
  - Dive In – the real work
  - Finish Line
- Closing Thoughts
- Q&A

# History of Reserve Financing

## Long History of the Use of Reinsurance to Provide Capital





# History of Reserve Financing

## Estimated Costs

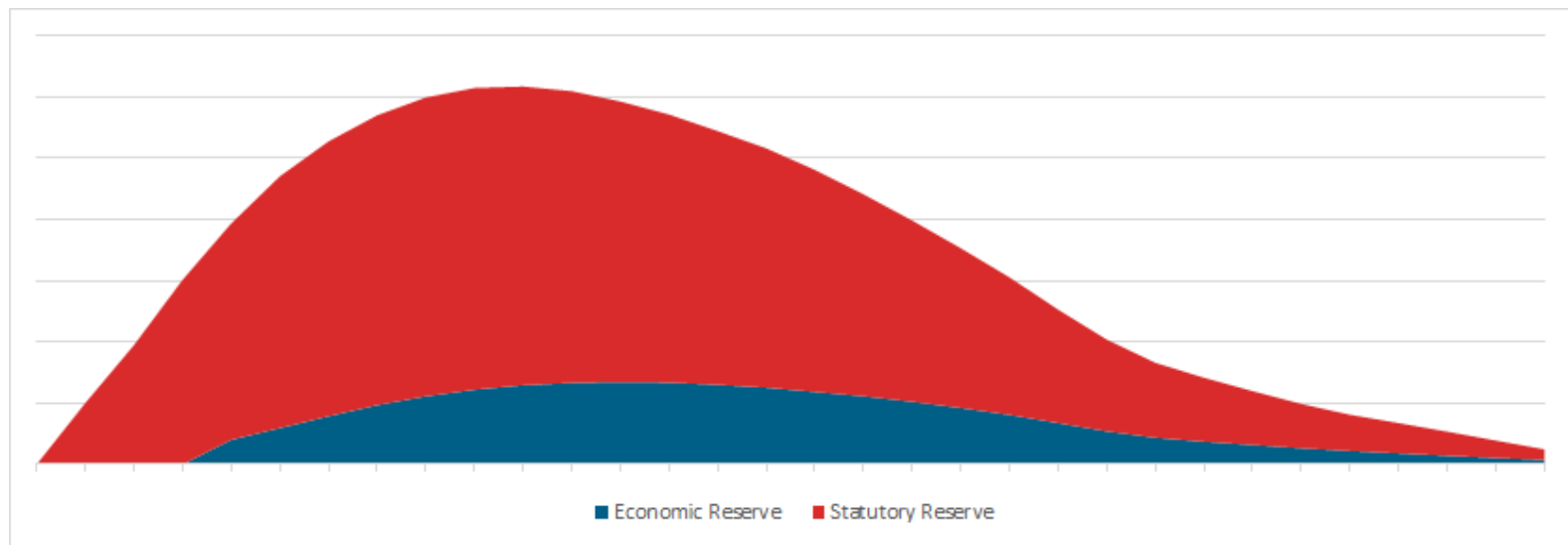
- Summary: Started high, driven lower over time
  - Early surplus relief; 1-2% of statutory capital provided
    - Tax impact may be reflected
  - XXX via early reinsurance: similar 1-2%
    - No AXXX
  - Bank vehicles
    - First bank vehicles: dependent on repo market rates and monoline fees. Rapid downward pressure.
    - 2006-2007: bank funded solutions with recourse; 1-1.5%
    - 2008: market effectively closed due to financial crisis
    - 2009-2010: long-dated letter of credit with recourse; 2.5%, decreasing rapidly to 1-1.5%
    - 2011: non-recourse LOCs; 1-1.25% or lower
  - 2012-2014: CLNs and XOL; less than 1% and falling



# Current Reserve Financing Market

## Before AG48/AG48 Exempt

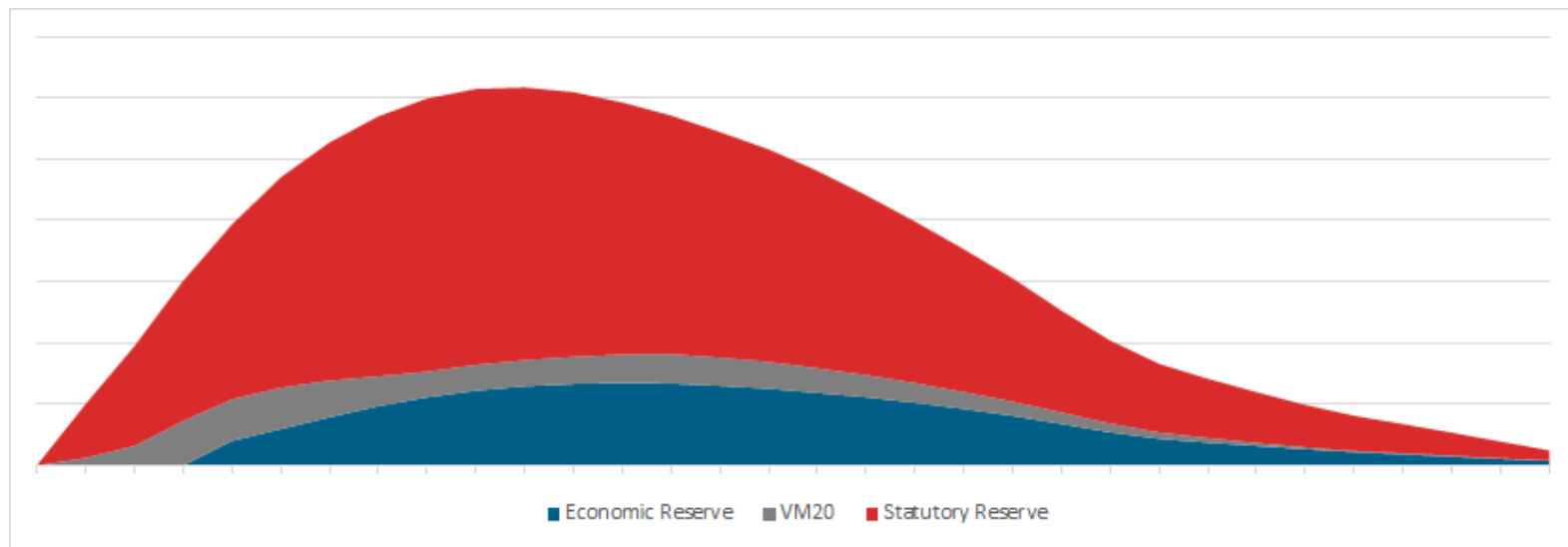
- Goal: fund excess level of reserves (Statutory – Economic)
  - Various asset types available for funding



# Current Reserve Financing Market

## AG48/Term and UL Reserve Financing Model Regulation

- Goal: fund excess level of reserves (Statutory – Economic)
  - Various asset types available for funding
  - VM 20 layer must be funded by “Primary Security” assets





# Current Reserve Financing Market

## Regulatory concerns

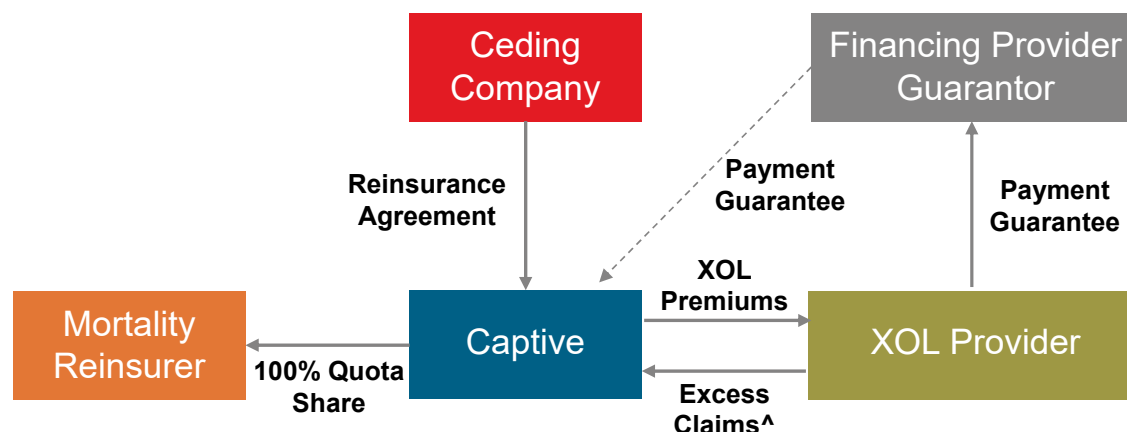
- Security of policyholders is the primary concern – are there high quality assets immediately available to meet future obligations of the ceding company?
- Recourse - ultimate liability: in a severe scenario, who pays?

## Current Options

- Debt, Equity, or existing surplus to fund full statutory reserve
  - Expensive – not supportable under current market pricing
- Reinsurance Solutions
  - Third-party Reinsurance
    - Requires utilization of the reinsurers balance sheet (most typically an accredited or certified reinsurer)
    - Tends to be more expensive, but less complex and lower regulator involvement
    - Transaction may have a negative tax impact on cedant
  - Affiliated (Captive-based) Reinsurance
    - Tends to be less expensive, but more complex and high regulator involvement
    - XOL or CLN to achieve reserve credit for non-economic reserves (“Other Security” under AG48)
    - Bank solutions also available (Annual evergreen LOCs, conditional LOCs, etc.)
    - Primary Securities to achieve reserve credit for VM20 layer of reserves under AG48

# Current Reserve Financing Market

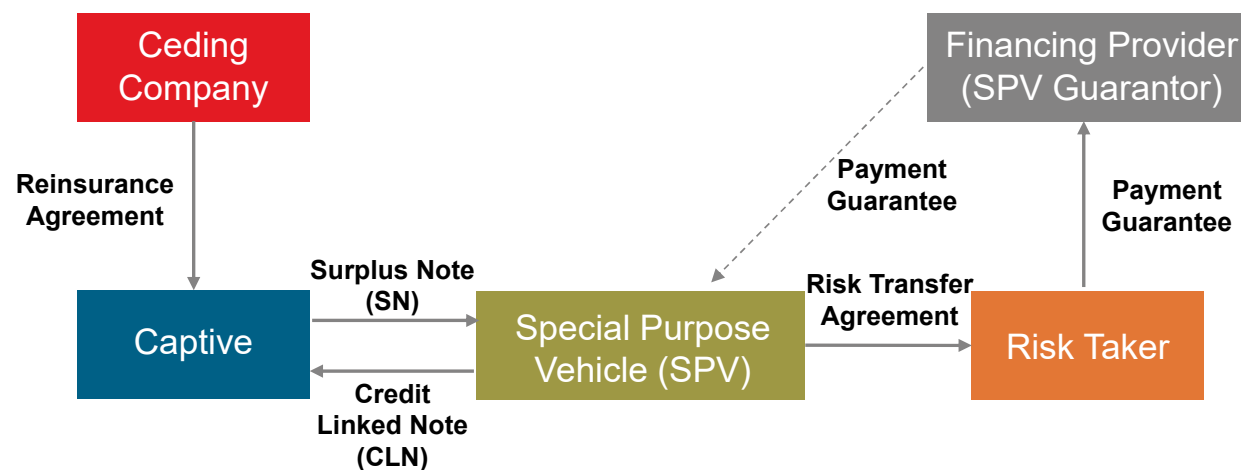
## Captive Based Solution - XOL



- Captive reinsures mortality risk at fixed premium rates
- XOL Provider pays claims up to full Statutory Reserves less Qualified Reserves (Economic Reserve) once other sources exhausted. XOL provider also assumes Captive's collection risk under mortality reinsurance.

# Current Reserve Financing Market

## Captive Based Solution – Credit Linked Note Structure (Note for Note)



- Captive and SPV exchange a SN for a CLN
  - CLN is allowed as an admitted asset on Captive's balance sheet
  - Coupon difference between the CLN and SN is the risk fee
- If Captive redeems the CLN to pay reinsurance claims, the Financing Provider funds the redemption of the CLN



# Current Reserve Financing Market

## Recent Transactions in the Market

- AG48 exempt/grandfathered transactions
  - XXX/AXXX - Non-captive based reinsurance reserve financing
  - XXX/AXXX - Captive based reserve financing
- AG48 Compliant Transactions
  - XXX – Captive based Other Security only reserve financing
  - XXX – Captive based Primary Securities and Other Security reserve financing
  - AXXX ???
    - Different risks and levels of VM20 layer reserves vs. XXX
    - Projecting future VM20 reserves is a challenge and can introduce significant potential volatility to the funding requirements
- PBR Compliant Transactions ???
  - Reserve financing transactions will require Primary Securities only
  - The concept of Other Securities will become unnecessary with the sunset of XXX and AXXX reserve methodologies



**RGA**

## **Captive Reserve Financing – Roadmap to Success**

Expert solutions  
for dynamic markets.





## A Journey of Partnership

- Getting Started – benefit / cost analysis
- Internal Engagement
- External Counterparties
- Dive In – the real work
- Finish Line





# Getting Started

## Determine the Financing Need

- Identify the block(s) of business
  - XXX and/or AXXX
  - Inforce and/or new business
- Determine the redundancy
  - Redundancy = XXX/AXXX reserve - economic reserve
    - If AG48 grandfathered, economic reserve is defined by ceding company
    - If not, economic reserve is AG48 reserve (Primary Security level)
  - Measure at current period, but also into the future – can evolve quickly!
- Set parameters: structure tenor, target closing date, general terms



# Getting Started

## Measure the Potential Benefits

- Capital needs/returns
  - Existing financing arrangement
  - Alternative uses of capital released
  - Competitive advantage
    - New business ROI may be significantly improved with financing
- Tax benefit
  - Full amount of tax reserve is still deductible

# Getting Started

**Reserve Financing is the Best Option – Can't Beat That Tax Break!**

Pricing Scenario	Pricing IRR*
XXX Stat and Tax No Reserve Financing	7.4%
VM20 Stat and Tax No Reserve Financing	9.9%
XXX Stat and Tax Financing at level of VM20	16.5%

\*From a recent SOA study performed by Milliman "Impact of VM-20 on Life Insurance Product Development"



# Internal Engagement

## Get Everyone on Board

- Secure senior management buy-in
  - Make sure they understand the structure and have a clear picture of cost/benefits
  - Gauge willingness to provide resources when the unexpected arises
  - Have an advocate to pitch the transaction to the board of directors
- Other department commitment
  - Near full time required for some employees
  - Part time support required from many others



# Internal Engagement

## Build the Team

- Executive / project sponsor
- Project management
- Actuarial
  - Pricing leader
  - Pricing / valuation / modeling
- Accounting
- Legal
- Other: tax, investment, administration, etc.



