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The Reinsurance Section Presents

Life & Annuity Reinsurance Seminar

August 29, 2018 | Marriott Marquis Washington D.C. | Washington, D.C.

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Life and Annuity Reinsurance Seminar

OVERVIEW OF REINSURANCE AND MARKET

Mark Costello, FSA, MAAA

(created by Jeff Katz, FSA, MAAA)

August 27, 2018

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Professional Development

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Life Reinsurance Introduction

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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

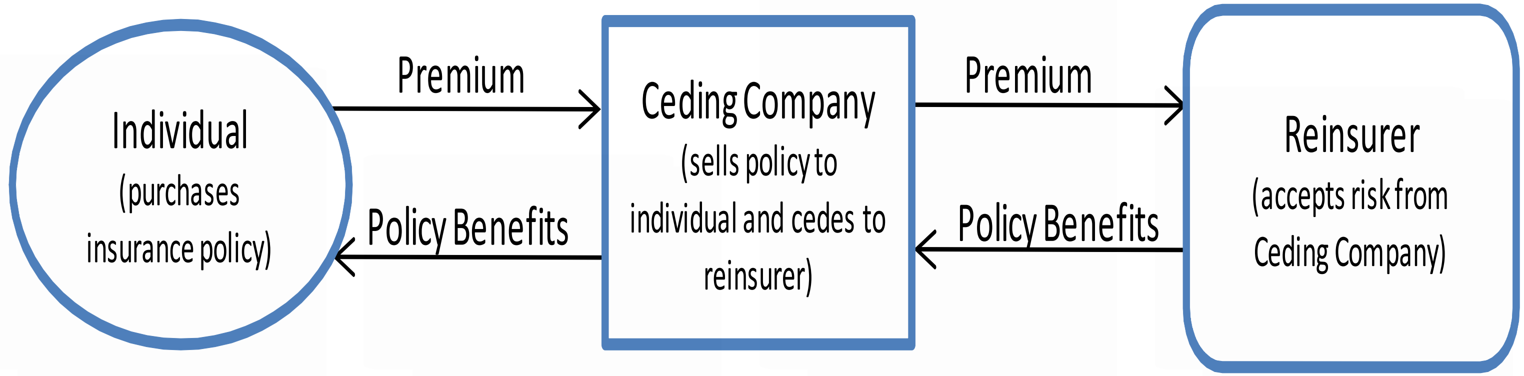
Definitions

- 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

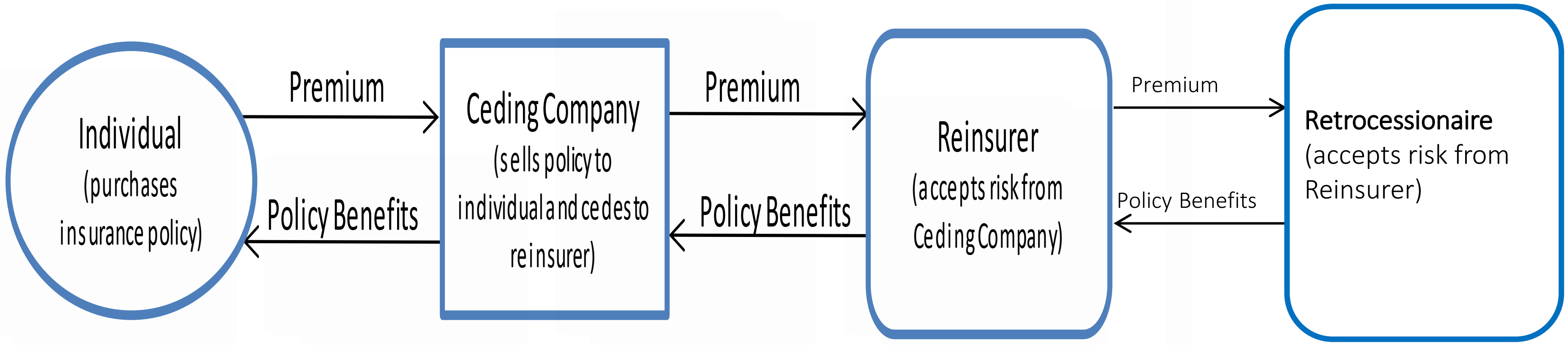
Typical Reinsurance Structure

- 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

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US Life Reinsurance Market

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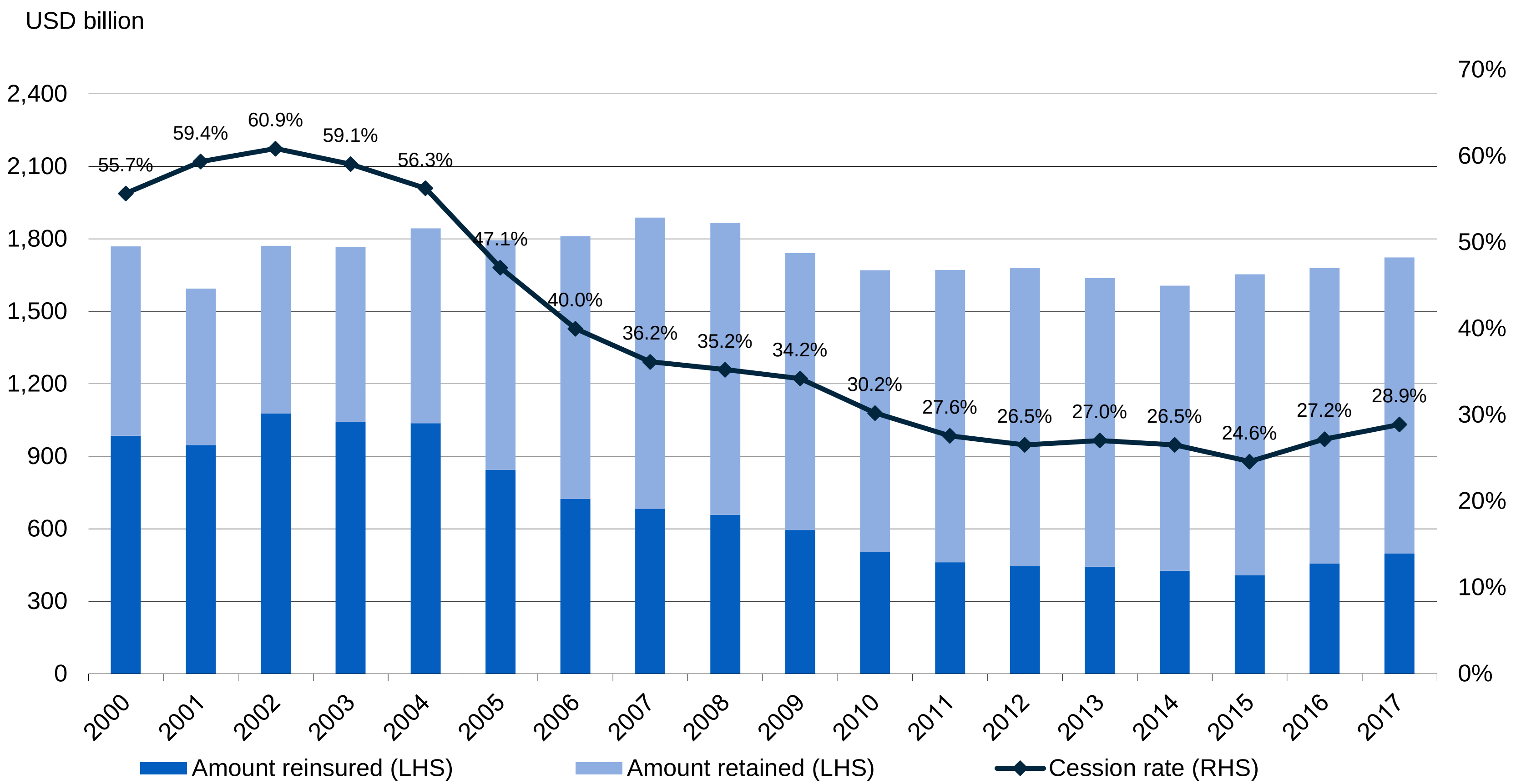
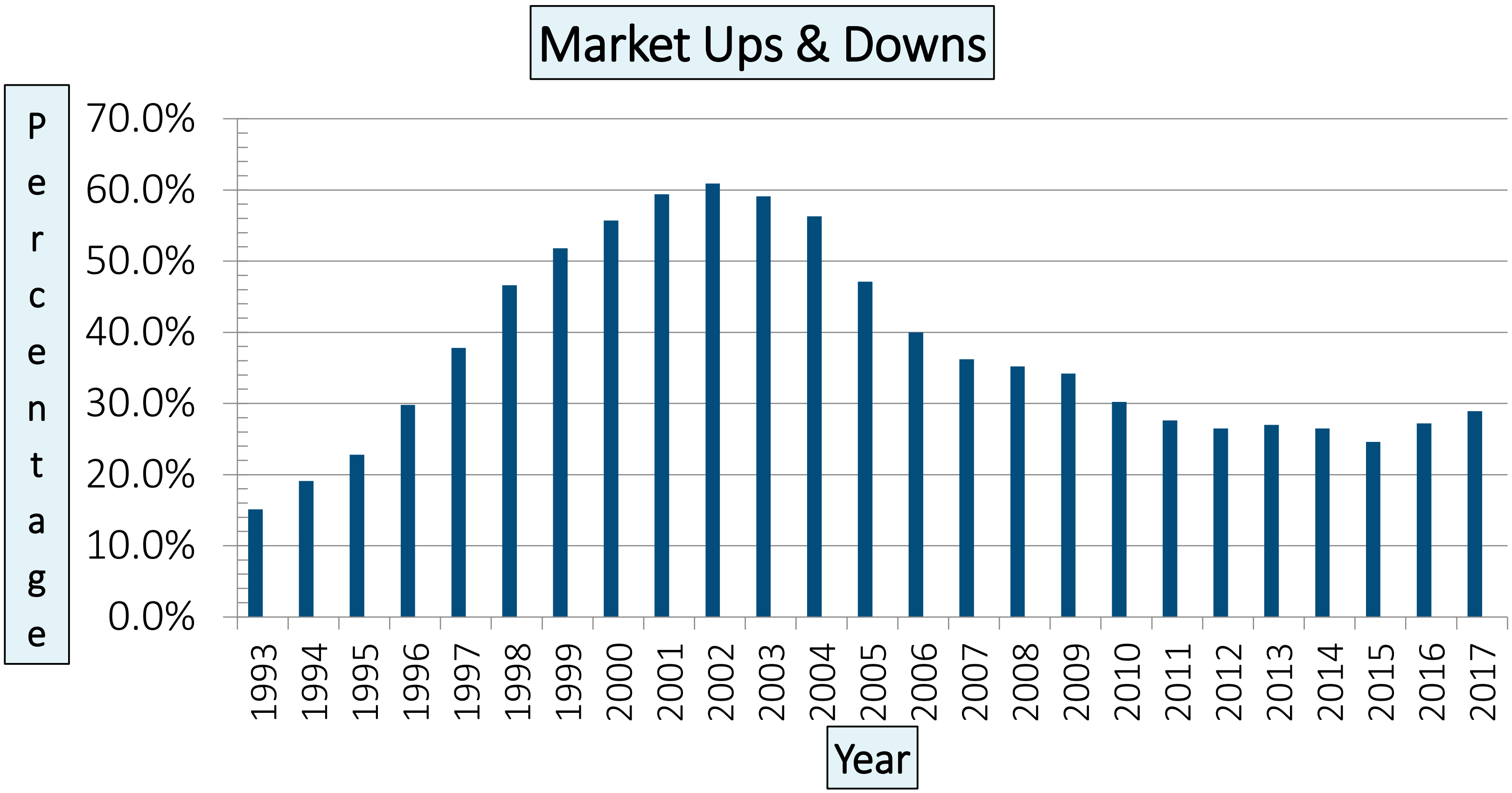
US Ordinary Life NB Cession Rates (recurring business)



Note: Cession rates on new recurring ordinary life business

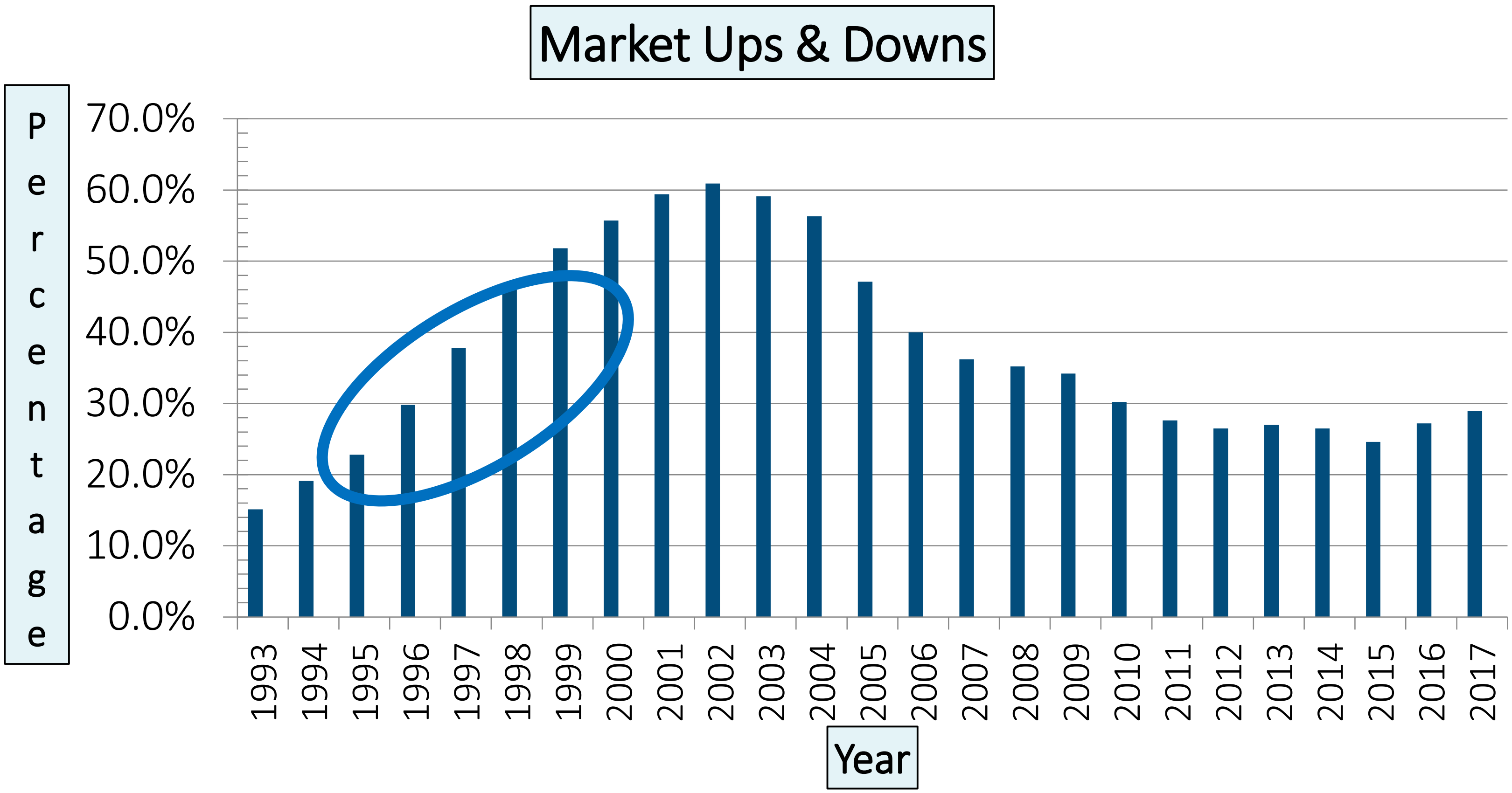
Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

Reinsurance Market: Cession Rate



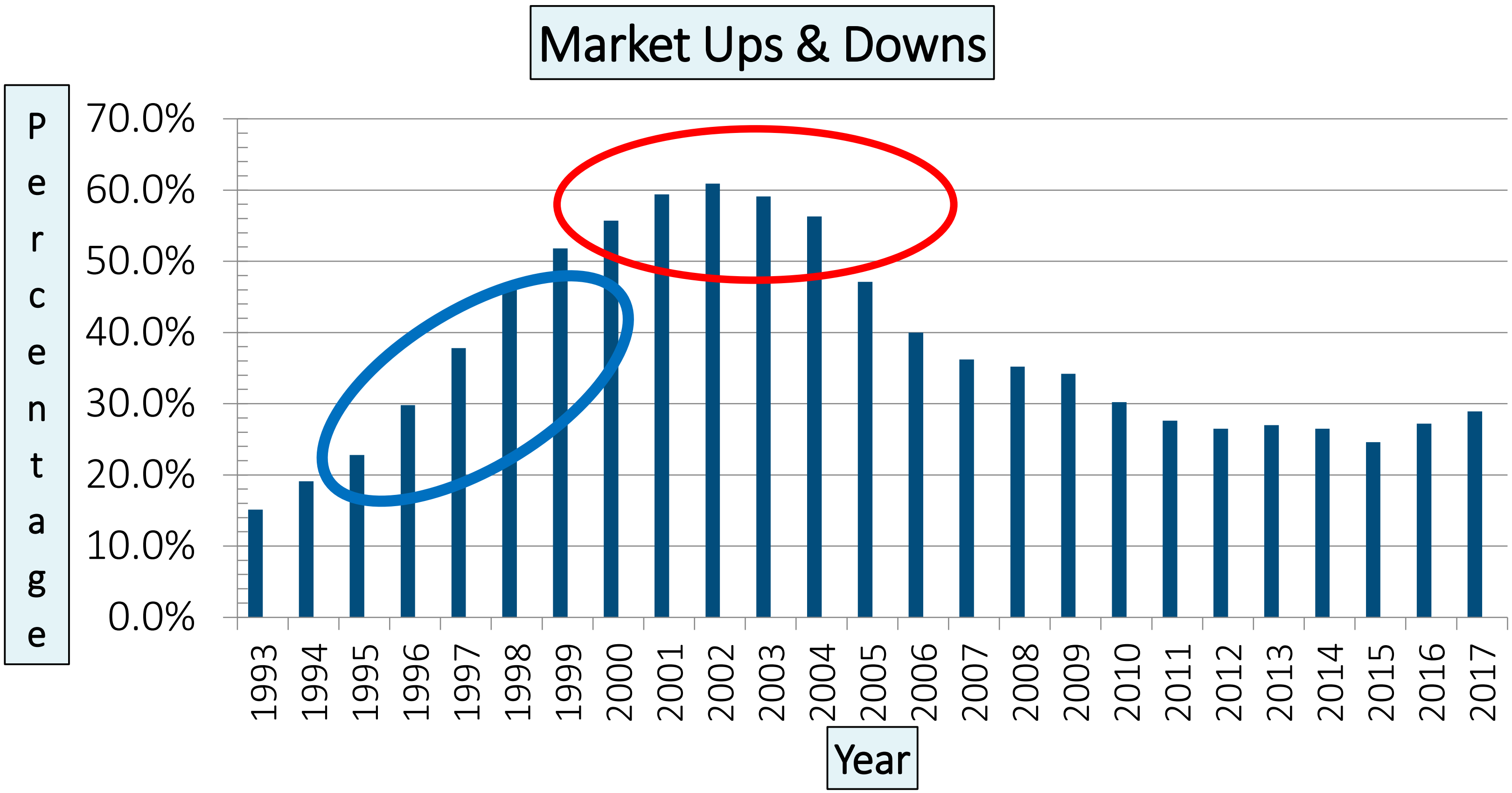
Source: Munich Re/SOA "2016 Life Reinsurance Survey Results"

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

2017 Recurring New Business

Reinsurer	Premium Volume $M	Share	Change from 2016
SCOR Global Life	104,724	21%	4%
Swiss Re	95,666	19%	13%
Munich Re (US)	92,408	19%	16%
RGA Re*	88,751	18%	6%
Hannover Life Re	65,730	13%	18%
Canada Life	19,508	4%	12%
Partner Re	11,615	2%	-33%
General Re Life	10,498	2%	15%
Optimum Re (US)	9,485	2%	8%

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

Source: Munich Re/SOA "2017 Life Reinsurance Survey Results"

Types of Reinsurance

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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

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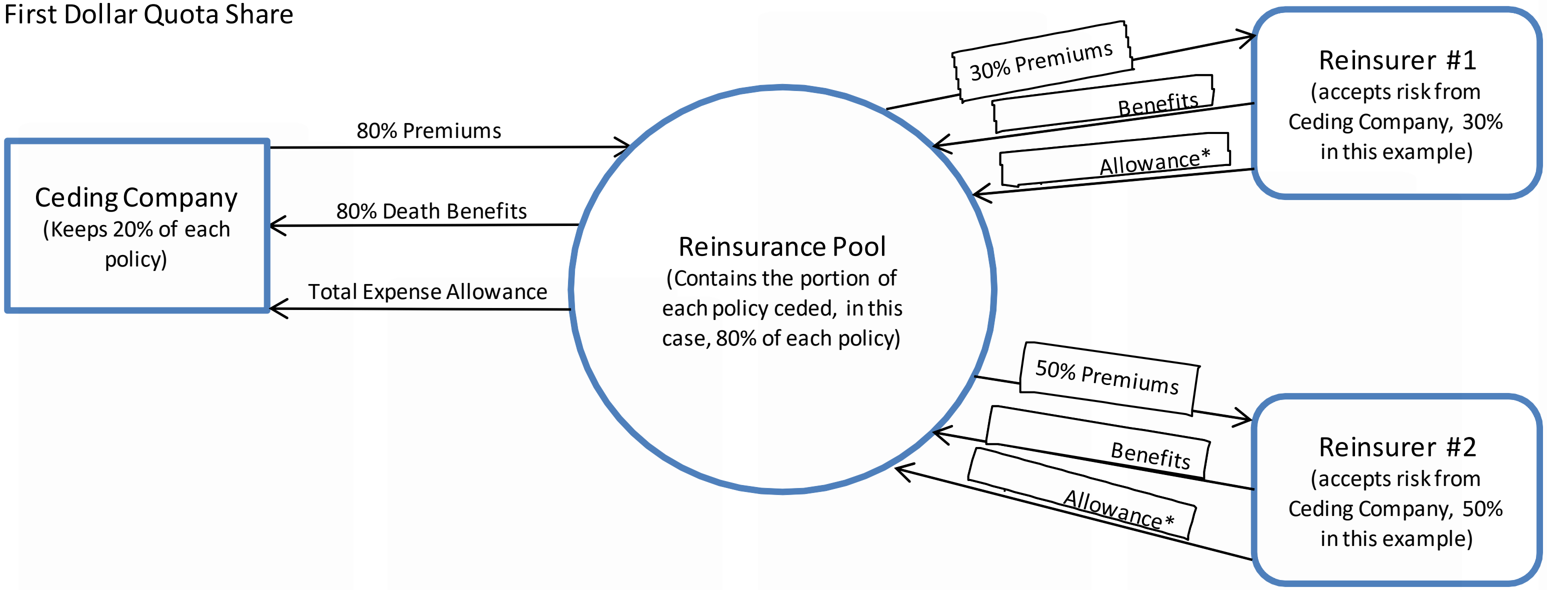
Types of Reinsurance

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

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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

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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://media.swissre.com/documents/The_Essential_Guide_to_Reinsurance_EN.pdf

  iPad Application

  •http://www.swissre.com/library/Apps/The_essential_guide_to_reinsurance_app.html
- http://media.swissre.com/documents/SRCM_The_Fundamentals_of_ILS_web.pdf
- http://media.swissre.com/documents/Global_insurance+_review_2012_and_outlook_2013_14.pdf
- 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

SOA Life and Annuity Reinsurance Seminar

Annuity and Asset-intensive Reinsurance

August 29, 2018

Mike Kaster, FSA, MAAA, MBA

Willis Re

Outline

- Asset Intensive products
- Market drivers of and rationale for annuity reinsurance
- Dynamics of reinsurance market
- Reinsurance Process
- Types of Annuity Reinsurance structures
- Challenges and considerations with Asset-Intensive reinsurance

Asset Intensive Products

What are Asset Intensive products?