# External Counterparties

## Financing Provider – Track Record Matters

- Criteria
  - Client experience
  - Technical expertise
  - Execution certainty
- Considerations
  - Financing cost
  - Counterparty exposure limits
  - Relationship
  - Split between multiple partners?



## External Counterparties

### Regulators – Communicate Early and Frequently!

- Decide captive's state of domicile
  - There are some pros and cons for using the same state as ceding company
- Anticipate regulator's "hot-button" issues
  - Preference between different structures and treaty mechanisms
  - Minimum required capital level of the captive
  - Accepted financing as "Other Security" under AG48
- Transaction may be reviewed by the NAIC Reinsurance Financial Analysis Working Group (ReFAWG)



## Dive In – The Real Work

### Actuarial

- Ceding Company provides the requested data
  - Projections
  - Product and policy information
  - Assumptions and supporting experience
- Financing Provider underwrites the risks
  - Term business is primarily mortality risk
  - ULSG is mortality, but also lapse, premium persistency, and investment risk
  - Mix of business can reduce risk through synergies





# Dive In – The Real Work

## Actuarial

- Build the deal model
  - Deal model incorporates all material provisions and risks
    - Needs to work in a wide range of scenarios
  - Likely to use Ceding Company's cash flow projections as inputs
    - Validation of results and model representations and warranties are key
- Communication
  - Multiple rounds of model revisions and discussions
  - Financing Provider helps Ceding Company identify company specific issues
  - Work together to understand the risks and find the solutions



# Dive In – The Real Work

## Legal

- Construct legal documents
  - Captive formation documents
  - Captive management documents
  - Reinsurance documents
  - Financing documents
  - Legal opinions
  - Certificates
- Preliminary filing
  - Establish captive, Form D filing
- Keep the ongoing communication with the regulator(s)



# Dive In – The Real Work

## Provision Refinement

- Each transaction is customized
  - To meet the specific objectives / constraints of the Ceding Company
  - To keep the risk level within the reasonable range
- Reinsurance Treaty
  - Funds withheld level
  - Experience refunds
  - Investment Guidelines
    - Captive's surplus assets
    - Ceding Company's funds withheld assets



# Dive In – The Real Work

## Provision Refinement

- Master Transaction Agreement
  - Representations, Warranties, and Covenants
  - Note increase / decrease
  - Tax treatment
  - Dividend and the level of capital retained in the captive
  - Draw mechanics – timing, amount, and priority of other payments
  - Treatment of third party reinsurance
  - Reporting



## Finish Line

### File with the Regulator(s)

- Finalize legal documents and deal model
- Expect an iterative process of questions, answers, and more questions with the regulators(s)
- Final filing and regulatory approval
  - Sign final legal documents, exchange notes
  - Reinsure business to captive
- Prepare for ongoing maintenance
  - Periodic reporting including settlements, experience, etc.



## A Journey of Partnership

- Getting Started – benefit / cost analysis
- Internal Engagement
- External Counterparties
- Dive In – the real work
- Finish Line



## Closing Thoughts

- Financing Provider's credibility and reliability matters
- Early engagement and total transparency
- Flexibility matters

# RGIA

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# Reinsurance of Annuity Products

Life and Annuity Reinsurance Seminar  
August 15, 2017  
Ari Lindner

# Variable Annuity Reinsurance

## Introduction to Variable Annuities

- Tax-Advantaged Savings / Investment Vehicle
- Separate Account product
  - Policyholder directs investments
  - Policyholder bears investment risk
- Account Value fluctuates with performance of selected funds
- Primary competitive advantage over mutual funds
  - Tax deferral
  - Additional guarantees

# Variable Annuity Reinsurance

## Introduction to VA Guarantees

- Guarantees generate a claim payment if
  - Account / Funds underperform a benchmark, AND
  - The policyholder has an insurable event or takes a specific action
- Fund Benchmarks:
  - Return of Premium / Principal
  - Reset / Ratchet – market-dependent growth
  - Roll-up – fixed growth rate
- Insurable event / action
  - Death
  - Annuitization
  - Periodic / Systematic Withdrawals to Account Exhaustion
  - Persist to a specified policy duration

# Variable Annuity Reinsurance

## Introduction to VA Guarantees

- Key risk / profit drivers for base product
  - Persistency
  - Fund performance
- Key risk / profit drivers for VA Guarantee
  - Fund performance
  - Interest rates
  - Policyholder behavior – lapse / withdrawal / annuitization
    - Particularly correlation between behavior and fund performance
  - Mortality / Longevity – typically to a much lesser degree

# Variable Annuity Reinsurance

## Motivation / Goals

- Transfer risk associated with VA Guarantee
  - Hedgeable Risk – Equity markets, Interest rates
  - Non-Hedgeable Risk
    - Financial – Basis, Correlation, Long-term volatility
    - Non-Financial – Mortality, Behavior (Lapse / Withdrawal / Annuitization)
- Reduce volatility of income statement / reserve / capital
- Improved accounting treatment (compared to hedging)
- Capital Release / divest non-core risk
- Monetize future profit
- Diversification

# Variable Annuity Reinsurance

## VA Guarantee Reinsurance Structures

- Risk transferred is connected to VA Guarantee claims
- Full Coinsurance / Proportional
  - Rarely available
- “Capital Markets” Reinsurance
  - Mimics or mirrors hedge risk management solutions
- “Structured” Reinsurance
  - Coinsurance with some form of non-proportional limits or features
- Assumption Reinsurance – full divestment of legacy book
  - Tends to be costly / motivated seller

# Variable Annuity Reinsurance

## Other VA Reinsurance Structures

- Fee stabilization reinsurance
  - Protects against fluctuations in base product fees caused by falling equity markets or fund values
- “Gap” risk reinsurance
  - Protects against risk of significant market movement in short period (over 10% in a single day, e.g.)
- “Mass Lapse” reinsurance
  - Protects against lost revenue from extreme lapse events
- Collateral enhancement
  - Reinsurer stands between onshore entity and captive to provide collateral / reserve credit

# Variable Annuity Reinsurance

## Types of Non-Proportional Limits / Features

- Reinsurance Claim Limit
  - Can be Annual or Aggregate over the lifetime of the treaty
- Behavior Limit
  - Maximum behavior level – for example, maximum annuitization rate for claims driven by annuitization behavior
- Reinsurance / Cedant Claim Mismatch
  - For example, reinsurance claim frequently a lump sum expected present value where insurer claim is a lifetime annuity
- True-ups for Non-Hedgeable Risk Elements
  - Deviations (vs. expected) of non-hedgeable risk elements may require periodic true-ups
  - May be a minimum threshold within which deviations do not require true-up



# Variable Annuity Reinsurance

## Key Accounting Considerations

- VA Guarantee can be considered either insurance or a derivative
  - Treatment varies and may change over time
- Reinsurance of VA Guarantee reinsurance can be considered either insurance or a derivative
  - Treatment varies and may change over time
- Accounting treatment may be different for reinsurance vs. insurance
- Reserve and capital relief may be limited with certain structures
  - Collateral is typically required

# Variable Annuity Reinsurance

## Current Market

- Supply is severely limited
  - This has been the case for almost the entire history of VA Guarantees and VA Guarantee reinsurance (> 20 years)
- “Capital Markets” and “Structured” reinsurance is available
  - Very small number of active reinsurers
- Full Coinsurance is not typically offered
  - Can be obtained in certain limited situations, but may be cost-prohibitive
- Motivated sellers can divest through assumption reinsurance, but available price / structure may not be attractive

# Fixed Annuity Reinsurance

## Introduction to Fixed Annuities

- Tax-Advantaged Savings / Investment Vehicle
- General Account product
  - Insurer directs investments
  - Insurer retains investment risk
- Account Value credited with interest
  - Crediting rate is periodically reset, subject to a minimum guarantee
- Tend to be less popular in low interest rate environment
- Key risk / profit driver is investment spread
  - Disintermediation risk can be mitigated with Market Value Adjustment on surrender

# Fixed Annuity Reinsurance

## Motivation / Goals

- Investment Risk transfer
  - Ceding company reduces investment / ALM risk
  - Reinsurer receives low-cost funds to support a more aggressive investment portfolio / yield assumption
- Increase product competitiveness by accessing reinsurer's investment expertise
- Capital Release / divest non-core risk
- Monetize future profit
  - Inforce Blocks with high interest rate guarantees may have negative value but reinsurance allows ceding company to focus on more desirable opportunities
- Diversification

# Fixed Annuity Reinsurance Reinsurance Structure

- Tends to be full risk transfer
- Coinsurance
  - Assets transferred to reinsurer
  - Reinsurer controls investments
    - Typically within defined investment guidelines
- Funds withheld
  - Assets remain on insurer's balance sheet
  - May require separate investment management agreement
  - May not be able to achieve all reinsurance goals

# Fixed Annuity Reinsurance

## Current Market

- Fairly robust market – supply, demand, deal flow
- Persistent low interest rate environment is driving some demand
  - Spread compression and lower returns on capital
  - Rising rates may actually increase demand as it will reduce cost of reinsuring inforce blocks with higher guarantees
- Reinsurers are frequently niche players focused on asset accumulation
  - Fixed annuity blocks viewed as cheap source of funding
  - Credit quality can be a concern

# Fixed Indexed Annuity Reinsurance

## Introduction to Fixed Indexed Annuities

- Tax-Advantaged Savings / Investment Vehicle
- General Account product
  - Insurer directs investments
  - Insurer retains investment risk
- Account Value credited with interest
  - Crediting rate is linked to the performance of an index or fund
  - Typically subject to a minimum guarantee
- Frequently includes death and living benefits (similar to VA)
- Significant rise in popularity in recent years
- Key risk / profit driver is investment spread
  - Insurer needs to match the promised index performance while still earning a spread

# Fixed Indexed Annuity Reinsurance

## Motivation / Goals

- Can be similar to Variable Annuity reinsurance goals
  - FIAs offer similar guarantees to VAs
- Can be similar to Fixed Annuity reinsurance goals
  - Particularly around product competitiveness
- Can look to access reinsurer's hedging expertise in regards to the index crediting strategy
  - Simple crediting strategies can be straightforward
  - More complex crediting strategies may require more sophisticated hedging techniques / technology



## Fixed Indexed Annuity Reinsurance Structure and Current Market

- Reinsurance structure similar to Variable or Fixed Annuity reinsurance, as appropriate based on the reinsurance goal(s)
- Accounting treatment may not always be clear
- Both demand and supply are low but expanding
- Further growth expected as competition increases

# Reinsurance of Annuity Products

## Summary

- Variable Annuity Reinsurance
  - VA Guarantees – limited availability, typically structured
  - Other more specialized VA reinsurance is available
- Fixed Annuity Reinsurance
  - Readily available
  - Reinsurers tend to be asset accumulators
- Fixed Indexed Annuity Reinsurance
  - Can have characteristics of any of the above as appropriate
  - May also reinsure to achieve complex or aggressive index crediting strategy



# Reinsurance of Annuity Products

Life and Annuity Reinsurance Seminar  
August 15, 2017  
Ari Lindner



Presented at  
**2017 SOA Life and Annuity Reinsurance Seminar**

The Westin New York at Times Square  
New York, NY  
August 15, 2017

# Reinsurance of Longevity Risk

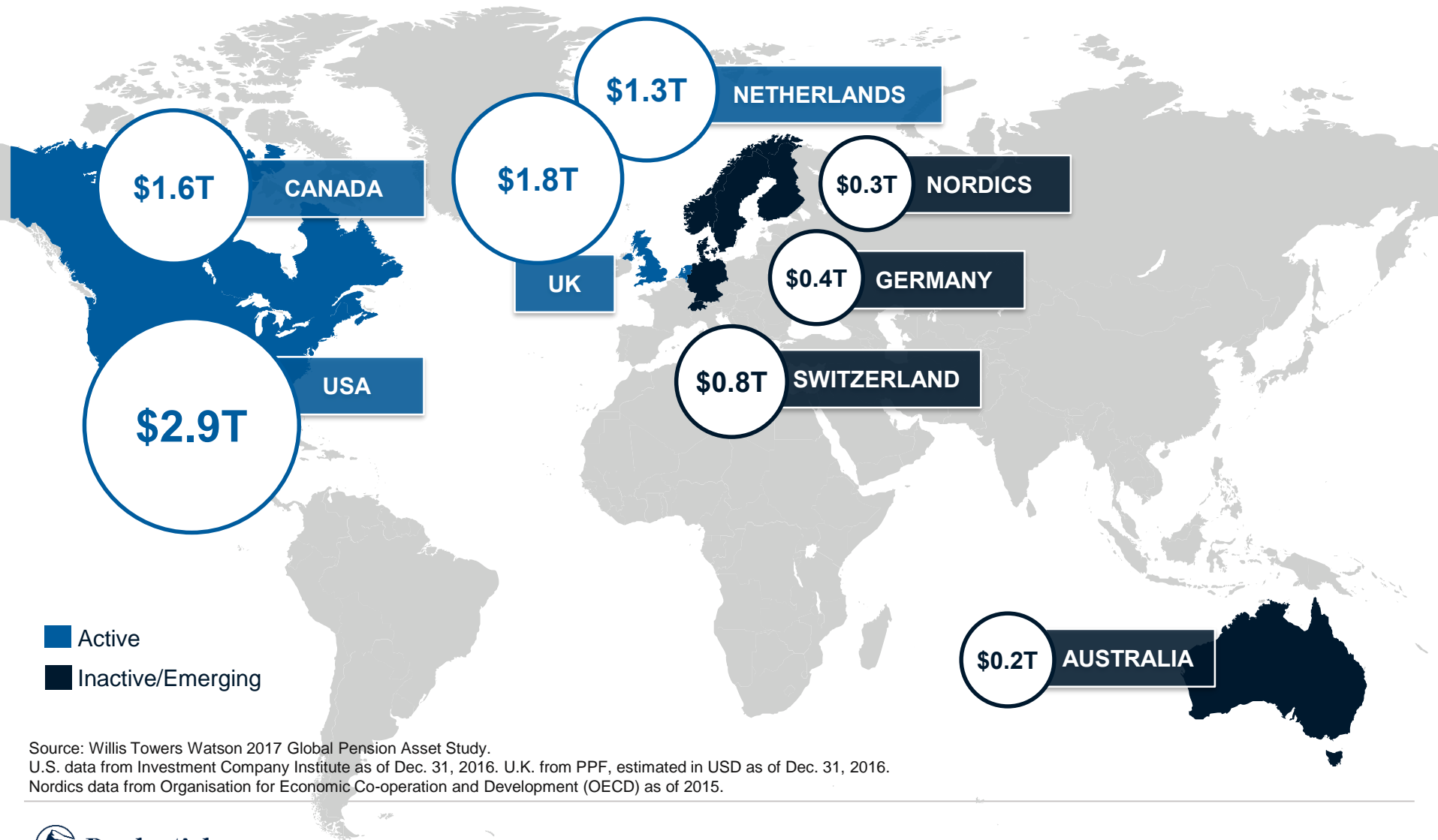
Innovative Solutions for Managing  
Pension and Longevity Risk

**Arnaud Bensoussan**  
Vice President

**David Lang**  
Vice President

**Pension Risk Transfer**  
**Prudential Retirement®**

# The Pension Risk Transfer Market is Growing and Going Global

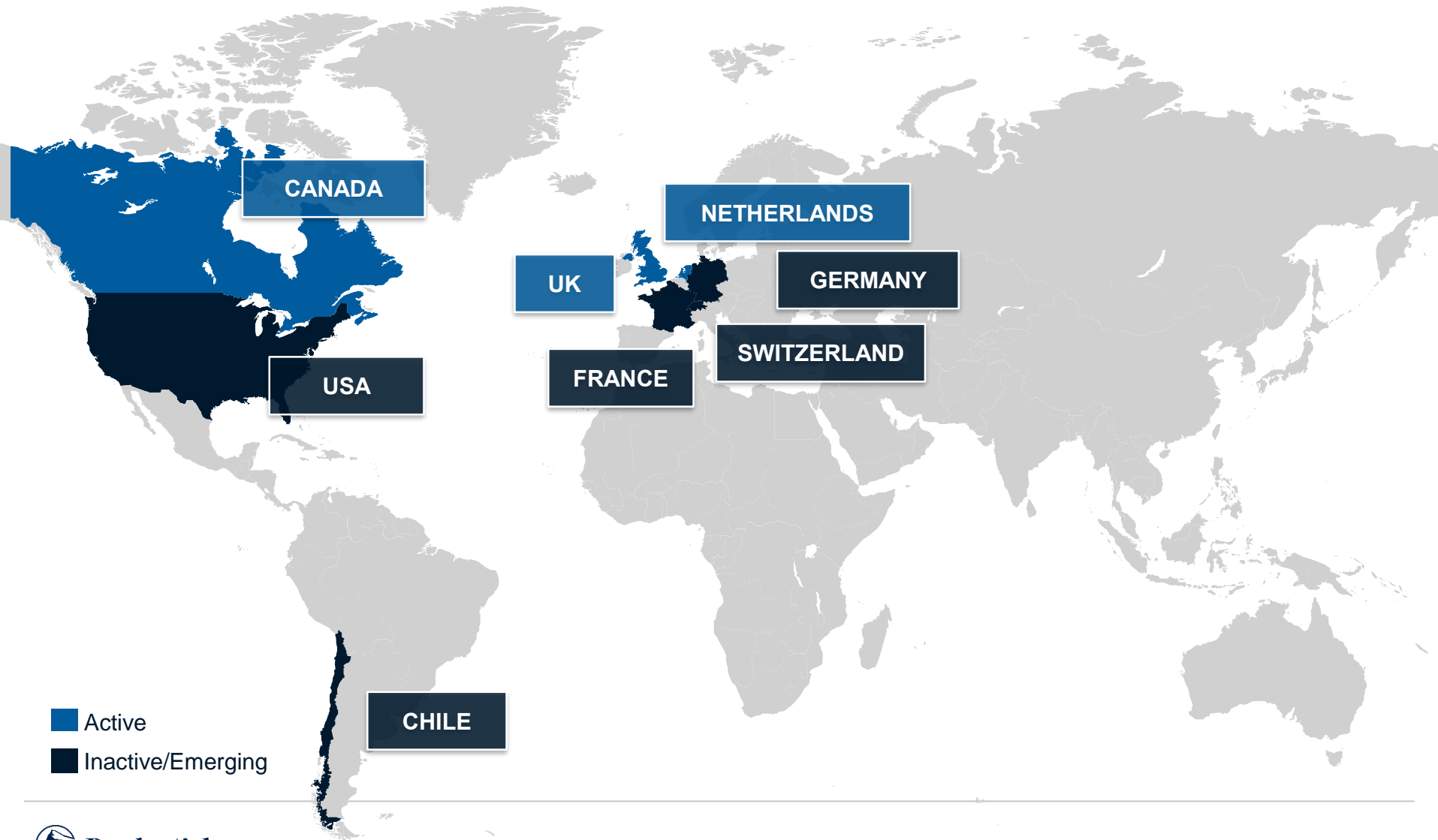


Source: Willis Towers Watson 2017 Global Pension Asset Study.

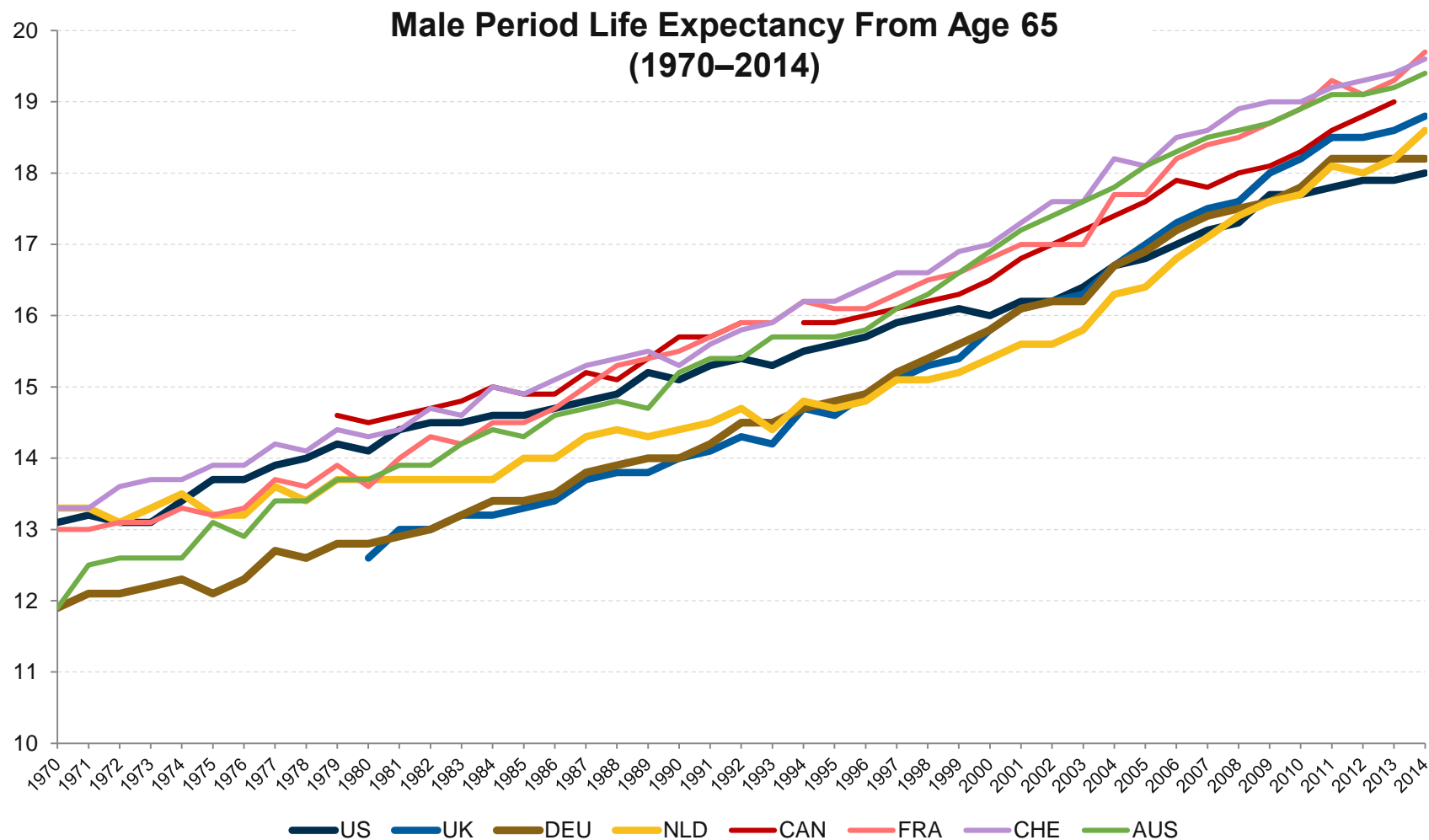
U.S. data from Investment Company Institute as of Dec. 31, 2016. U.K. from PPF, estimated in USD as of Dec. 31, 2016.

Nordics data from Organisation for Economic Co-operation and Development (OECD) as of 2015.

## A more recent wave of innovation has begun to help insurance companies in the UK, Netherlands and Canada manage their annuity risks



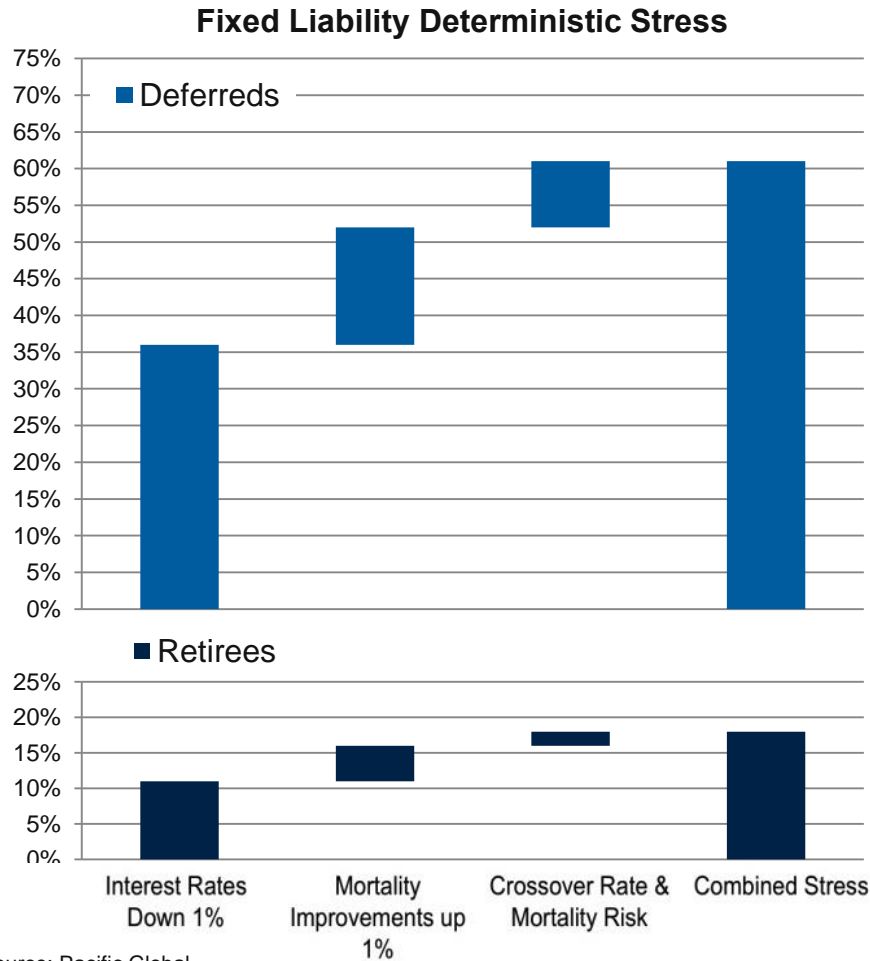
# Retired Lifetimes Have Increased Significantly



Source: OECD (2017), Life expectancy at 65 (indicator). doi: 10.1787/0e9a3f00-en (Accessed on 23 July 2017)

# Longevity Risk Should Be Part of the Pension Risk Equation Because Longer Life Increases Other Risks

**Deterministic Stress on Liabilities** (Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)



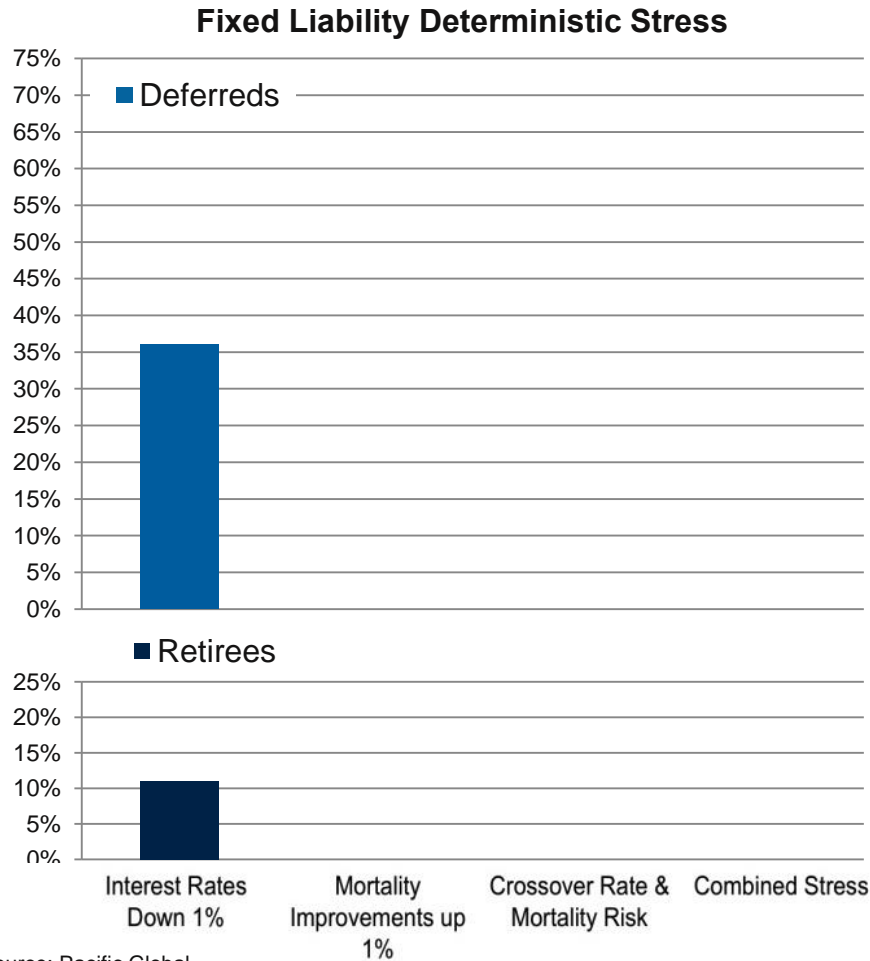
- If people **live longer** than expected, the **liability will grow**
- The larger liability will have a **longer duration**
- As a result, the pension fund will face **more interest rate risk** and **more duration risk**
- Pension funds with cost of living adjustments in the benefits have nearly double the exposure

Source: Pacific Global Advisors. For illustration only.