- Annuity reinsurance is really the ultimate form of Asset Intensive ("A-I") reinsurance, i.e. reinsurance of liabilities that are heavily weighted on asset/interest rate risk.
- Forms of reinsurance can be developed on the Asset Only component of these types of liabilities;
  - ISWL
  - Universal Life
  - Payout Annuities
  - Indexed Annuities
  - Structured Settlements
  - Disabled Life Reserves
  - Whole Life
  - Long Term Care
  - Full Risk-transfer solutions would need to deal with all risks, and the investment risk would be just one aspect of all of these products
- Separate account products (VA, VUL) would not be considered in this category, as those "assets" are policyholder related.

Market drivers of and rationale for annuity reinsurance

Market drivers of Asset-Intensive reinsurance transactions

- **Improved capital position**
  - Either through unlocking some trapped value in the business, or
  - Releasing required capital associated with the block.
- **Improving Return on Capital/Equity for overall block**
  - Removing low return business will result in better overall returns
- **Low interest rate environment continues to pressure life and annuity writers**
  - Spread compression on general account assets
  - Pressure on credited interest rates and profit margins
  - Reluctance of companies to invest capital (Surplus Strain)
- **De-risking portfolio to improve ERM metrics**
- **Improved profitability or competitiveness of new business**

Many companies are considering various types of transactions in the asset-intensive space, with many different transactions having transacted in 2017 and 2018.

Annuity transactions – recent larger transactions (2017)

Based on publically available data – Reserve credit taken at EOY

2017 Large Transactions – outside organizations

- Transamerica/Aegon ceded Payout Annuity business (along with COLI/BOLI) to Wilton Re (May announcement) - $13,524 mil
- Farmers New World Life ceded Fixed Annuity, Structured Settlements and VA business to RGA Re (May announcement) - $2,288 mil
- Universal Life Ins. Co. ceded fixed annuity business to Private Bankers BM (part of Global Bankers) - $556 mil
- F&G Life ceded FIA with living benefits to Hannover Life Re - $347 mil
- Lincoln National Life announces new business reinsurance agreement with Athene for FIA business – ceded $211 mil by EOY 2017

Source: S&P Global Market Intelligence and company press release

Annuity and other A-I transactions – recent larger transactions

Newly announced – closed or in process

2018 Large Transactions – outside organizations

- Consortium of investors purchased Voya Insurance & Annuity Company to form Venerable Holdings.
  - As part of transaction, Athene reinsured Voya's Fixed Annuity business – approx. $19 Billion of reserves
- Hartford agreed to sell Talcott Resolution, its run-off life and annuity business to investor group, including primarily the closed VA business of Hartford.
  - As part of transaction, Talcott reinsured a portion of the fixed annuities, payout annuities and structured settlements to Global Atlantic – approx $9 Billion of reserves
- Wilton Re recently announced an inforce reinsurance deal with Bankers Life and Casualty, to reinsure certain LTC policies – approx. $2.7 billion of reserves.
  - Includes administration and claims management responsibility

Source: S&P Global Market Intelligence and company press release

Reasons for reinsuring annuities

Reasons	Description	Downstream Impact(s)
De-risk balance sheet	No appetite for on-going management of non-core business	Focus on growing core business
Capital base	Release of EV within closed blocks	More readily support and grow new business for core products
Diversification	High concentration of risks	Diversify risks to protect balance sheet, in particular during adverse environments
New Business Competition	Improve competitive position through reinsurer's expertise	Share in expertise
Investment experience	Annuity reinsurers consider investment management one of core strengths	Share in expertise

Dynamics of reinsurance market

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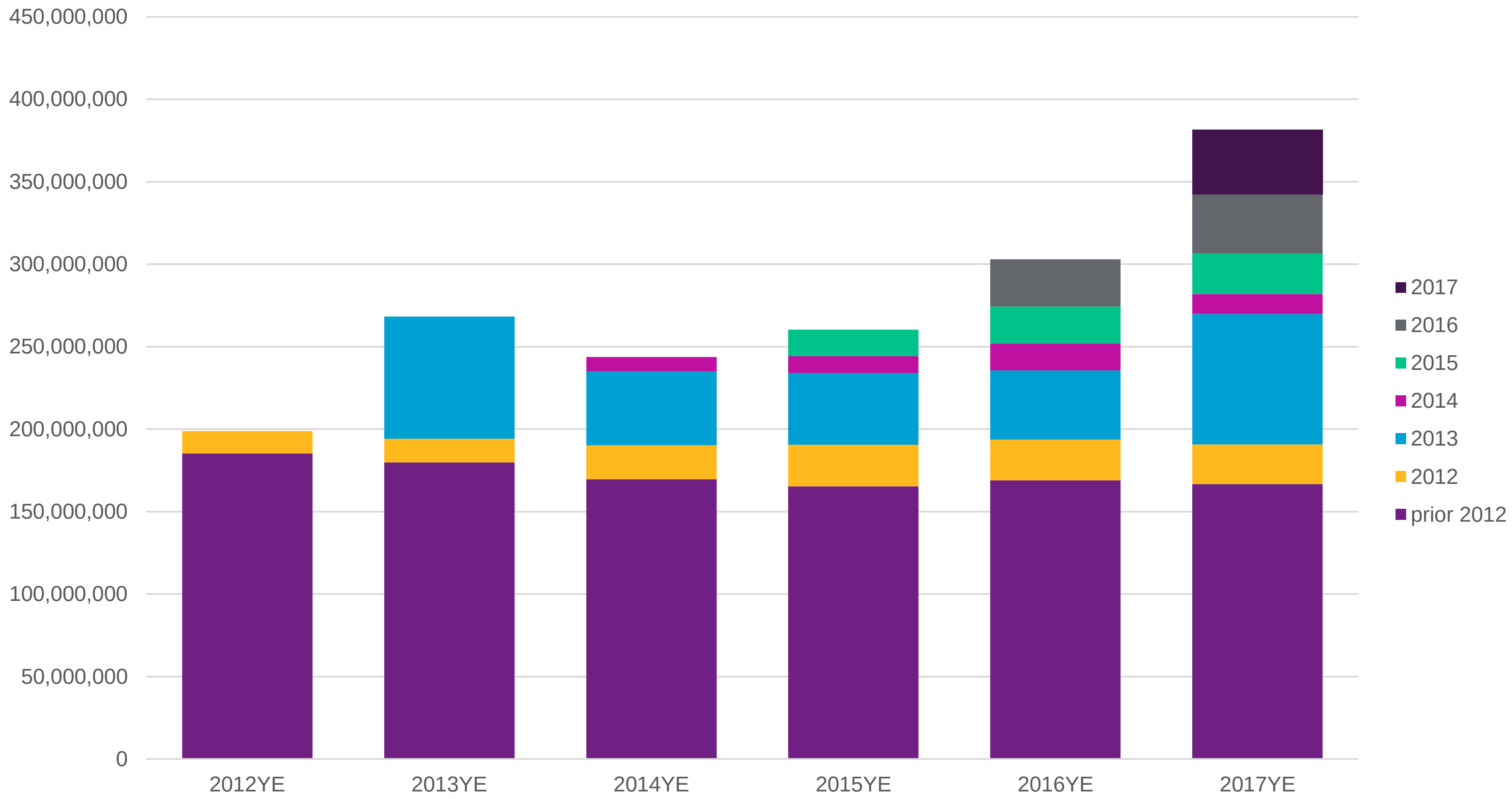
Annuity Reinsurance Reserve Credit Taken + Modco Reserve Trend

Combined total ($000s) through 2017



Source: S&P Global Market Intelligence

Various types of Reinsurers

Reinsurance of Asset Intensive business is very different than traditional mortality reinsurance…and the interested parties are different as well.

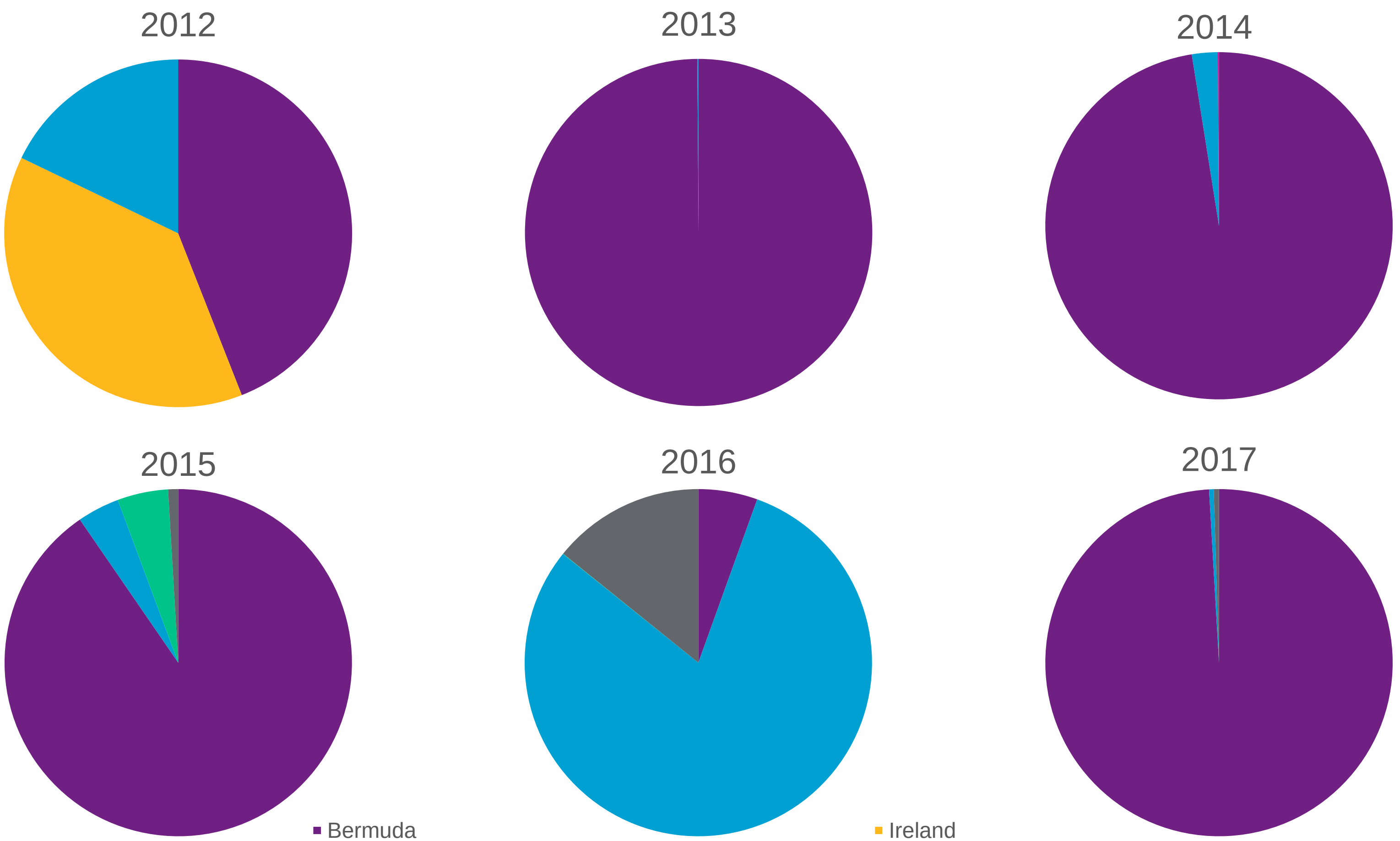
Types of Reinsurers:

- Established, highly rated, well capitalized
  - Generally, most have pulled back from capital driven reinsurance – but some movement back.
- Newer, annuity focused reinsurance entities
  - Growing – but capital situation is varied
  - Generally bring Investment expertise
- Off-shore vs. On-shore – tax reform and SII impacting this
- Unauthorized vs. Authorized

Drivers of growth in A-I Reinsurance

- Diversification – organizations looking to diversify their earnings, and view the “life” market as having stable earnings
- Growth – for most, they are looking for growth in assets under management (AUM) and are willing to be aggressive to see this growth
- Rising rates – even slightly has caused positive movement
- Stable markets – no volitale market disruptions has been favorable to newer entrants
- New Capital sources – looking for ways to deploy capital more quickly than through organic growth

Non-Domestic Reinsurance Amount by Country



Source: S&P Global Market Intelligence

Reinsurance market segments to consider

- AM Best rated NAIC Reinsurers: US Statutory accounting and US tax/less flexible investment strategy
- AM Best rated non-NAIC Reinsurers: GAAP accounting, non-NAIC regulations, non-US tax, collateral structure / moderately flexible investment strategy
- Unrated Reinsurers: GAAP accounting, non-NAIC regulations, non-US tax, collateral structure / flexible investment strategy
- Other variations exist – there are no less than a dozen

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Reinsurance Process

Choosing a suitable partner

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Approach for Annuity Reinsurance – similar, but not the same

When you embark on a new reinsurance process around annuities or other asset-intensive products, there are a number of considerations.