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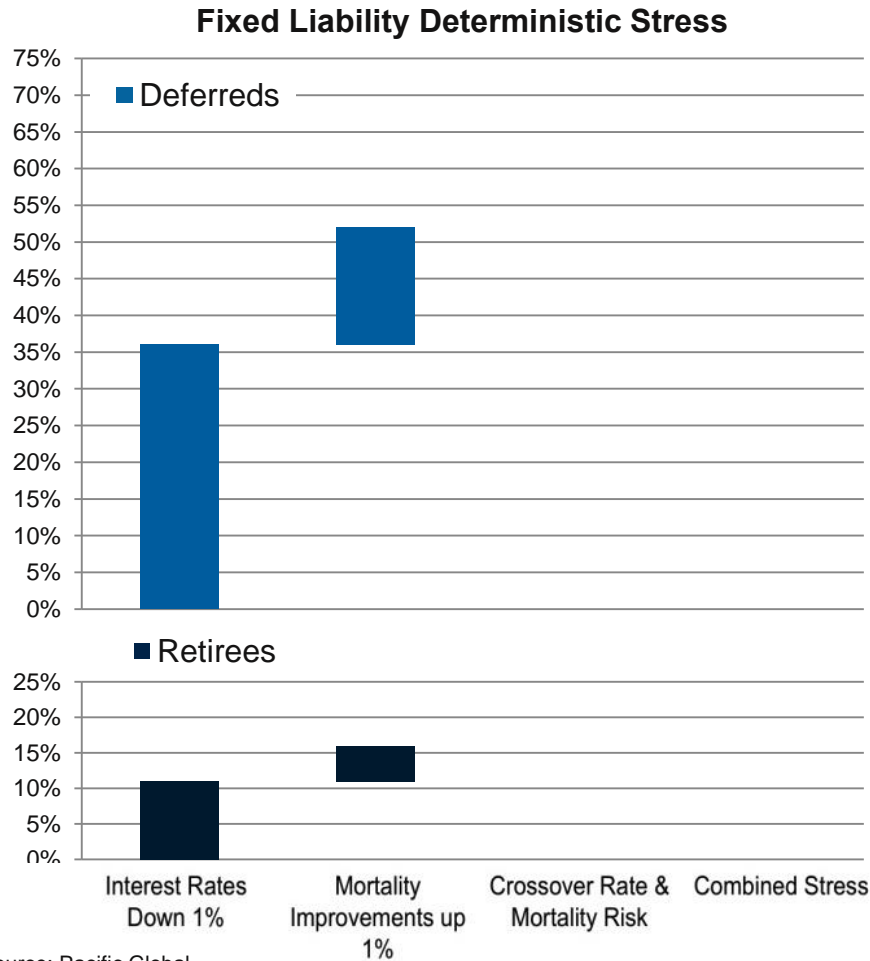


Source: Pacific Global Advisors. For illustration only.

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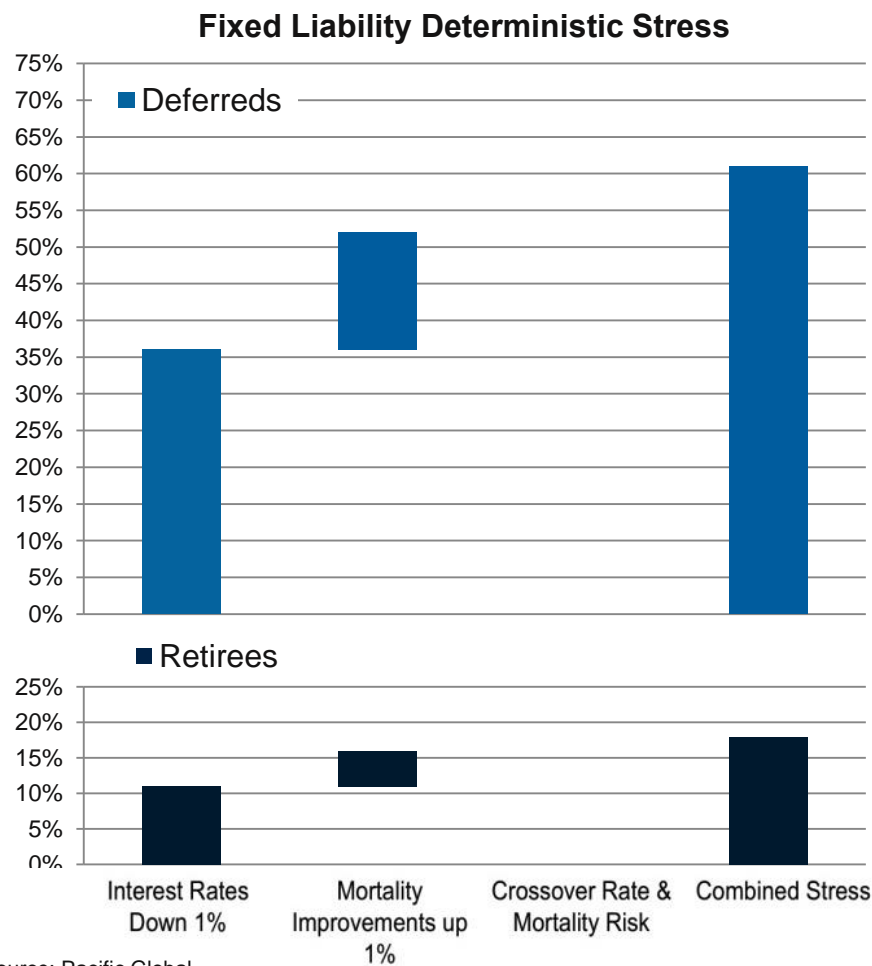


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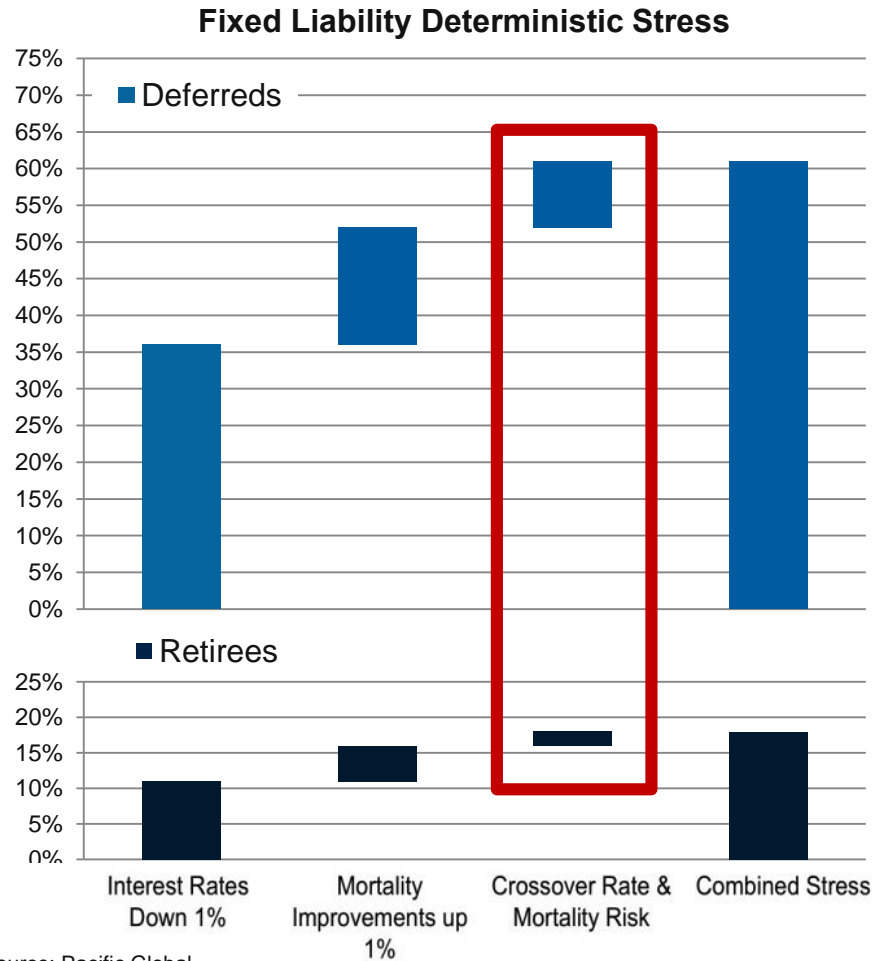


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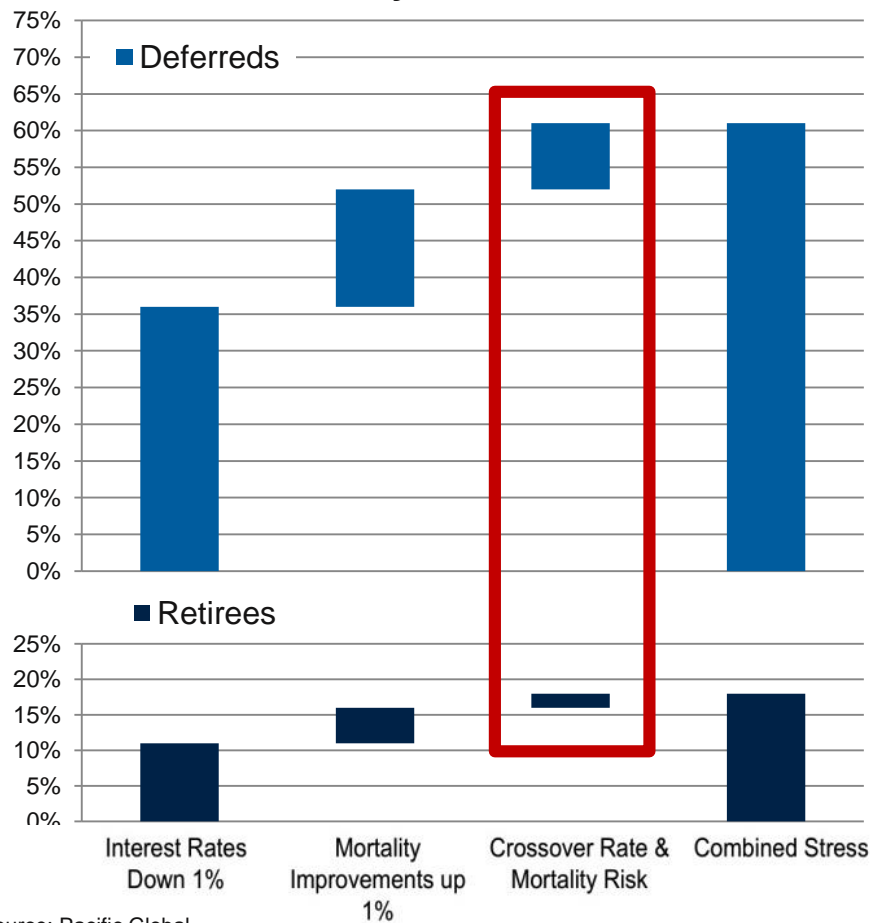
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Source: Pacific Global Advisors. For illustration only.

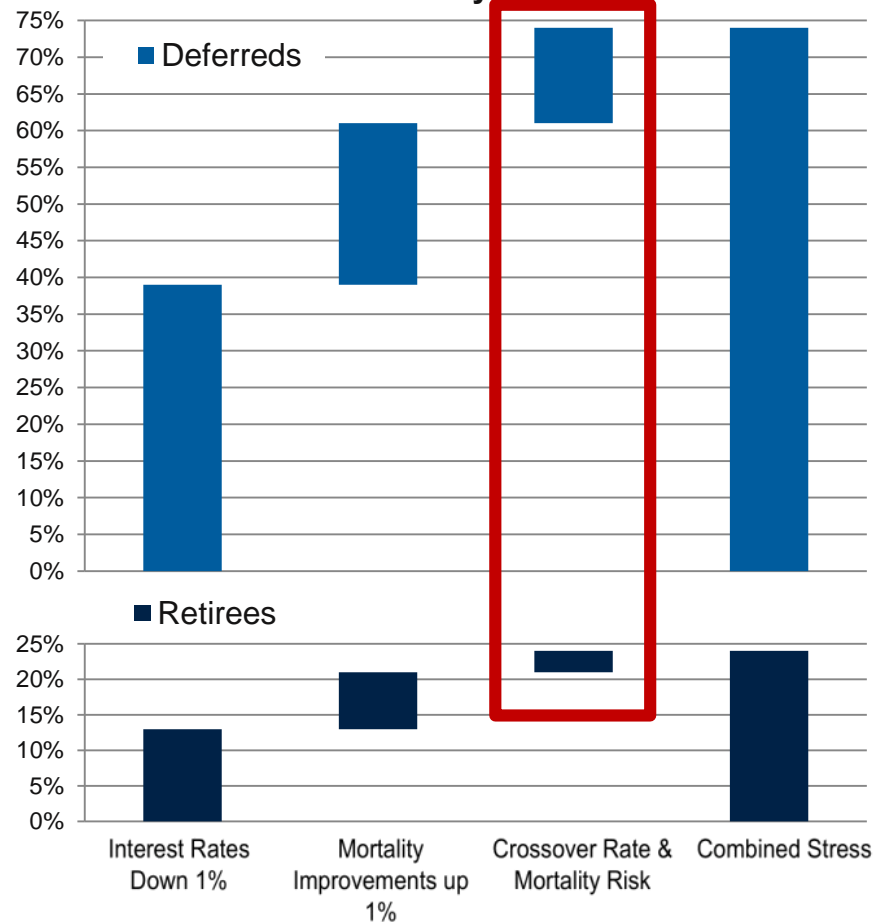
# Longevity Risk Should Be Part of the Pension Risk Equation Because Longer Life Increases Other Risks

**Deterministic Stress on Liabilities** (Impact of a 1% Decline in Rates and a 1% Increase in Mortality Improvements)

**Fixed Liability Deterministic Stress**



**Inflation Linked Liability Deterministic Stress**



Source: Pacific Global Advisors. For illustration only.