- Counterparty credit and potential markets
  - No less than 25-30 potential reinsurers and markets for Asset-Intensive reinsurance
- Non-Disclosure Agreements (NDA)
  - To allow for free-flow of information
- Data sharing with markets
  - Fairly intensive for inforce business
  - May want to discuss product features for new business
- Meetings with interested parties
  - Many are not well known and are newer to the market
- Transaction objectives and motivations
  - Most important as you embark on an evaluation of potential reinsurance for your asset-intensive business.

Ceding company considerations when choosing a Reinsurer

- Credit Rating of reinsurer
- Capital levels or over-collateralization
- Experience in market
- Investment expertise
- Pricing / Competitiveness
- Regulatory concerns
- Rating agency reactions
- Reinsurance structure proposed
- Partnership Approach

Considerations – choosing a reinsurance partner

Pricing assumptions

- Annual full surrender (“lapse”) rate assumptions (assuming current low interest environment remains during projection period):
  - Review of experience of company
  - Benchmark to competitor rates
  - High lapse at end of SC period – older business may be stable
- Investment yield (per investment guidelines)
- Expenses (for administration – typically paid to ceding company)
  - Commissions are an expense on new sales - shared
- Taxes, cost of capital, etc. – all different by reinsurer

Considerations – choosing a reinsurance partner (cont'd)

Viewing all of the economic factors in a block transaction:

- Ceding allowance is only one consideration
  - Reinsurers have been offering "negative" ceding allowances on blocks of fixed annuities with relatively high minimum interest rate guarantees
- Liquidation of assets to provide a cash transfer to the reinsurer often results in releasing unrealized gains that can be used to off-set the negative allowance
- 100% coinsurance transaction may also release a portion of the Interest Maintenance Reserves – both existing and new
  - Treatment of this varies by company / off-shore vs NAIC entity.

Types of Annuity Reinsurance Structures

Forms of Annuity Reinsurance

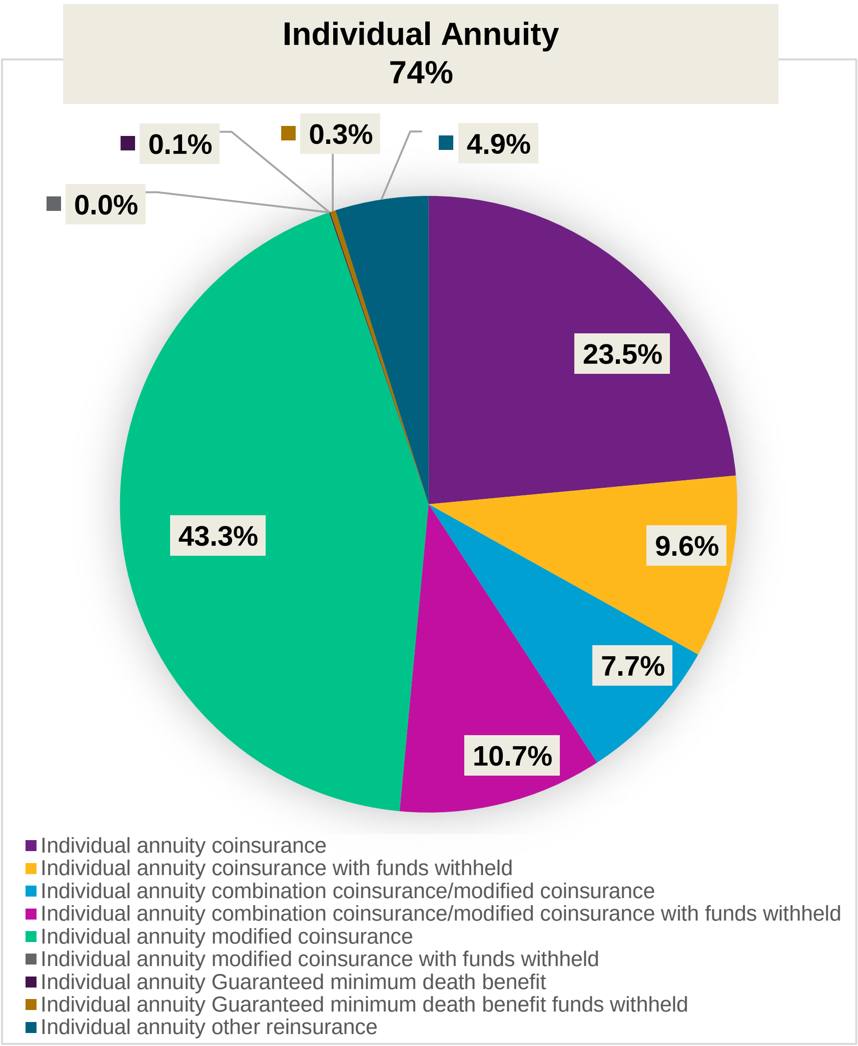
- Coinsurance
  - Reinsurer assumes risk for quota-share portion of asset performance, disintermediation, expense and persistency
  - In force vs. new business
    - Ceded premium is either defined as a quota share of the annuity deposits (new business) or a quote share of the reserves (inforce)
    - Ceding commission is generally calculated to support the ceding company. For IF, it's the value. For NB, offsets cost of writing business.
  - Assets backing reserves – held by reinsurer
    - Does not require a separate investment management agreement
    - Acceptable investment guidelines are defined in treaty.

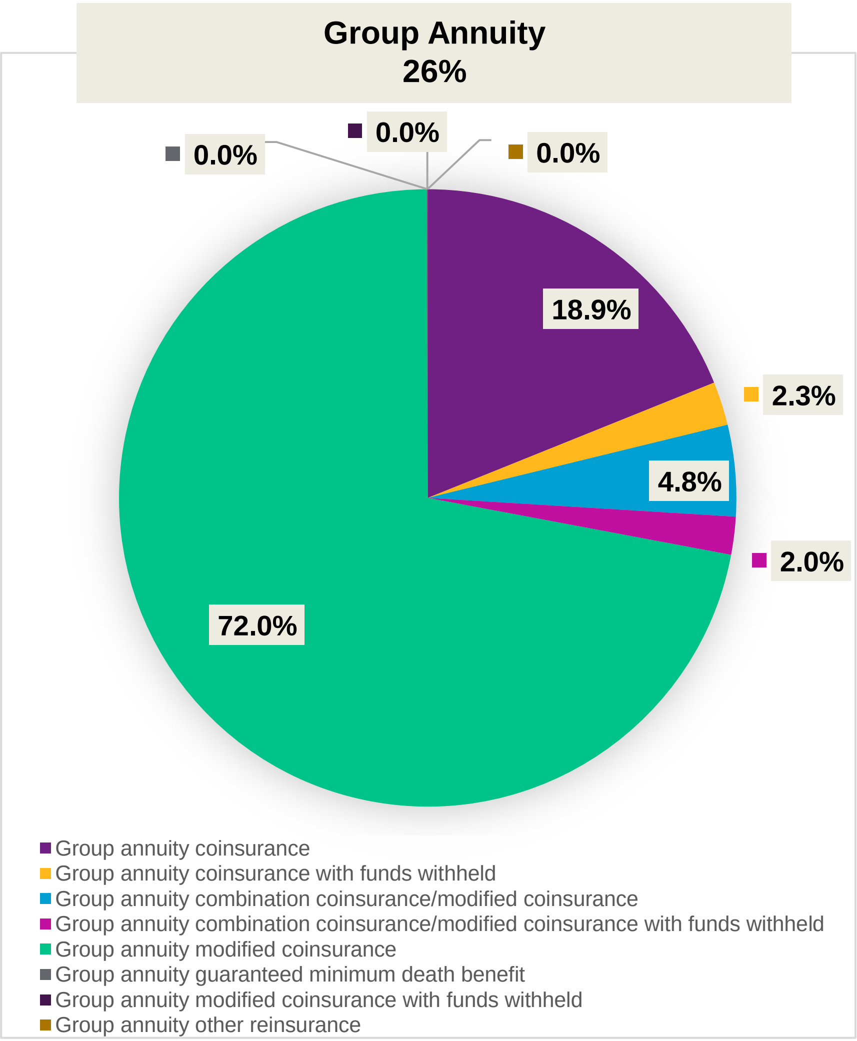
Forms of Annuity Reinsurance

- ModCo or Coins funds withheld (Co-FWH)
  - Risks are still transferred from cedant to reinsurer.
  - Key difference - Assets remain on ceding company's balance sheet
    - Usually put into a trust or separate account, to the benefit of the reinsurer, but not always in trust
    - Ceding company maintains more control over assets – still "on balance sheet" – or perception of control
    - Reinsurer likely will want separate investment management agreement between two parties – to manage the interest risk.
  - Viewed as less risky; qualifies for reserve credit.
    - Ceding company has access to assets at all times.
  - Assets are maintained at Book Value – preferred by reinsurers

Annuity Reinsurance by Type

- Based on Reinsurance Reserve Credit Taken and Modco as of 12/31/2017





Source: S&P Global Market Intelligence

Unauthorized Reinsurer – Trust requirement

How do new reinsurers qualify to provide valid reinsurance credit.

Two approaches:

- Coinsurance – with Reserve Credit Trust and over-collateralization
  - To obtain reserve credit, a market value trust is established
  - Assets held in trust are marked to market at all times – equal to 102% of statutory reserves
  - Fluctuations in market conditions that impact asset value are responsibility of reinsurer
  - Investment guidelines are agreed to for trust assets
- Modified Coinsurance or Co-FWH – also qualifies
  - May still provide a “comfort trust” to hold capital (over collateralization) to protect transaction.

Challenges and Considerations with Asset-Intensive Reinsurance

New Business vs. In-Force Reinsurance - Annuities

New Business

- Also called "Flow" reinsurance
- Monthly (or more frequent) credited interest discussions. Rates determined by mutual agreement.
- Ceding commission to cover new issue expenses and administration.
- Reinsurer likely will want to help with new product development.
- May allow a company to get into a new line of business easier by leveraging the reinsurers expertise.

In-Force

- Much more M&A oriented.
- Significant diligence required by the reinsurer on the business.
- Will need to understand how business was sold, experience, demographics.
- Existing asset portfolio critical to the success of a transaction.
- Ceding commission represents the reinsurers view of the "value" of the business – pays for a portion of future profits.
- Most of the discussion is around appropriate investments going forward.