# Solutions For DB Pension Funds

**Reinsurance of Longevity Risk:** Innovative Solutions for Managing Pension and Longevity Risk

# Since 2007, There Have Been More Than \$300B in Pension Risk Transfer Transactions With Many Important Breakthroughs

## Buy-out

Complete settlement of plan liability

- ☒ Longevity Risk
- ☒ Investment Risk

## Buy-in

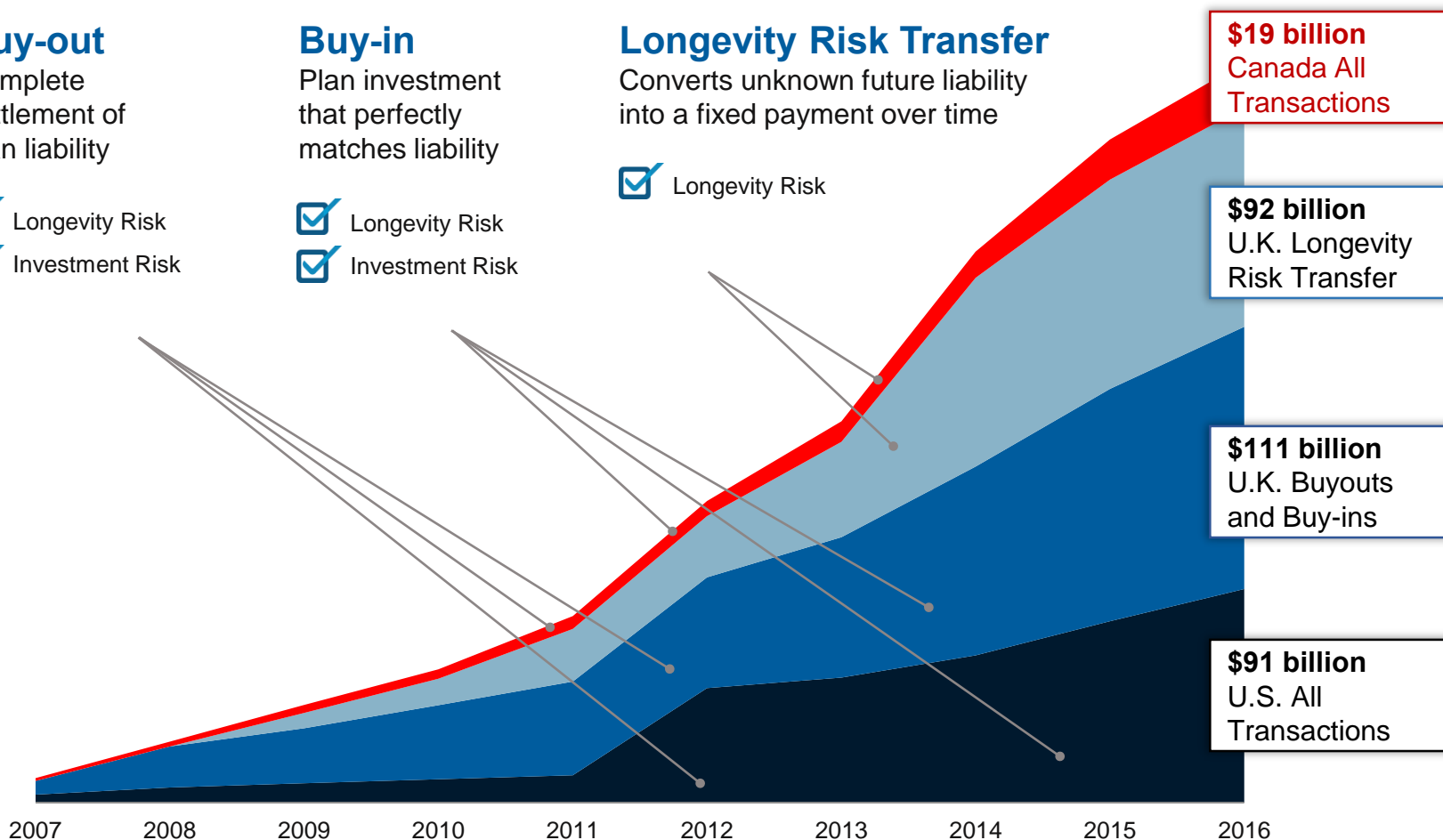
Plan investment that perfectly matches liability

- ☒ Longevity Risk
- ☒ Investment Risk

## Longevity Risk Transfer

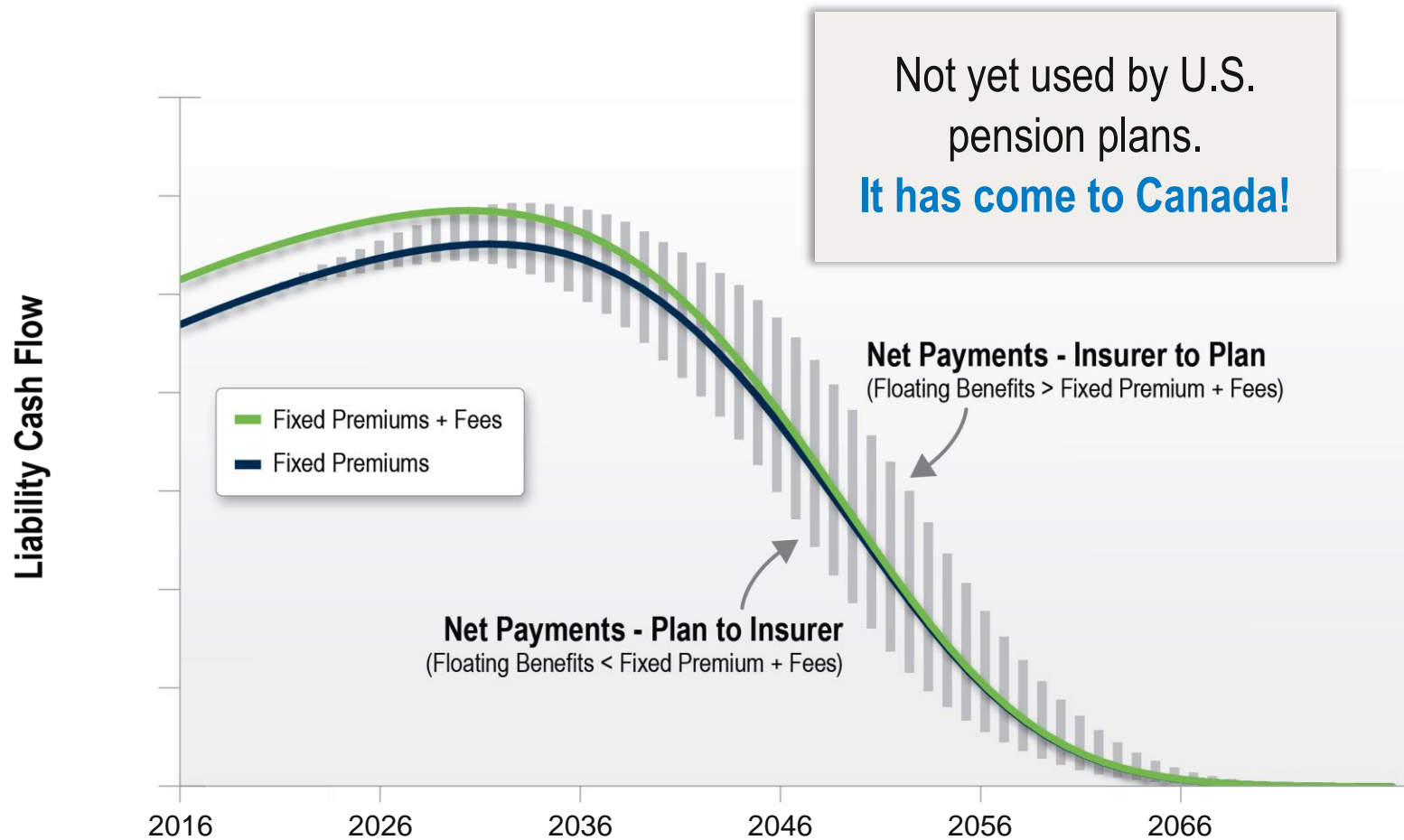
Converts unknown future liability into a fixed payment over time

- ☒ Longevity Risk



Data in USD. Sources: LCP, Hymans Robertson, LIMRA and Prudential analysis, as of December 31, 2016.

# Longevity Risk Transfer Converts an Unknown Future Liability Into a Fixed Payment Over Time

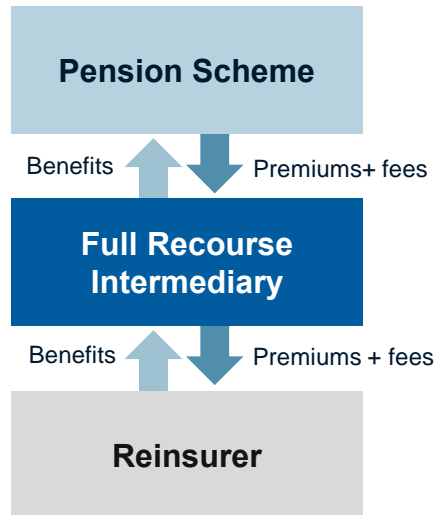


Source: Prudential. For illustration only.



# The Market Now Has a Complete Set of Longevity Risk Transfer Solutions For Jumbo Pension Funds

## Fully Intermediated



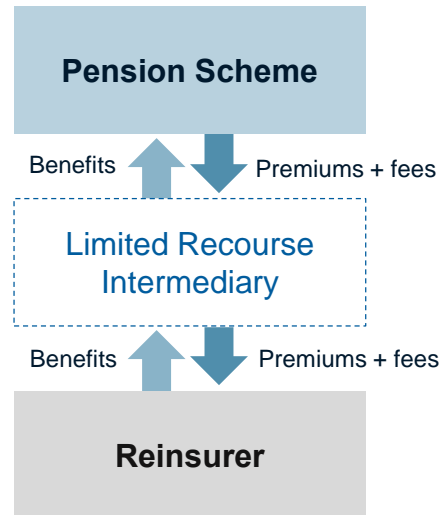
### Pros

Straight forward structure  
No need to run insurance company

### Cons

Risk of default by intermediary  
Maximizes cost  
Not scalable or reusable

## Limited Recourse



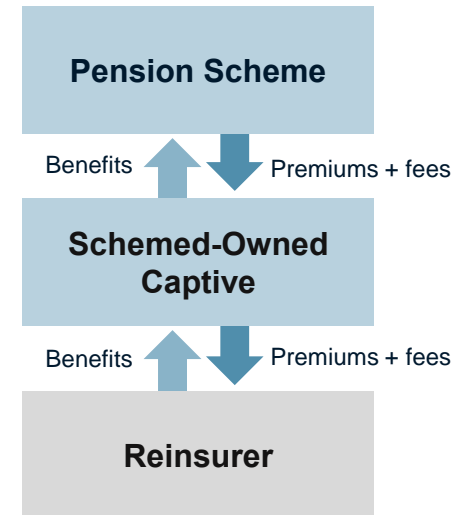
### Pros

Reasonable cost  
No need to run insurance company

### Cons

Risk of default by intermediary  
Not scalable or reusable  
Difficult to execute