Investment guidelines

When considering what's appropriate for investments backing the reinsured reserves, the ceding company generally will want to think about several items;

a) Protecting the policyholder – ensuring that good ALM practices are followed.

b) Assuring there won't be adverse investment experience – but need to remember the reinsurer is really baring the risk.

c) In an adverse tail event, would the insurance company be comfortable taking back these assets.

d) For Mod-co or Co FWH, would there be any impact to overall company investment guidelines.

e) For Reinsurer – they will want sufficient flexibility to earn a good return!

Items to be addressed in Investment Guidelines

- Appropriate Investment classes, with Maximums and Target allocations
  - Generally start with the cedent's own investment guidelines, but consider areas that would be OK for additional allocations.
  - Alternative assets, CMLs, Structured Securities (CLOs), etc.
- Asset-Liability Management constraints
  - Consider asking reinsurer to commit to a duration matching tolerance
- Defining specific investments that are not permitted
  - Items like derivatives, equities, hedges, etc.
  - For some reinsurers, they will generally use these instruments within their surplus accounts, to give cedent comfort.
- Reporting and Compliance – frequency of reporting, auditing, etc.
  - Cure period – need to allow reinsurer some time to make "right".

Treaty issues

- Non-guaranteed Element management
  - Reinsurer does NOT have authority to determine non-guaranteed interest rates; must work in cooperation with the reinsurer.
  - “seek consent, not to be unreasonably withheld”
  - Agreement will specify process to be followed.
    - Should ideally address cure and compromise approach.
    - May be formulaic or indexed based.

Other issues in negotiations

- Quota share – how do you manage different profit objectives and investment approaches with new business reinsurance?
  - Example 60/40, with reinsurer assuming 5% yield and cedant assuming 3.5%.
  - If both have same profit objective, will need to discuss an on-going allowance from reinsurer to cedant to off-set the lower return target.
- Minimum capital requirements and recapture provisions
  - If market value of assets fall below a certain level, reinsurer must either top-up or may trigger recapture option.
  - Recapture could also be tied to RBC level of the reinsurer.
  - For overcollateralization levels, may consider tying to the reinsurers external rating (like A.M. Best) for determination.

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Pension Risk Transfer

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Agenda

Topic	Presenter
Pension Risk Transfer: What, Why and Who	Sheena McEwen
Hot Topic: missing participants	Sheena McEwen
An insurer perspective: Focus on investments	Jing Shi

Legal & General

What is Pension Risk Transfer?

TRADITIONAL PLAN TERMINATION BUY-OUT – transferring all risk to an insurer and closing down the plan:

Risks being transferred: longevity risk, asset risk, interest rate risk, expense risk, operational risk

VARIATIONS HAVE BECOME MORE WIDESPREAD OVER THE LAST 5 YEARS:

LIFT-OUT	• Portion of plan has risk transferred to an insurer, plan stays operational • Common lift-out: taking a “bottom slice” of the lowest paid participants
SPIN-OFF TERMINATION	• Split a single plan into two plans • Terminate one of the plans, the other remains operational
BUY-IN	• Transfer the longevity, asset and interest rate risk but maintain administrative operations of the plan • Pension plan remains as the payor, bulk payments are paid to the plan from the insurer

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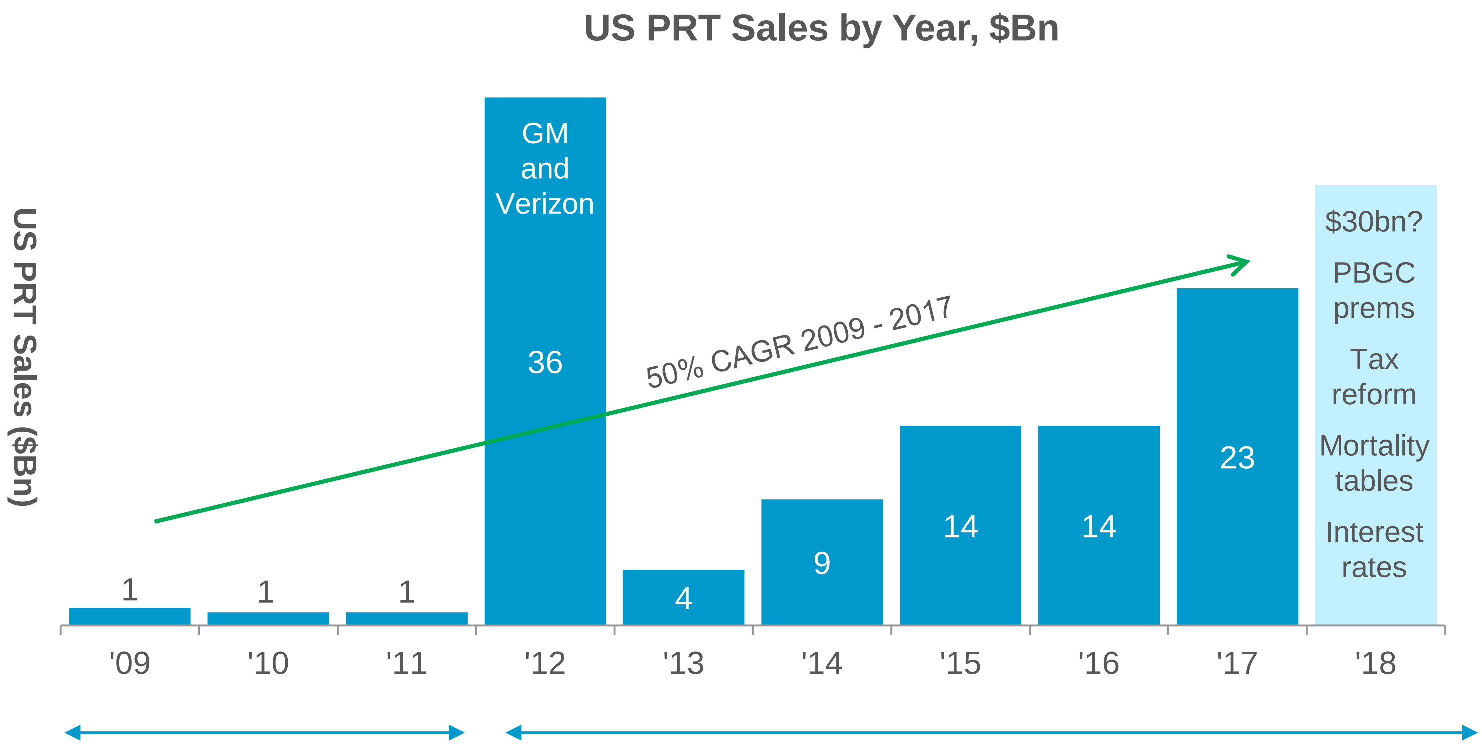
Why transfer risk to an insurer?



Largely full plan terminations

- Accounting volatility – exposed to several risks
- Cost vs perceived benefit

Plan terminations, retiree lift-outs, spin-offs, buy-ins

- Accounting volatility
- Escalating ongoing costs
- Competitive landscape
- New mortality tables
- Tax reform
- Interest rates

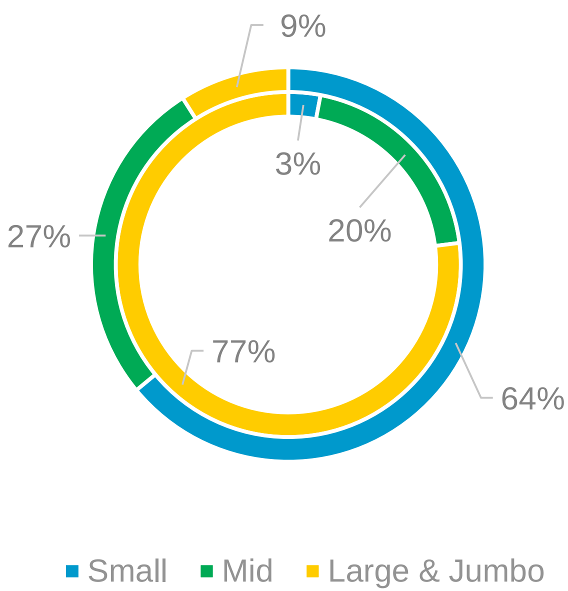
Source:

- 2009 – 2017: LIMRA

Who participates in the market?

- Since the GM and Verizon deals and the resulting increase in sales, several new insurers have come to the market
- There are now 16 insurance companies in the market, but not all bid on every deal

Sales – by count of deals (outside) and $Bn (inside)



SMALL	• Less than $10m • Expect to see up to 7 bidders depending on complexity
MID	• Between $10m and $100m • Expect to see upwards of 10 bidders if straightforward deal
LARGE & JUMBO	• Over $100m • As the deal size gets larger the number of bidders gets smaller • Only a select few bid on jumbo

Sources:
- Willis Towers Watson
- LIMRA

Legal & General

Hot topic – missing participants

- In February MetLife announced a more than half-billion-dollar charge to cover unpaid pension obligations for up to 30,000 individuals and said it had identified “material weaknesses” in its financial reporting
- In response to the episode, MetLife said it had launched a review of how it identified “unresponsive and missing” policyholders across its global business
- Triggered a huge response from all those in the PRT market

How does an insurer manage this risk?

PREVENTION AT ONSET

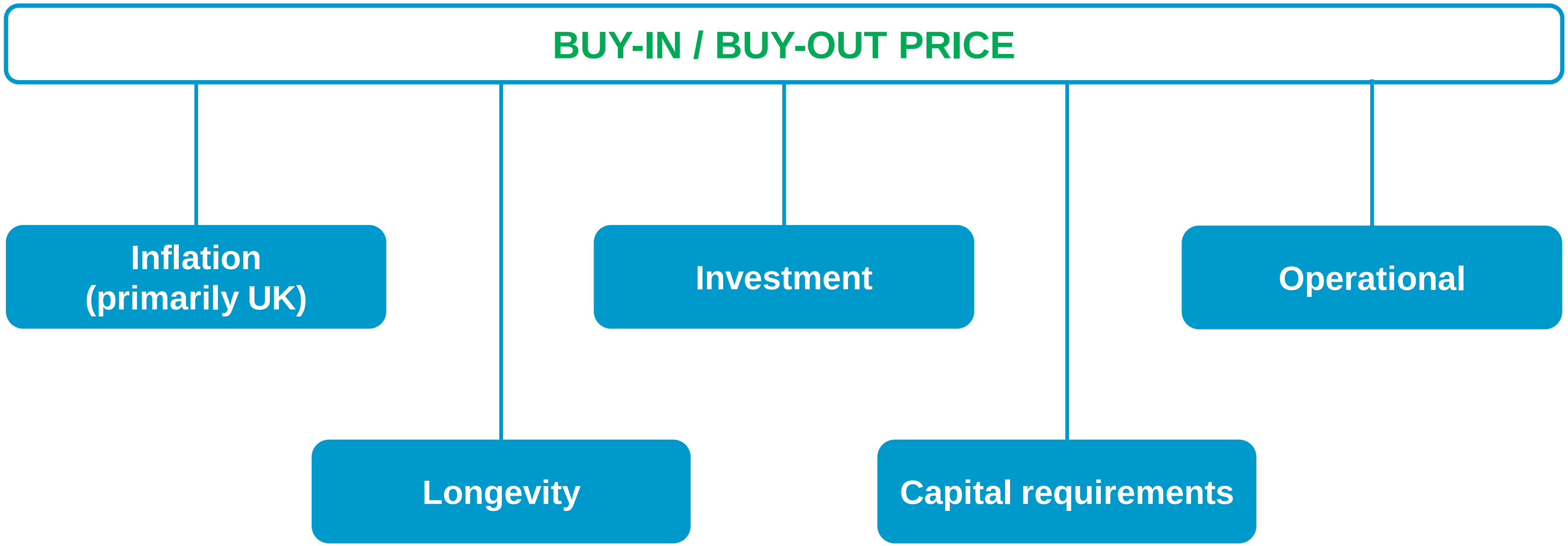
ONGOING COMMUNICATION

PRUDENCE

Source:

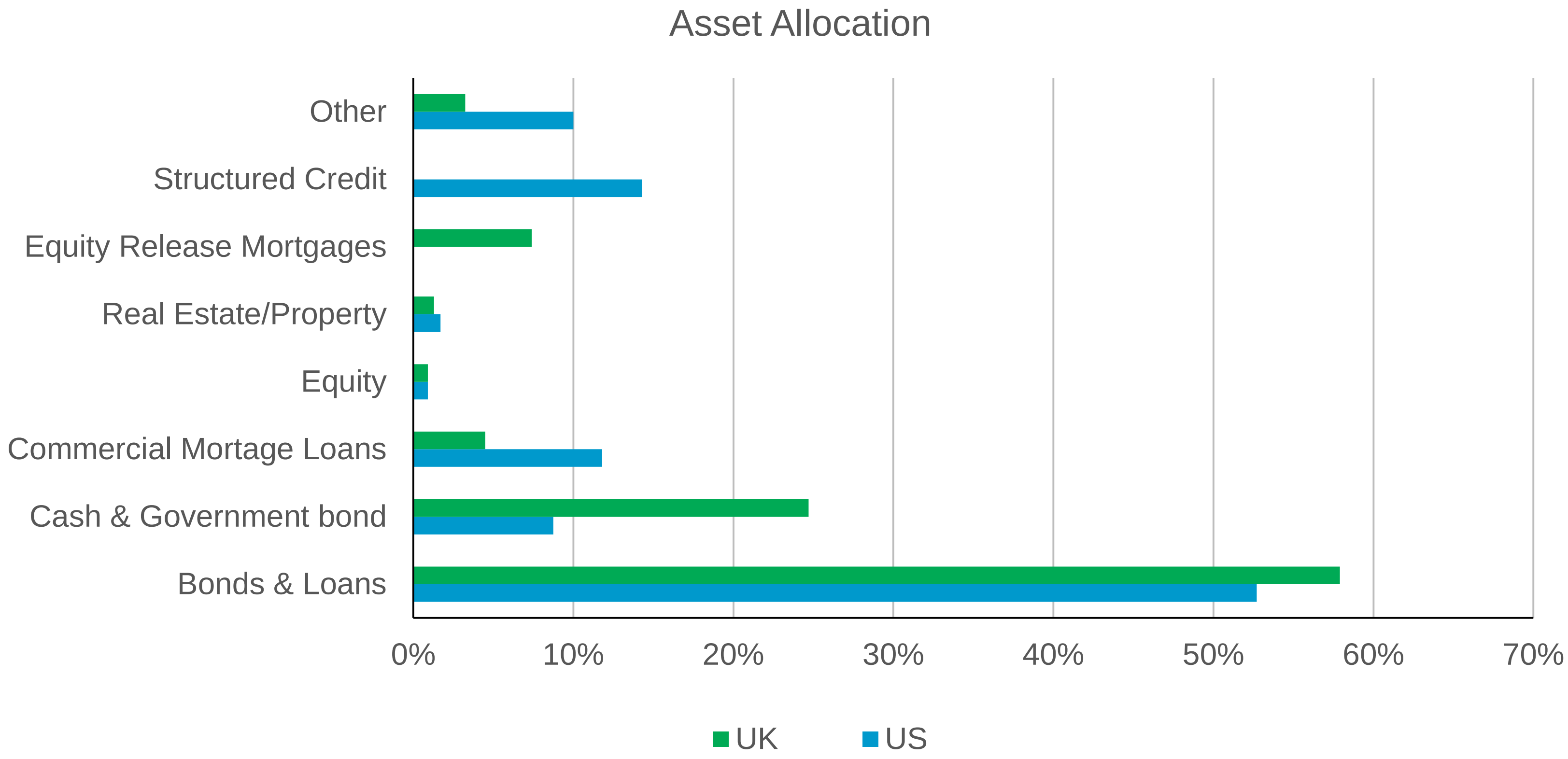
- Financial Times

Drivers of buy-in and buy-out pricing



Legal & General

How asset allocation differs between UK life insurance and US life insurance



- Source: PRA returns 2016 (average of 7 major life annuities in UK), Legal and General, Goldman Sachs Asset Management

Investment hot topics

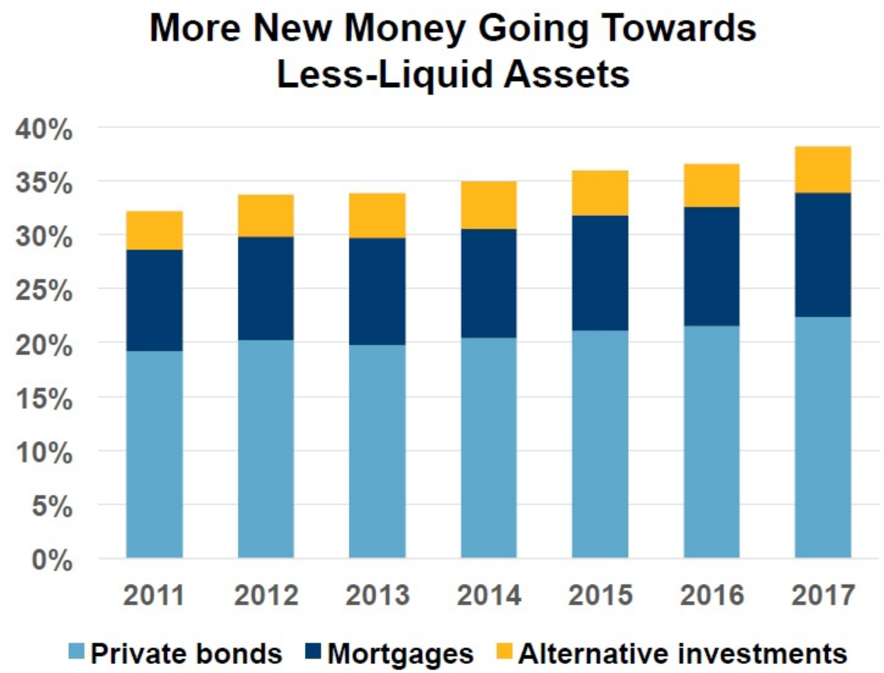
SEARCH FOR YIELD – life insurers have increased asset allocation to less liquid assets

TAX REFORM – implications for insurer PRT

A. Asset prices

B. Capital requirements

C. Offshore Strategies



Source: U.S. Life Insurers' NAIC Statutory Filings; S&P Global Ratings research

Life & Annuity Reinsurance Seminar 2018

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
  - Funds held

Example

- Assume:
  - Spread product with 2% net spread
  - Domestic tax rate 35% (current rate now lower)
  - 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

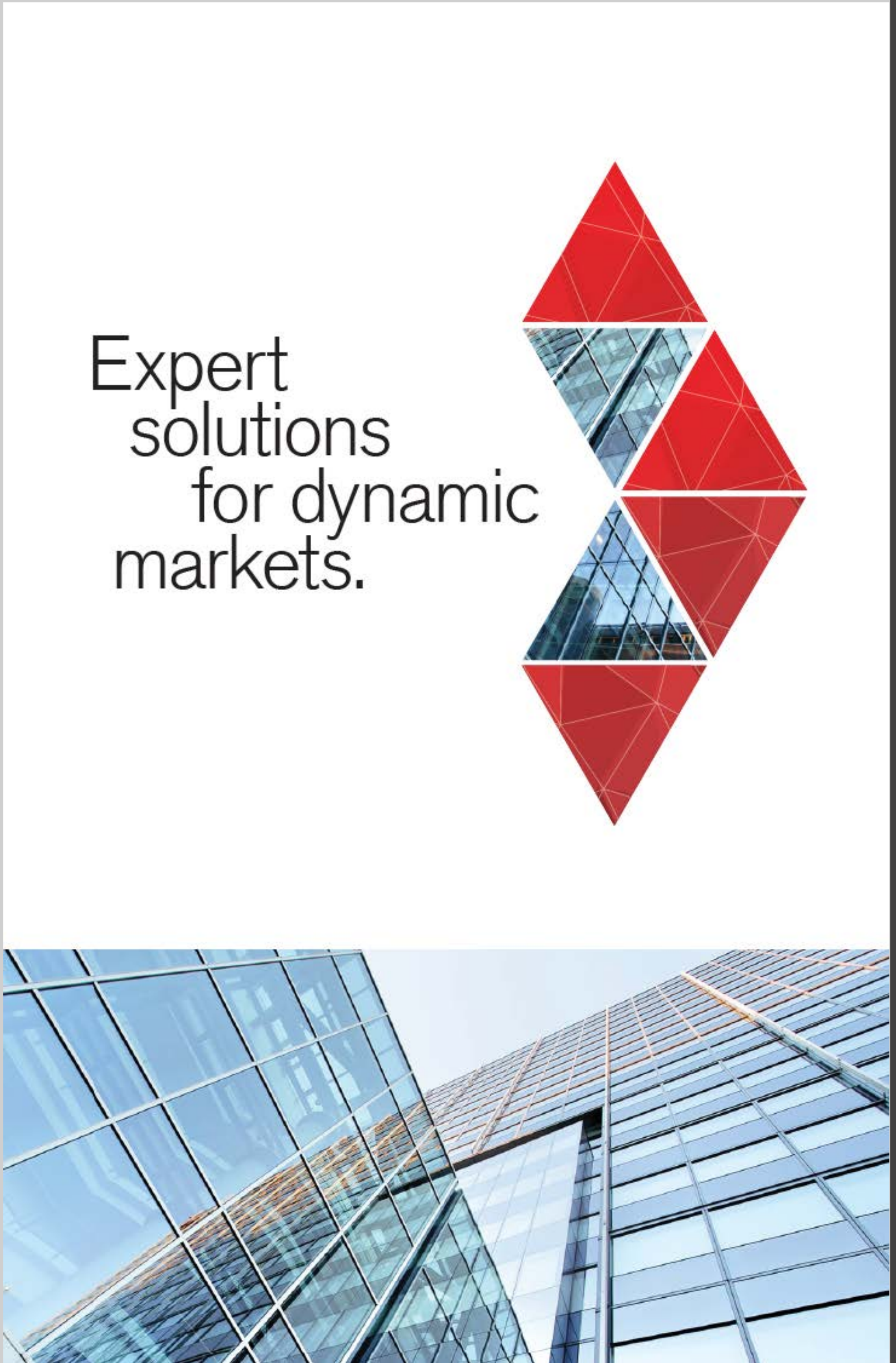
- Offshore reinsurers will generally have to post collateral for ceding insurer to take reserve credit (exception: "Certified" reinsurers)
- Trust accounts with qualified institution
- Letters of credit from approved banks
- Funds held by ceding insurer

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



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Reserve Financing and Captive Reinsurance

Ryan Stevens, FSA, MAAA
VP and Managing Actuary
Global Financial Solutions
RGA

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

SOA Life & Annuity Reinsurance Seminar
August 29, 2018

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

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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

Pre-2000
- Initial transactions – surplus relief on secure blocks of life business

2000-2006
- XXX and AXXX drove greater need due to more conservative reserving requirements for Term and UL with secondary guarantees
- Initially, similar to early pre-XXX/AXXX surplus relief transactions
- First bank vehicles: capital market securitization structured and guaranteed by monolines

2006-2007
- Solutions funded by banks on a recourse basis
- Securitizations structured by banks

2008
- Market effectively closed due to financial crisis

2009-2010
- Long-dated letter of credit (LOC) on a recourse basis structured by banks

2011
- Non-recourse LOCs

2012-2014
- Captive structures with credit-linked notes (CLNs) or excess of loss (XOL) agreements supported by professional reinsurers or other investors
- Increasing regulatory and public scrutiny - NAIC responded to pressure by drafting a white paper and hiring a consultant, Neil Rector, to study the regulatory framework of captive reinsurance and develop proposals