## Captive



### Pros

Minimizes cost  
Maximizes control  
Scalable and reusable

### Cons

Need to run an insurance company

**What about small schemes for whom this is too much bother and expense?**

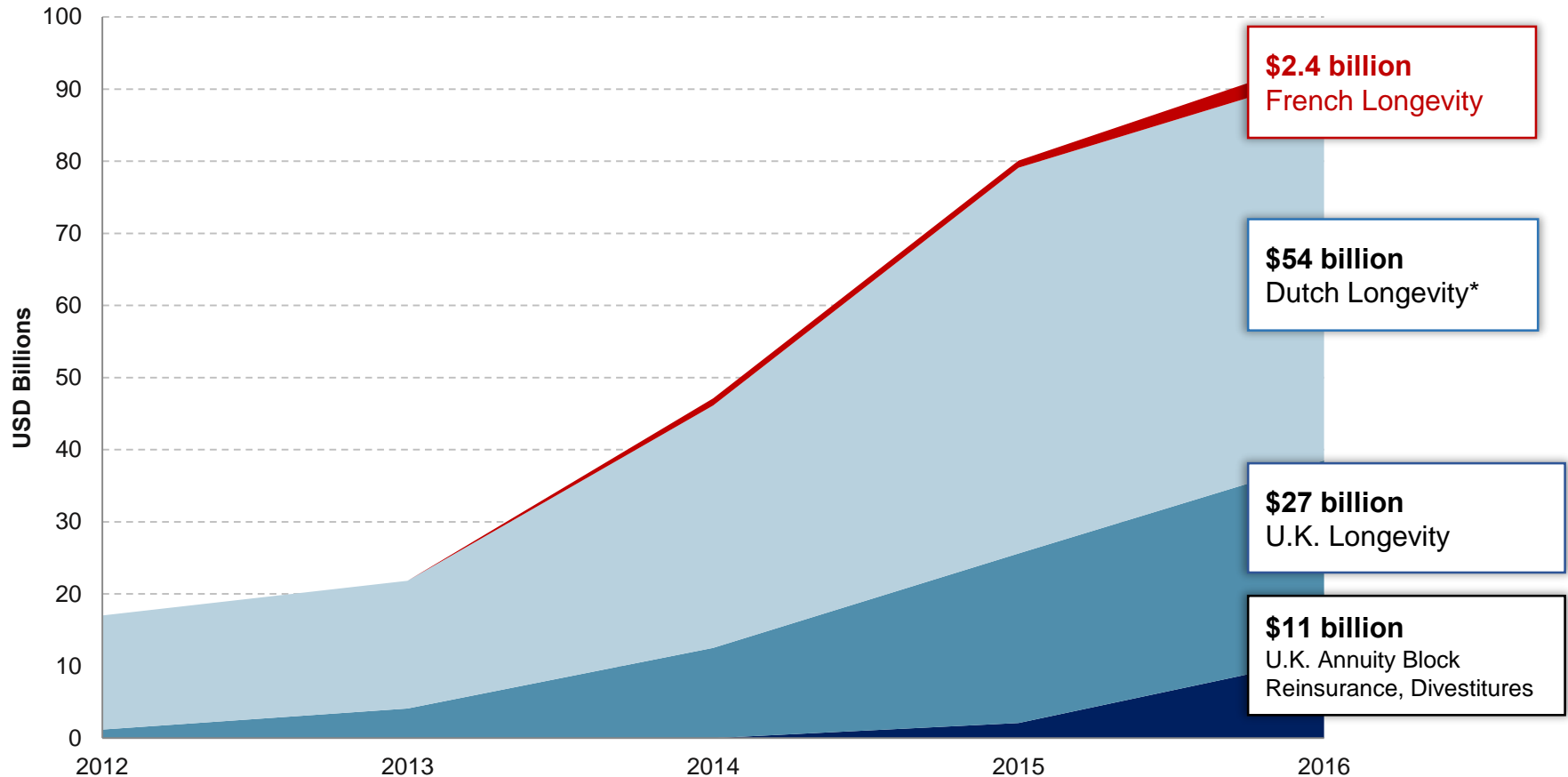


# Solutions For Insurers Managing Annuity Risks

**Reinsurance of Longevity Risk:** Innovative Solutions for Managing Pension and Longevity Risk

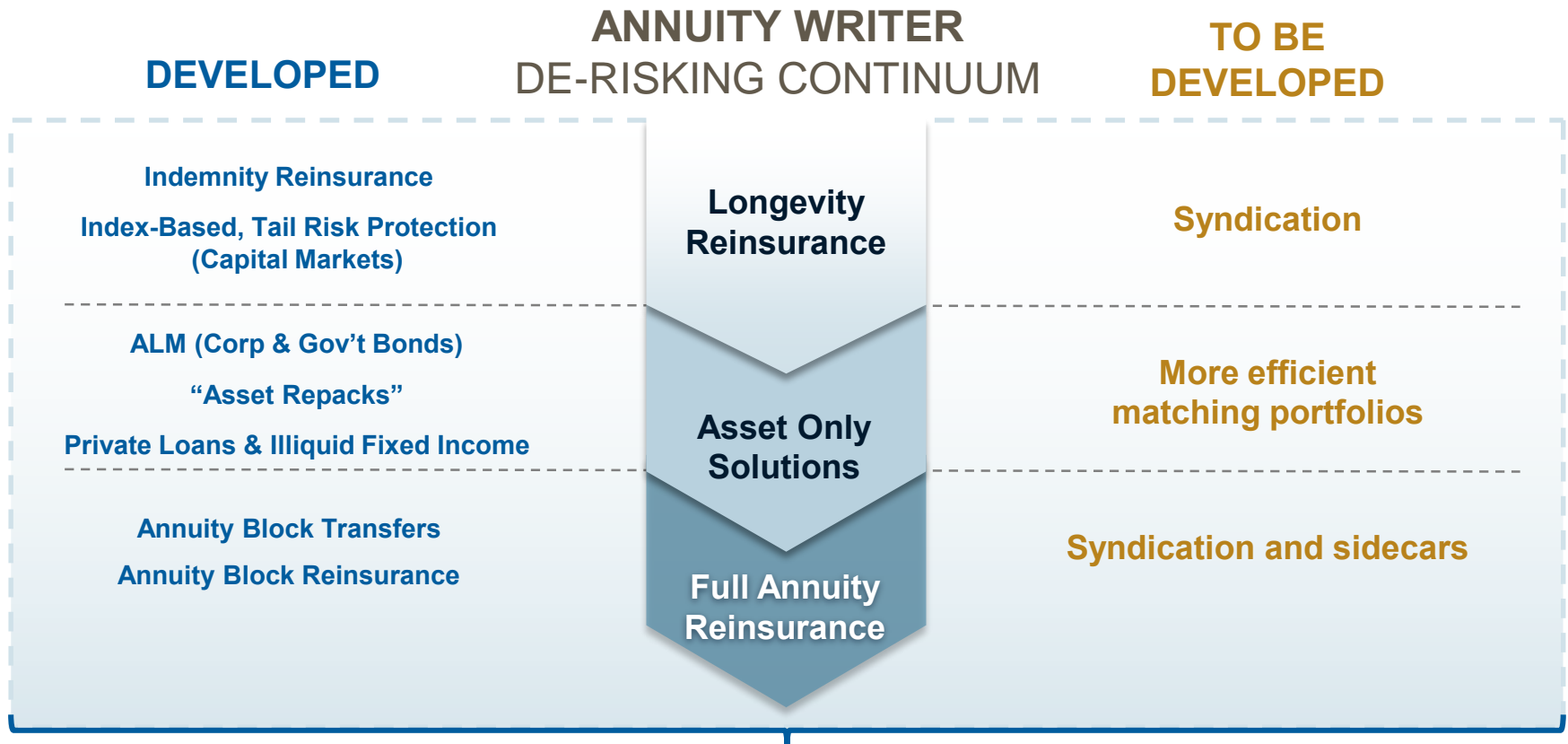
# Since 2012, There Have Been More Than \$90 Billion in Transactions for Insurers Managing Annuity Risks

Cumulative Transaction Totals by Country and Product



Source: Prudential analysis of disclosed transactions. Note: many transactions are not disclosed. Transactions have occurred in Germany, Canada and the US but transactions sizes were not disclosed. \*These deals provide tail risk protection against future longevity improvements.

# Solvency II and Changing Capital Regimes in Canada and Elsewhere Have Driven Insurer De-risking – But Capacity is Limited



## MORE COUNTRIES

If we get this right, insurers will be able to more cost-effectively offer annuities to individuals, even in post Solvency II Europe.

# A New Capital Framework in Canada Will Change the Way Capital For Longevity Risk Impacts Canadian Life Insurers' Balance Sheets

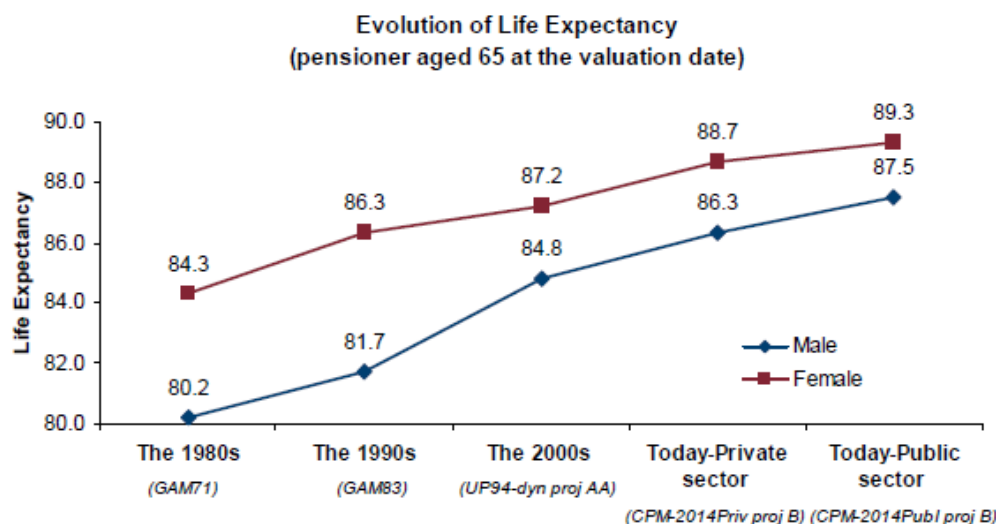
- The current Canadian capital requirements are based on the Minimum Continuing Capital and Surplus Requirements (MCCSR) framework, prescribed by the Office of Superintendent of Financial Institutions (OSFI).
- MCCSR will be replaced by the Life Insurance Capital Adequacy Test (LICAT) framework on January 1, 2018.
- Canadian Insurers will transition from a factor-based calculation to an economic-based model.

Capital Components	Existing MCCSR	New OSFI LICAT
Discount Rate for PV	CALM Valuation Interest Rate	5.3% fixed
C2 Longevity Capital	1% x notional amount, no covariance of diversification benefit	Base Down and Trend Up Capital shocks with 100% correlation
OSFI supervisory capital target	150% (Total Ratio)/105% (Tier 1 Ratio)	100% (Total Ratio)/70% (Core Ratio)

**LICAT will require more complex capital calculations and will lead Canadian insurers to adapt their hedging of longevity risk accordingly**

# Canada Now Has its Own Mortality Tables and an Increased Awareness of Longevity Risk

- The 2014 Canadian mortality study was the first ever Canadian-specific pension plan mortality study.
- New mortality tables for use by pension plans came into effect in 2015. They indicated a significant increase in longevity, contributing to a higher awareness of longevity risk.



Source: Information Bulletin, "Ground Breaking Study on Canadian Pensioner Mortality," Aon Hewitt, Feb 17, 2014. [http://www.aon.com/canada/attachments/thought-leadership/infobulletin/pub\\_mortality02172014.pdf](http://www.aon.com/canada/attachments/thought-leadership/infobulletin/pub_mortality02172014.pdf)

- Current tables forecast long-term rates of mortality improvement of 0.80%, which is lower than historical averages.

**Insurers and reinsurers are unlikely to price with improvements below historical averages. Convergence of these assumptions is likely to be a catalyst for growth and maturity in the Canadian pension risk transfer market.**



**Prudential**  
Bring Your Challenges<sup>®</sup>

# Q&A

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**Pension Risk Transfer**

Prudential Retirement<sup>®</sup>

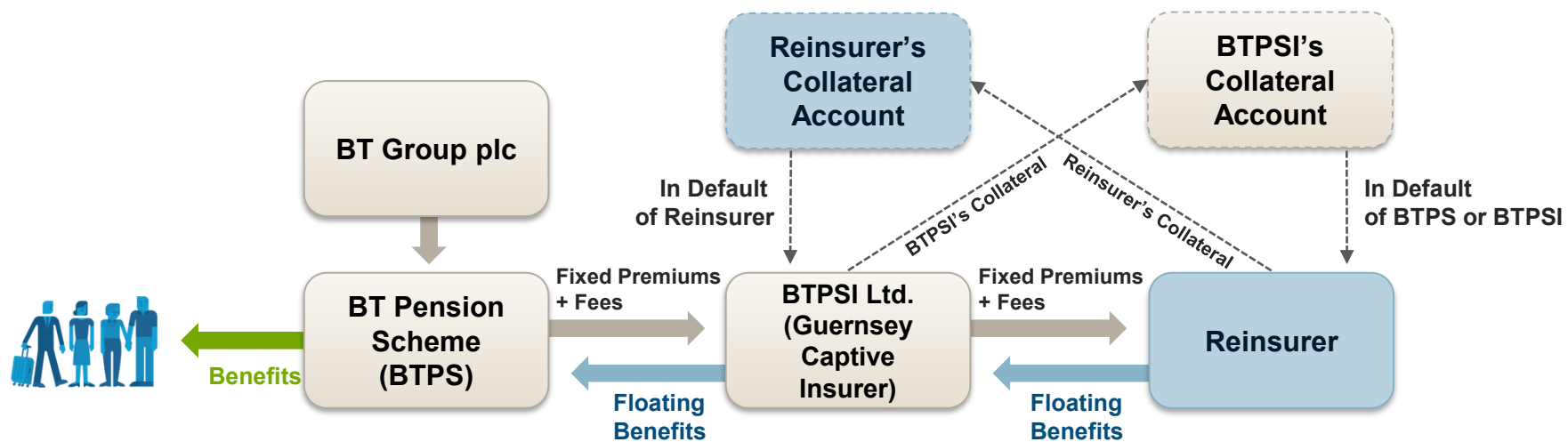
# Innovative Pension Risk Transfer Transactions Since 2014

Plan Sponsor	Insurer	Date	Amount	Country	Innovation
ICI	Legal & General	2014	\$4.9B	UK	Several transactions
	Prudential Plc.	2014	\$0.5B	UK	
	Legal & General	2015	\$0.7B	UK	
	Scottish Widows	2016	\$0.9B	UK	
	Legal & General	2016	\$1B	UK	
TRW	Undisclosed	-	-	CAN	Transacted in three countries
	Legal & General	2014	\$3.9B	UK	
	MetLife	2014	\$440M	US	
Philips	Pension Insurance Corp	2015	\$3.7B	UK	Transacted in two countries
	Prudential, Legal & General, OneAmerica	2015	\$1.1B	US	Split between three insurers
Kimberly-Clark	Prudential, MassMutual	2015	\$2.5B	US	Split between two insurers
JC Penney	Prudential	2015	-	US	Variable size
ASR	Legal & General	2015	\$220M	NLD	Created a pathway to Bermuda
2 undisclosed and unrelated indexed plans	SunLife	2015	\$530M	CAN	Coupled buy-ins
Undisclosed	Zurich, Pacific Life Re	2015	\$135M	UK	Opens smaller market for longevity risk transfer
MNOFP	Legal & General	2009	\$800M	UK	Three buy-ins converted to buy-out and longevity risk transfer with captive
	Legal & General	2010	\$155M	UK	
	Rothsay Life	2012	\$1B	UK	
	Rothsay Life, Legal & General	2014	\$2.2B	UK	
	Pacific Life Re	2015	\$2.3B	UK	

Source: Prudential analysis of publicly announced transactions.