2015
- AG48 – Applies to all new reinsurance transactions covering XXX and AXXX

2017
- PBR and Term/UL Insurance Reserve Financing Model Regulation (sun-setting of AG48)

History of Reserve Financing

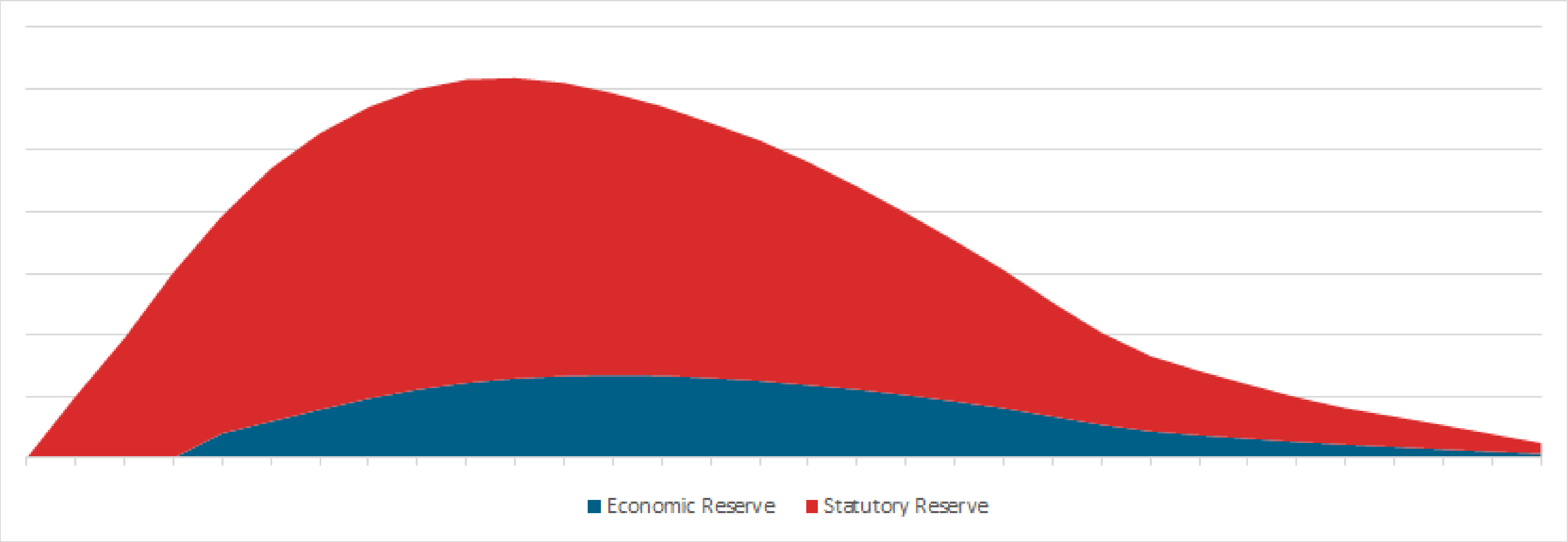
Estimated Costs

- 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

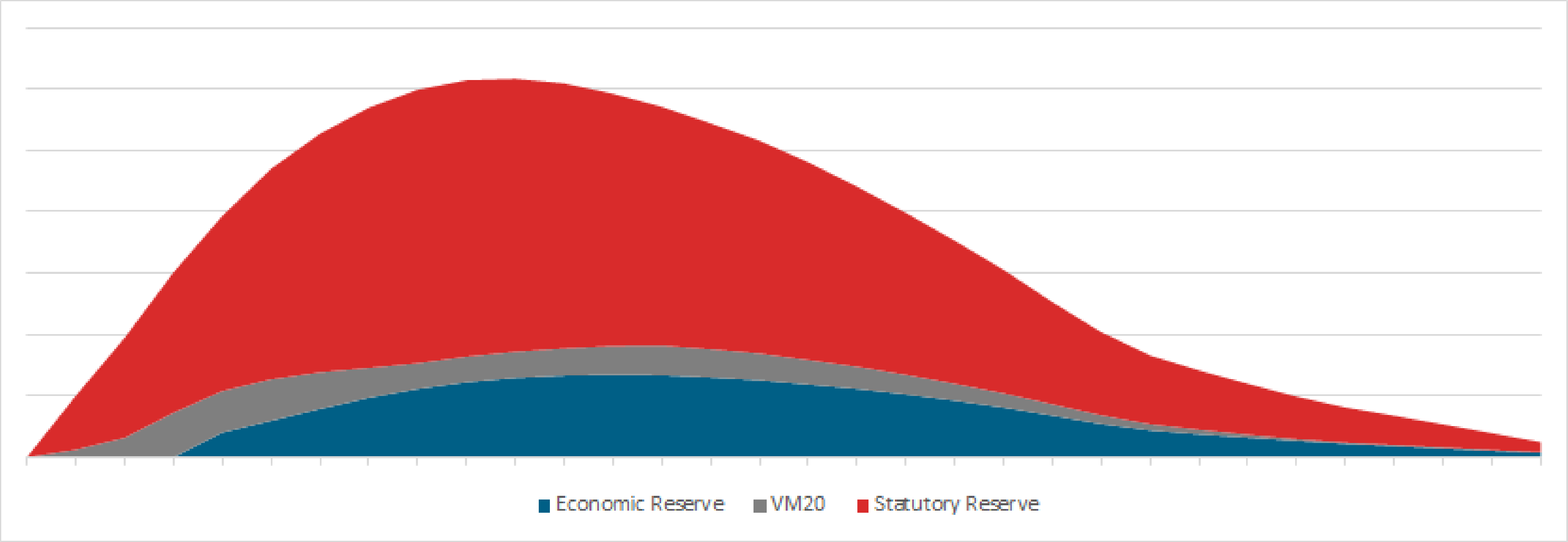
- Goal: fund excess level of reserves (Statutory – Economic)
  - Various asset types available for funding



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

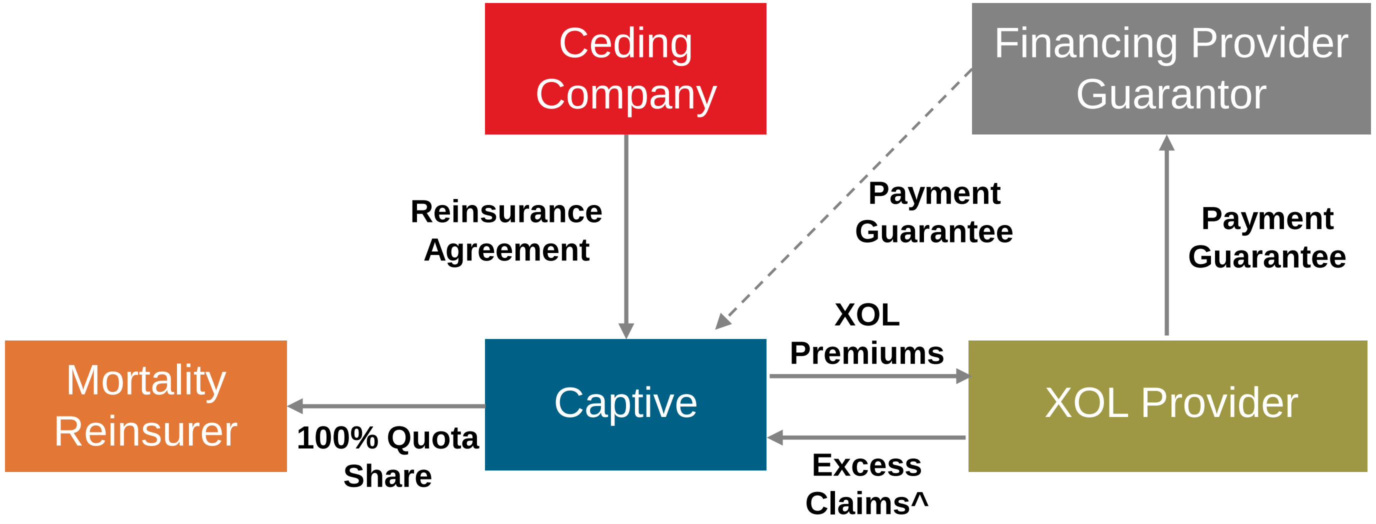
- Security of policyholders is the primary concern – are there high quality assets immediately available to meet future obligations of the ceding company?
- Recourse - ultimate liability: in a severe scenario, who pays?

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

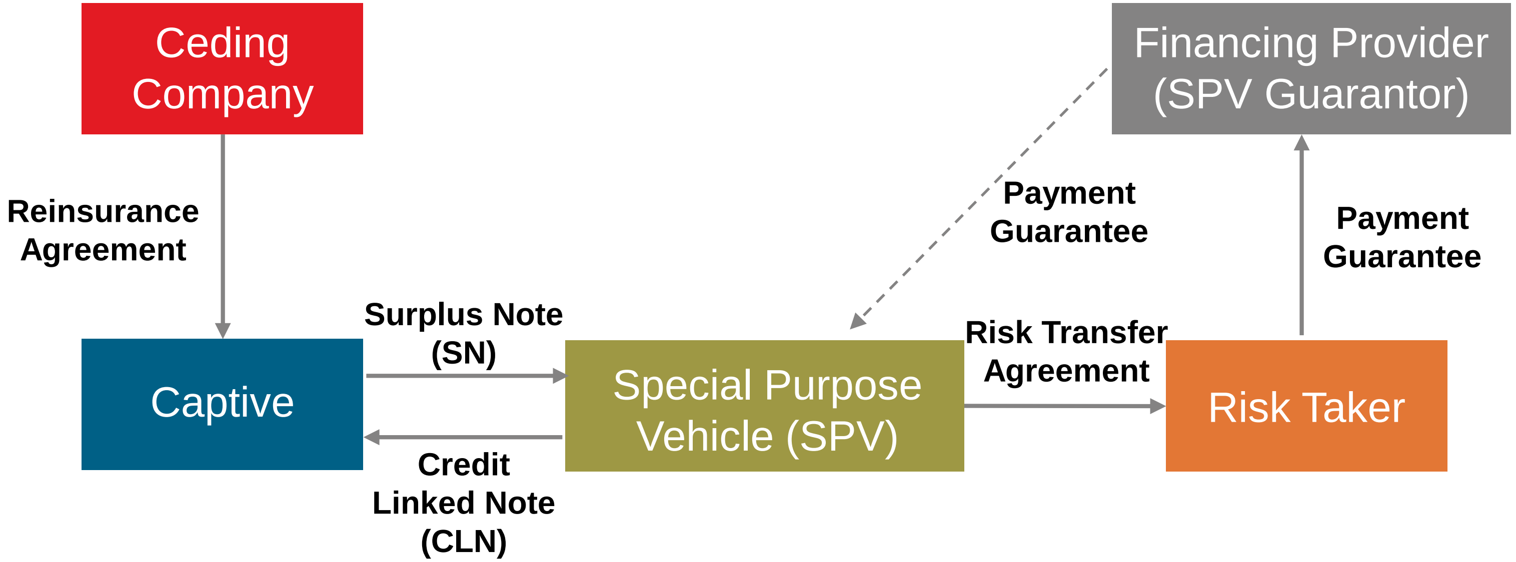
Captive Based Solution - XOL



- 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

Expert solutions
for dynamic markets.

Captive Reserve Financing – Roadmap to Success

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.

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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)

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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

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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.

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Closing Thoughts

A Journey of Partnership

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

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2018 VALUATION ACTUARY SYMPOSIUM

Predictive Modeling and Policyholder Behavior

When is your own data not enough?