# The BT Pension Scheme Completed the Largest and Most Innovative Longevity Risk Transfer in the Market



- Largest ever completed at £16 billion (\$27.7 billion)
- First to use an insurance captive owned by the pension fund
- Allows BTPS to immunize 25% of its longevity risk, combining a fixed and known future liability with the Scheme's own world-class asset management
- Allows BTPS to pay for its de-risking over time and shed an unrewarded risk
- Provides a proven approach for the world's largest pension funds to manage longevity risk

# U.K. Pension Scheme Longevity Risk Transfers Since 2009

Organization	Date	Approx. Value of Deal
Babcock	3Q 2009	£1.2bn
RSA Insurance	3Q 2009	£1.9bn
Berkshire	4Q 2009	£1bn
BMW	1Q 2010	£3bn
Pall	1Q 2011	£0.1bn
ITV	3Q 2011	£1.7bn
Rolls-Royce	4Q 2011	£3bn
British Airways	4Q 2011	£1.3bn
Pilkington	4Q 2011	£1bn
AkzoNobel	2Q 2012	£1.4bn
LV=	4Q 2012	£0.8bn
BAE Systems	1Q 2013	£3.2bn
Bentley	2Q 2013	£0.4bn
Carillion	4Q 2013	£1bn
Astra Zeneca	4Q 2013	£2.5bn
BAE Systems	4Q 2013	£1.7bn
Aviva	1Q 2014	£5bn
BT	2Q 2014	£16bn
PGL	3Q 2014	£0.9bn
MNOPF	4Q 2014	£1.5bn
Scottish Power	4Q 2014	£2bn

Organization	Date	Approx. Value of Deal
AXA UK	3Q 2015	£2.8bn
Heineken	3Q 2015	£2.4bn
RAC (2003) Pension Scheme	4Q 2015	£0.6bn
Unnamed	4Q 2015	£0.1bn
Pirelli	3Q 2016	£0.6bn
Electric Supply (Manweb)	3Q 2016	£1.0bn
Unnamed	4Q 2016	£0.05bn
Unnamed	4Q 2016	£0.9bn
Unnamed	1Q 2017	£0.3bn

## Structure

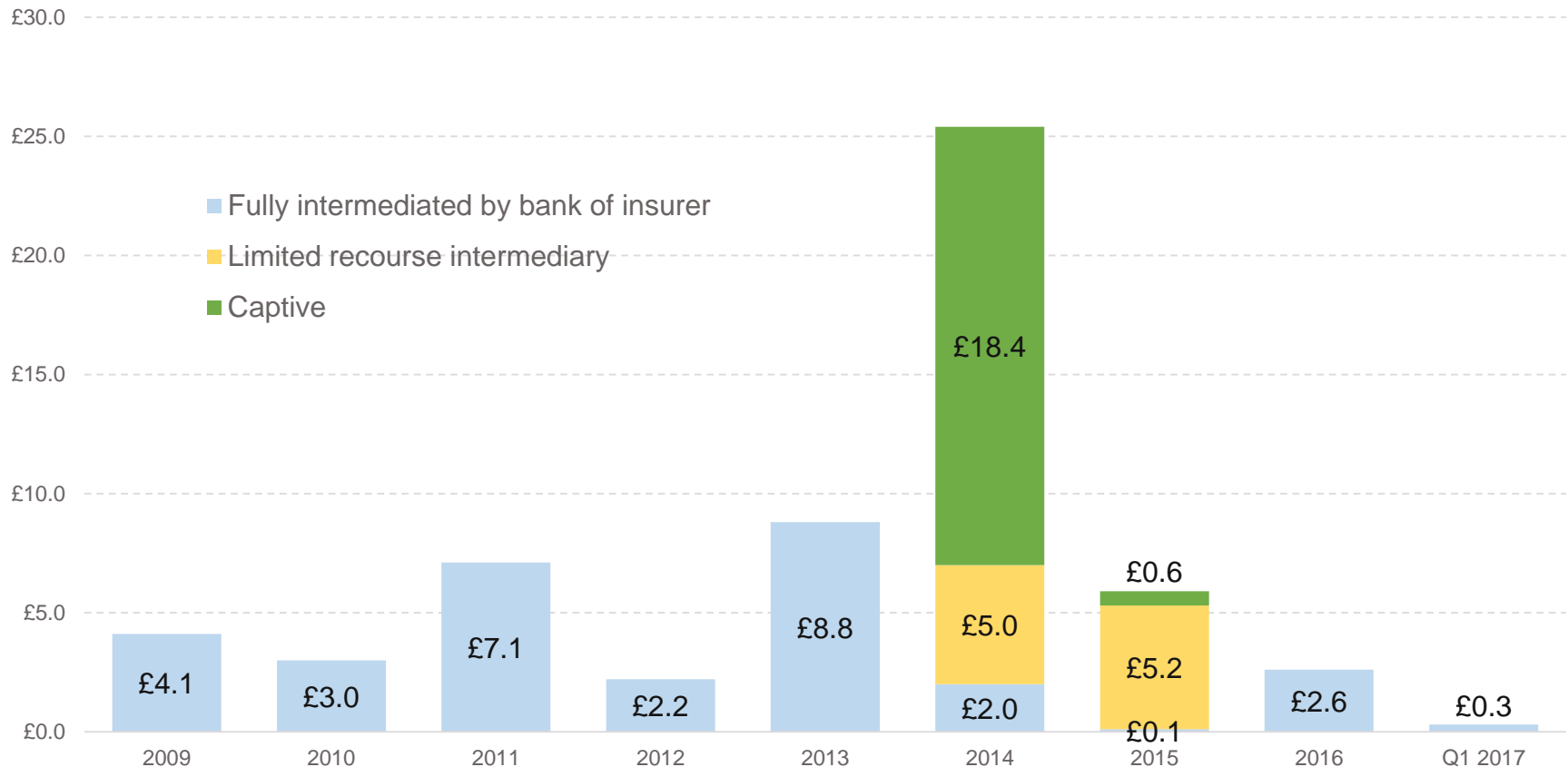
Fully intermediated  
by bank or insurer

Limited recourse  
intermediary

Captive

Source: Hymans Robertson, "Buy-outs, buy-ins and longevity hedging – H2 2016," as of March 2017.

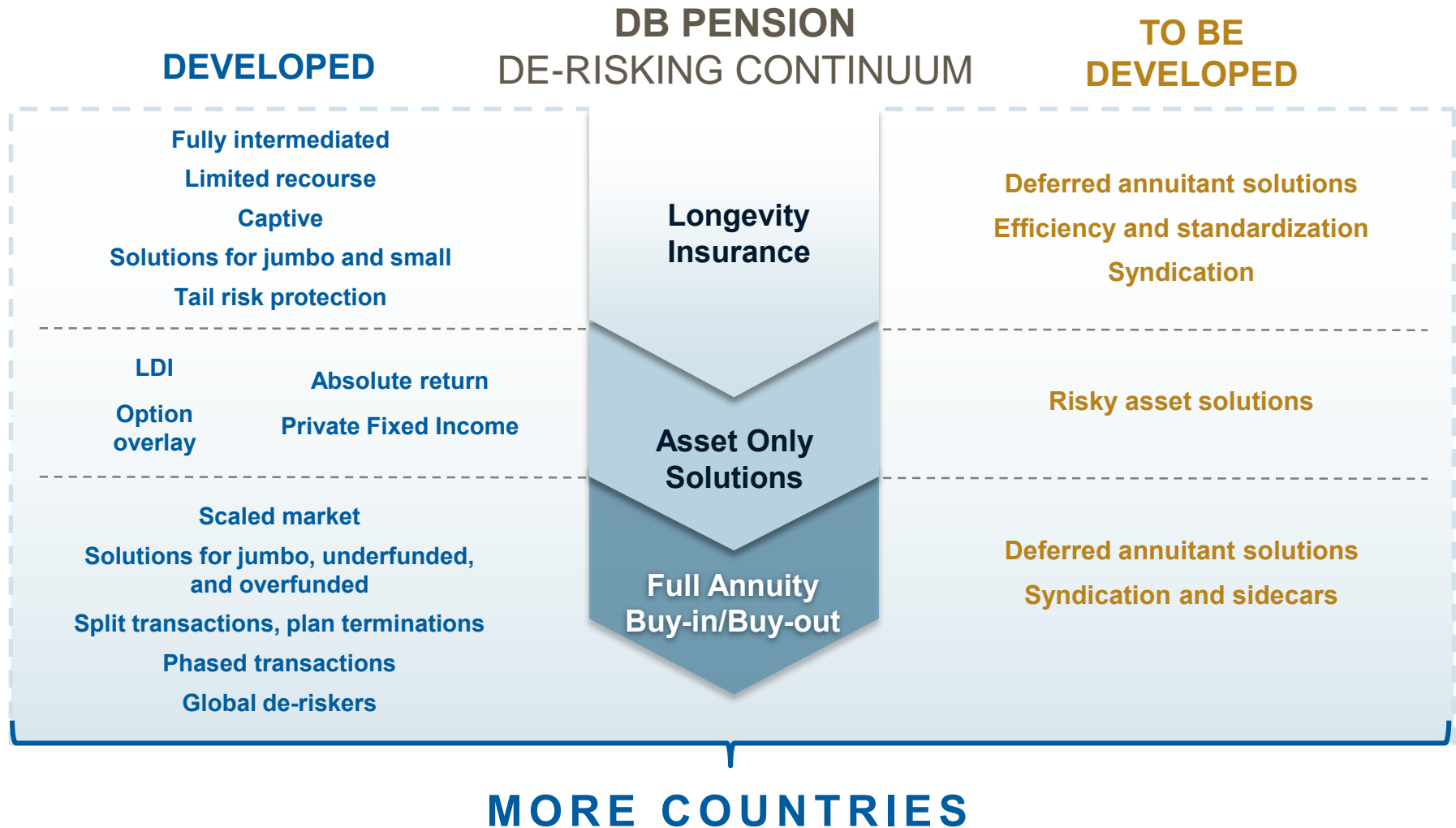
# U.K. Pension Scheme Longevity Risk Transfers Since 2009



**Since 2014, the market has been dominated by captives and limited recourse intermediaries**

Source: Hyman Robertson, "Buy-outs, buy-ins and longevity hedging – H2 2016," as of March 2017.

# Through a Decade of Innovation We Have Developed Many Solutions, But Our Work is Not Yet Complete



## Longevity Risk Transfer in Other Markets

Cedant	Risk Taker	Country	Size	Date
<b>AEGON</b>	Capital Markets (thru Deutsche Bank)	NLD	EUR 12b	Feb. 2012
<b>AEGON</b>	Capital Markets and SCOR (thru Société Générale)	NLD	EUR 1.4b	Dec. 2013
<b>Delta Lloyd</b>	RGA	NLD	EUR 12b	Aug. 2014
<b>AXA France</b>	Hannover Re	FRA	EUR 750m	Aug. 2014
<b>Delta Lloyd</b>	RGA	NLD	EUR 12b	June 2015
<b>AEGON</b>	Canada Life Re	NLD	EUR 6b	July 2015
<b>AXA France</b>	RGA	FRA	EUR 1.3b	Nov. 2016

These Dutch transactions provide “out-of-the-money” tail risk protection against future longevity improvements.

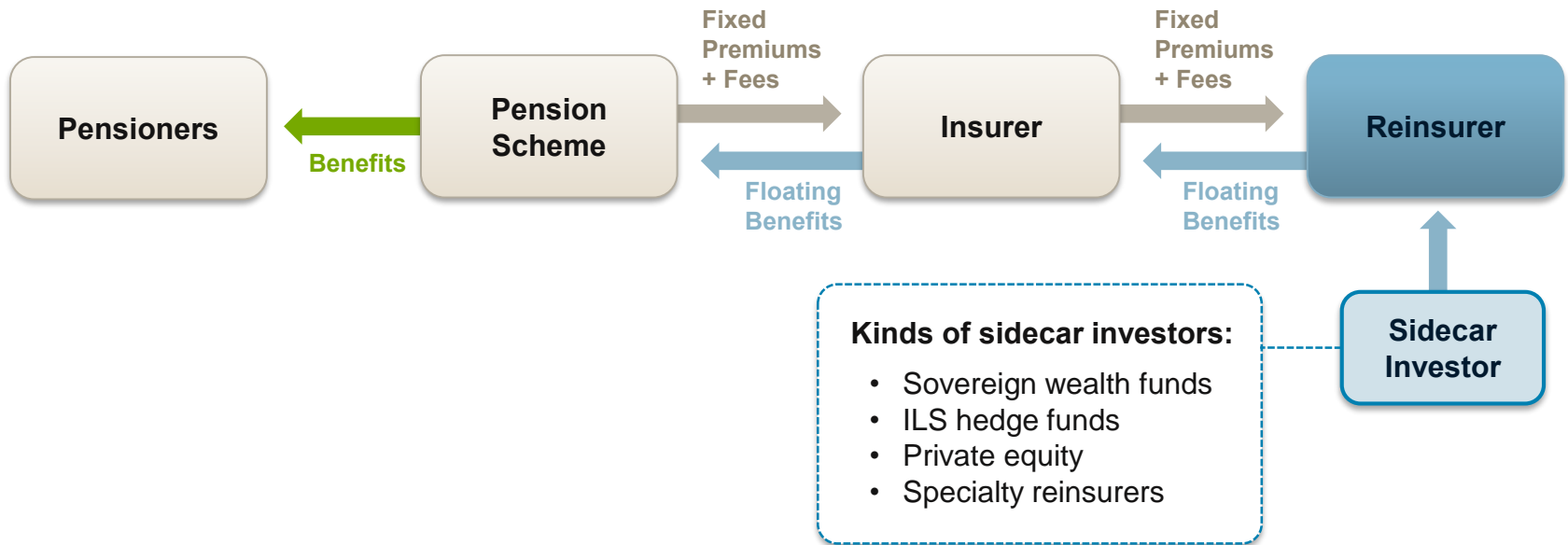
Source: [http://www.artemis.bm/library/longevity\\_swaps\\_risk\\_transfers.html](http://www.artemis.bm/library/longevity_swaps_risk_transfers.html). Updated July 2017.

# Capital Market Solutions Have Been Slow to Materialize... Sidecar Investing May Be Preferred

## Reinsurance sidecar

A financial structure established to allow investors (often external or third-party) to take on the risk and benefit from the return of specific books of insurance or reinsurance business.

Typically set up by existing re/insurers who are looking to either partner with another source of capital or set up an entity to enable them to accept capital from third-party investors.



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## **Life & Annuity Reinsurance Seminar 2017**

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Offshore Reinsurance

Donald D. Solow, FSA, MAAA



# Offshore Reinsurance



- Definition
  - Reinsurance ceded to a non-US/Canadian reinsurer, generally one domiciled in a jurisdiction having a different regulatory and/or tax regime
  - Examples include Bermuda, Cayman Islands, Barbados, Ireland
- Not to be confused with “captives”

# Advantages for the Reinsurer



- Ease of setting up
- Flexible capital requirements based on business plan rather than rigid rules
- Accounting under GAAP or IAS
- Potential for lower overall tax burden

# Comparison (US vs. Offshore)



	Domestic	Offshore
Set-up time	Months	Weeks
Capital Requirements	Rigid (NAIC RBC formula)	Flexible (based on business plan)
Accounting	NAIC statutory	Generally IAS, US GAAP, Canadian GAAP, or other recognized system (consistently applied)
Local Tax Burden	Corporate tax rate	Little or no local burden

# Potential Benefits for Ceding Insurers

- Possibility for better pricing
  - Capital efficiencies
  - Tax efficiencies
  - Global investment strategies
- Generally collateralized
  - Trust account
  - Letter of credit

# Example

- Assume:
  - Spread product with 2% net spread
  - Domestic tax rate 35%
  - Offshore reinsurer reimburses 1% FET
  - 5-year amortization of FET \*\*
  - Domestic capital requirement of 10%
  - Offshore requirement 8%
  - \$100 million volume
    - \*\* Annual FET expense = \$1 million divided by 5 years

## Example (cont'd)

- Missing from the analysis
  - Cost of trust account or
  - Cost of letter of credit
  - Local taxes in offshore domicile (if any)
  - Cost of capital for initial ceding commissions (if any)
  - Cost of capital for over-collateralization (e.g. holding 102% of stat. reserves)

# Example (cont'd)

	Domestic	Offshore
Gain P/T	\$2.00	\$2.00
Taxes	0.70	0.20
Gain A/T	1.30	1.80
Req'd Capital	10%	8%
A/T R.O.C.	13.0%	22.5%

# Collateral



- Offshore reinsurers will generally have to post collateral for ceding insurer to take reserve credit (exception: “Certified” reinsurers)
- Trust accounts with qualified institution
- Letters of credit from approved banks
- Funds held by ceding insurer



# Certified Reinsurers



- Historically, 100% collateral requirement imposed on cessions to unauthorized reinsurers
- Revised credit for reinsurance model act reduced collateral requirements for certain reinsurers
- Must be in a qualified jurisdiction (Bermuda, France, Germany, Ireland, Japan, Switzerland, UK)
- Reduction in collateral based on financial strength rating (e.g. Moody's Aaa 0% collateral; Aa 10%, A1 or A2 20%; A3 50%; Baa 75%; lower 100%)

# Additional Considerations



- Operational issues for the ceding insurer
  - Payment of Federal excise tax (if applicable)
  - Monitoring of the collateral
    - Amounts
    - Timing of true-ups
  - Travel to negotiate deal terms

# SOCIETY OF ACTUARIES

## Reinsurance Arbitration

**HUGH MCCORMICK**

**MICHELE JACOBSON**

**DON SOLOW**

Date: August 14-15, 2017



# SOCIETY OF ACTUARIES

## Antitrust Compliance Guidelines

Active participation in the Society of Actuaries is an important aspect of membership. While the positive contributions of professional societies and associations are well-recognized and encouraged, association activities are vulnerable to close antitrust scrutiny. By their very nature, associations bring together industry competitors and other market participants.

The United States antitrust laws aim to protect consumers by preserving the free economy and prohibiting anti-competitive business practices; they promote competition. There are both state and federal antitrust laws, although state antitrust laws closely follow federal law. The Sherman Act, is the primary U.S. antitrust law pertaining to association activities. The Sherman Act prohibits every contract, combination or conspiracy that places an unreasonable restraint on trade. There are, however, some activities that are illegal under all circumstances, such as price fixing, market allocation and collusive bidding.

There is no safe harbor under the antitrust law for professional association activities. Therefore, association meeting participants should refrain from discussing any activity that could potentially be construed as having an anti-competitive effect. Discussions relating to product or service pricing, market allocations, membership restrictions, product standardization or other conditions on trade could arguably be perceived as a restraint on trade and may expose the SOA and its members to antitrust enforcement procedures.

While participating in all SOA in person meetings, webinars, teleconferences or side discussions, you should avoid discussing competitively sensitive information with competitors and follow these guidelines:

- **Do not** discuss prices for services or products or anything else that might affect prices
- **Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- **Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- **Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
- **Do** alert SOA staff and/or legal counsel to any concerning discussions
- **Do** consult with legal counsel before raising any matter or making a statement that may involve competitively sensitive information.

Adherence to these guidelines involves not only avoidance of antitrust violations, but avoidance of behavior which might be so construed. These guidelines only provide an overview of prohibited activities. SOA legal counsel reviews meeting agenda and materials as deemed appropriate and any discussion that departs from the formal agenda should be scrutinized carefully. Antitrust compliance is everyone's responsibility; however, please seek legal counsel if you have any questions or concerns.

## Presentation Disclaimer

*Presentations are intended for educational purposes only and do not replace independent professional judgment. Statements of fact and opinions expressed are those of the participants individually and, unless expressly stated to the contrary, are not the opinion or position of the Society of Actuaries, its cosponsors or its committees. The Society of Actuaries does not endorse or approve, and assumes no responsibility for, the content, accuracy or completeness of the information presented. Attendees should note that the sessions are audio-recorded and may be published in various media, including print, audio and video formats without further notice.*

# Dramatis Personae

- The Parties:
  - **Gotham Life Insurance Company** ("the life insurer that never sleeps")
  - **Big Apple Reinsurance Company** ("if your underwriting can make it here, it can make it anywhere")
- Arbitrator:
  - **Don Solow**, President, Vista Life & Casualty Reinsurance Company
- Counsel:
  - **Michele Jacobson**, Partner, Stroock & Stroock & Lavan LLP, representing **Gotham Life**
  - **Hugh McCormick**, Partner, Duane Morris LLP, representing **Big Apple Re**

# The Beginning--2004

- Gotham Life approaches Big Apple Re seeking a quote for reinsurance on its UL business, proposing a 80% quota share.
  - It seeks automatic binding limits of \$10 million per life.
  - It provides the following pertinent information:
    - Gotham Life historically has retained the majority of its UL business but cedes some facultative risk excess of its corporate retention limits (including to Big Apple Re).
    - Gotham Life states that the reason for seeking reinsurance is to “take advantage of the favorable reinsurance market.”

# The Beginning

- Four underwriting classes:
  - Preferred Plus – 20%
  - Preferred – 30%
  - Standard – 40%
  - Substandard – 10%.
- Gotham Life uses ABC Manual to underwrite.
  - Most recent mortality study shows similar historical distribution by underwriting class.
  - Big Apple Re does new business audit, including Gotham Life's systems. Big Apple Re finds Gotham Life to be materially in compliance with ABC Manual.
  - Gotham Life states that it expects new business performance to be consistent with existing business.



# The Beginning

- Big Apple Re provides a quote for YRT reinsurance on up to a 80% share of the business, with banded rates as a % of an industry table for each class.
- Gotham Life accepts Big Apple Re's quote.
  - Gotham Life provides draft Treaty.
  - Big Apple Re provides comments, including list of required data elements for reporting.
  - Parties execute treaty, to be effective 1/1/2005.

# Change in Underwriting Manual

- Gotham Life's agent force advises that ABC Manual is "overly conservative," suggest switch to XYZ Manual to be more competitive.
  - Gotham Life compares ABC Manual to XYZ Manual.
  - "Very similar in approach."
  - Leaves more flexibility to underwriters in rating risks.
  - It concludes that XYZ Manual will allow Gotham Life "to be more competitive in the marketplace without materially compromising underwriting quality."
- Gotham Life decides to switch to XYZ Manual effective 1/1/2007.
  - It does not inform Big Apple Re of the switch.
  - It does not believe change would have a material impact on the business.

# Change in Underwriting Manual

- In 2009 Big Apple Re does second new business audit, learns of switch to XYZ Manual.
  - Gotham Life advises that switch “has enabled us to compete more effectively without compromising our standards.”
  - Big Apple Re finds Gotham Life to be materially in compliance with XYZ Manual, tells Gotham Life that it will be “monitoring the situation closely.”
- By 2010 actual distribution varies significantly from business at inception:
  - Preferred Plus – 20% to 30%
  - Preferred – 30% to 40%
  - Standard – 40% to 25%
  - Substandard – 10% to 5%.

# Contestable Claim

- In 2010 Gotham Life issued \$5 million policy on life of Amelia Earhart.
  - Policy is within auto-binding limits so ceded to Treaty automatically.
  - Policy application answered “no” to question regarding whether Amelia had pilot’s license or plans to fly private aircraft.
  - Amelia flew private aircraft periodically.
  - Amelia’s insurance agent was family friend and knew reason for policy purchase, yet still checked “no” on application.
  - Had “yes” been checked, there would have been significant additional premium and a rider, as base policy contained standard exclusion for death via piloting private aircraft.

# Contestable Claim

- In 2011 Amelia dies while flying private plane, within contestable period of policy.
  - Following investigation of Claim, Gotham Life decided not to contest coverage even though policy was within the contestable period.
  - No evidence Amelia was personally responsible for misrepresentation.
  - Gotham Life didn't want bad publicity it feared would result from contesting coverage.
  - Gotham Life did not consult with Big Apple Re prior to paying claim, and simply submitted the usual claim paperwork.

# Problems Emerge

- In 2012 the issues begin to come to light.
  - After a small profit/break-even in the first few years, the Treaty's performance steadily turns negative.
- In 2013 Big Apple Re conducts an audit.
- Determines that business mix differs significantly from that at inception.
  - Primary reasons for change in mix of business was switch from ABC Manual to XYZ Manual, and aggressive marketing.
    - Some business previously classified as "Preferred" now was able to be classified as "Preferred Plus."
    - Some business previously classified as "Substandard" now was able to be classified as "Standard."
  - As part of audit, Big Apple Re reviews claims files for all claims for which Big Apple Re's share is \$1 million or more.
    - Big Apple Re's share of the Amelia claim = \$4 million (80% quota share of claim).

# Dispute Arises

- Big Apple Re terminates the Treaty for new business effective 1/1/2014.
- Big Apple Re demands that Gotham Life:
  - Pay additional of premium from treaty inception, plus interest, based on changes in distribution of business by classification.
  - Refund \$4 million paid for the claim within the contestable period.
- In 2015 the parties have numerous discussions in an effort to resolve their differences.

# Arbitration

- In 2016 Gotham Life demands arbitration, seeking:
  - Declaration that Big Apple Re is not owed additional premiums based on change in underwriting manual.
  - Declaration that Gotham Life is not obligated to contest every death claim, and thus Amelia Earhart claim is covered by reinsurance under the “follow the fortunes” provisions of the treaty.
- Big Apple Re counterclaims, seeking:
  - Rescission of the Treaty effective January 1, 2007 for Gotham Life’s change in the manual.
  - Alternatively, repricing of the Treaty from inception based on Gotham Life’s materially misleading representation about the underwriting class distribution of the business to be reinsured (alleged to be an additional 20% of total premium), plus interest.
  - Reimbursement of \$4 million previously paid for Amelia Earhart claim that Gotham Life should have contested.



# Results of Discovery

- During discovery in the arbitration, the following additional facts are revealed:
  - The statute of limitations is five years from the time each party had the right to make a claim against the other.
  - The persons at both parties who negotiated the Treaty are not available, so there is no additional evidence of what was discussed during placement.
  - Big Apple Re wrote other business that was underwritten using the XYZ Manual.
    - There is no consistent pattern of Big Apple Re charging higher rates for business written using the XYZ Manual.
  - The parties' experts disagree about the impact of the change in underwriting class business mix.
  - Big Apple Re's expert says that, based on Big Apple Re's pricing methodology, Big Apple Re would have quoted rates 20% higher had Big Apple Re used the distribution percentages that actually were ceded.
  - Gotham Life's expert says that competitive pressure would have kept Big Apple Re's rates the same even had the distribution been different.

# *Treaty Clauses*

- Article I – Definitions: “We,” “Us” and “Our” refers to Gotham Life. “You” and “Your” refers to Big Apple Re.
- Article IV – Reinsurance Premiums: The premium rates for life insurance and other benefits reinsured are set forth in the schedules in Exhibit II. The rates will be applied to the net amount at risk.
- Article VII – Reporting: Within 30 days following the close of each calendar quarter, We agree to provide You with complete and accurate data and reports in the form specified in Exhibit II. We will provide You with notice of material changes to (i) Our Underwriting Guidelines, (ii) Our Standard Claims Guidelines and Practices, and (iii) Our Policy form or product specifications.

# *Treaty Clauses*

- Article X – Contestable Claims: We will notify You of Our intent to contest insurance reinsured under this Agreement or to assert defenses to a claim for such insurance. If the contest results in the reduction of Our liability, You will share in this reduction. If You decline to participate in the contest, You must pay Us the full amount of Your share of the reinsurance, and You will not share in any subsequent reduction in liability.

# Treaty Clauses

- Article XIV – Arbitration: This Agreement shall be considered an honorable undertaking, and the arbitrators shall consider the customs and practices of the life insurance and life reinsurance industry, including the principles that the parties will conduct their relationship based on utmost good faith and that the Big Apple Re will follow the fortunes of the Gotham Life, in reaching a result.
- Article XXI – Error and Omissions: If there is an unintentional oversight or misunderstanding in the administration of this Agreement, whether by Us or by You, it must be corrected promptly after the oversight or misunderstanding is first discovered. Both parties will be restored, to the extent possible, to the position each would have occupied had the oversight or misunderstanding not occurred.

## **Questions for Audience**

**Q: Is Big Apple Re entitled to rescind the Treaty effective 1/1/2007 based on Gotham Life's switch to the XYZ Manual?**

- Yes, in full
- Yes, in part
- No
- Another remedy is warranted

## **Questions for Audience**

**Q: Is Gotham Life required to pay additional premiums based on distribution of the business to be reinsured?**

- Yes, in full
- Yes, in part
- No
- Another remedy is warranted

## **Questions for Audience**

**Q: Is Gotham Life required to pay additional premiums based on different underwriting?**

- Yes, in full
- Yes, in part
- No
- Another remedy is warranted

## **Questions for Audience**

**Q: Is Big Apple Re required to cover the Amelia Earhart policy?**

- Yes, in full
- Yes, in part
- No
- Another remedy is warranted