Life and Annuity Reinsurance Seminar

1:45 – 2:30pm, 29 August 2018

Timothy Paris, FSA, MAAA

Chief Executive Officer, Ruark Consulting LLC

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Agenda

- Experience data crash course: VA and FIA
- Developing behavioral models using company and industry data
- Using models for risk management and reinsurance

2018 VALUATION ACTUARY SYMPOSIUM

Experience data crash course: VA and FIA

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Data

VA

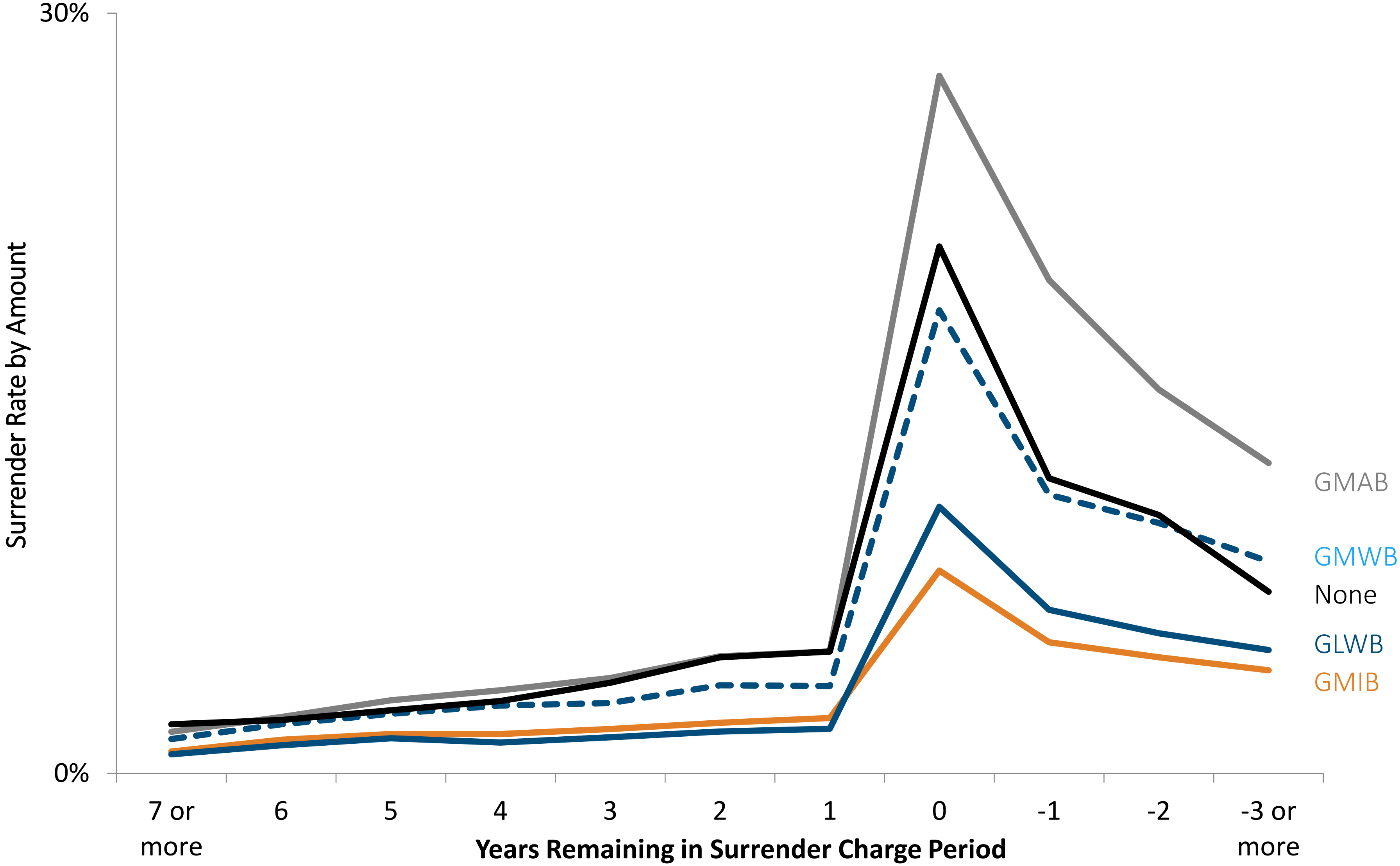
- 2008 through Jun-2017
- 13.8 million policyholders
- 77 million contract years
- $905 billion ending AV

FIA

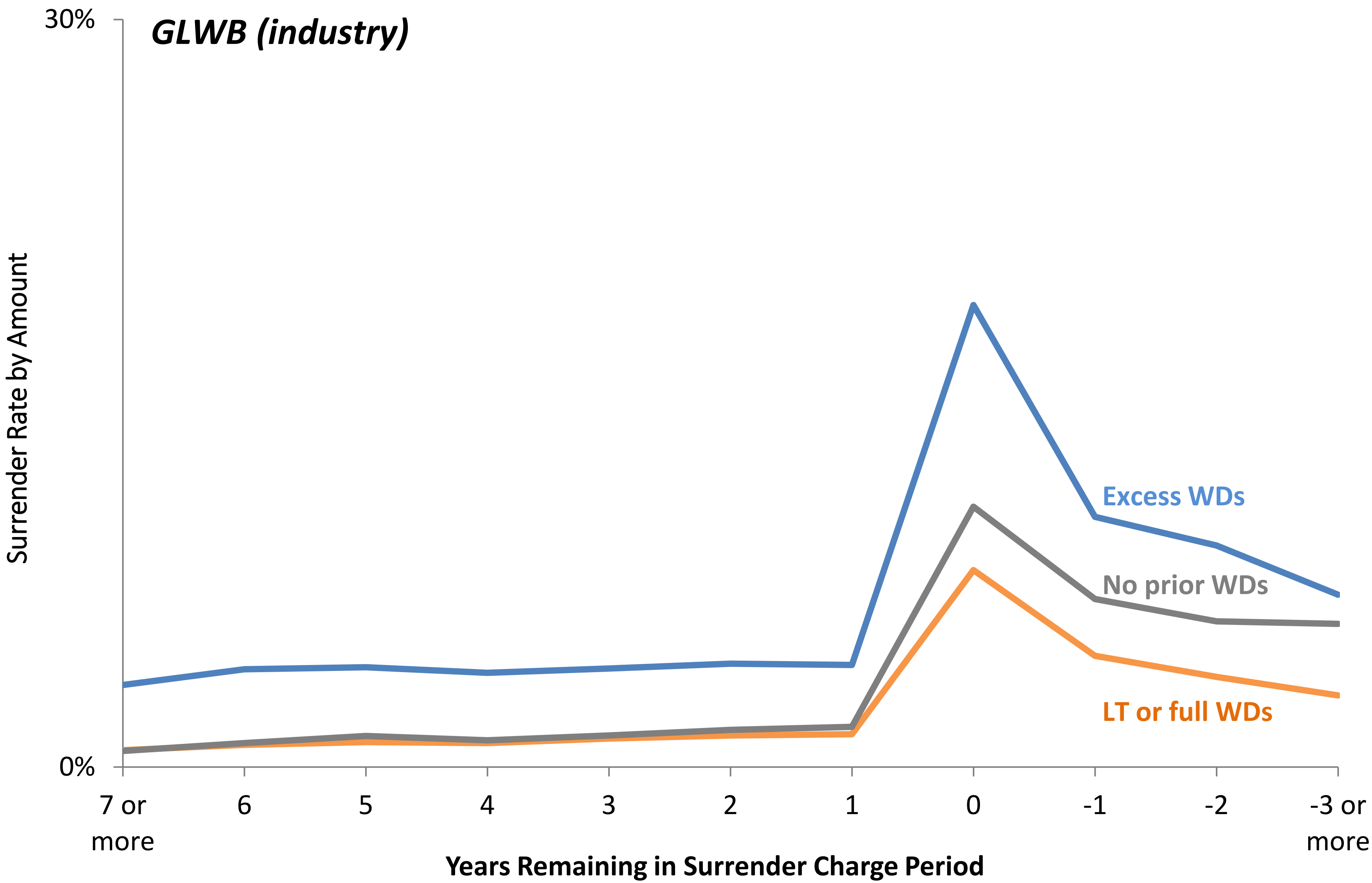
- 2008 through Sep-2017
- 3.3 million policyholders
- 17 million contract years
- $215 billion ending AV

Surrenders

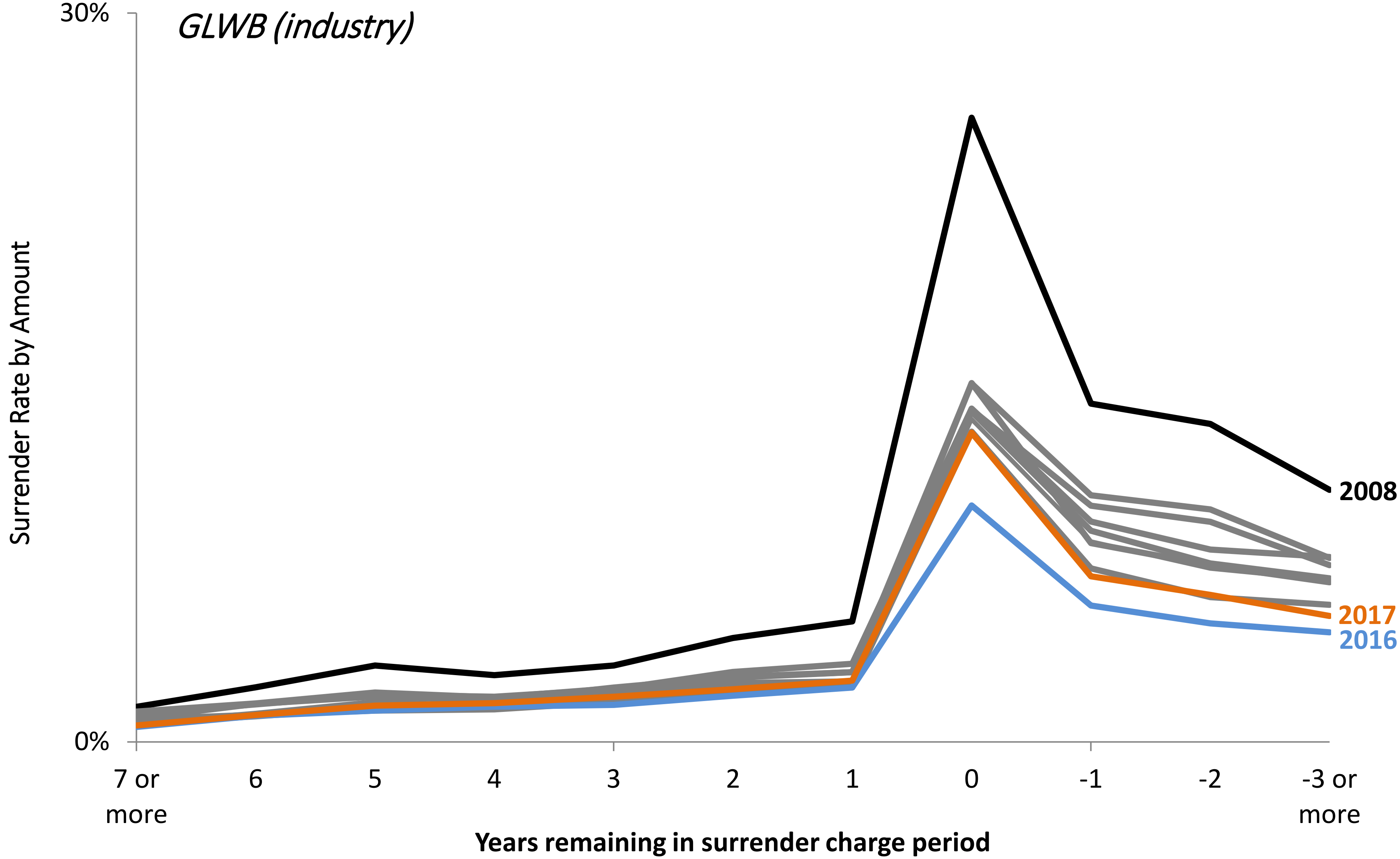
VA surrenders vary by living benefit type…



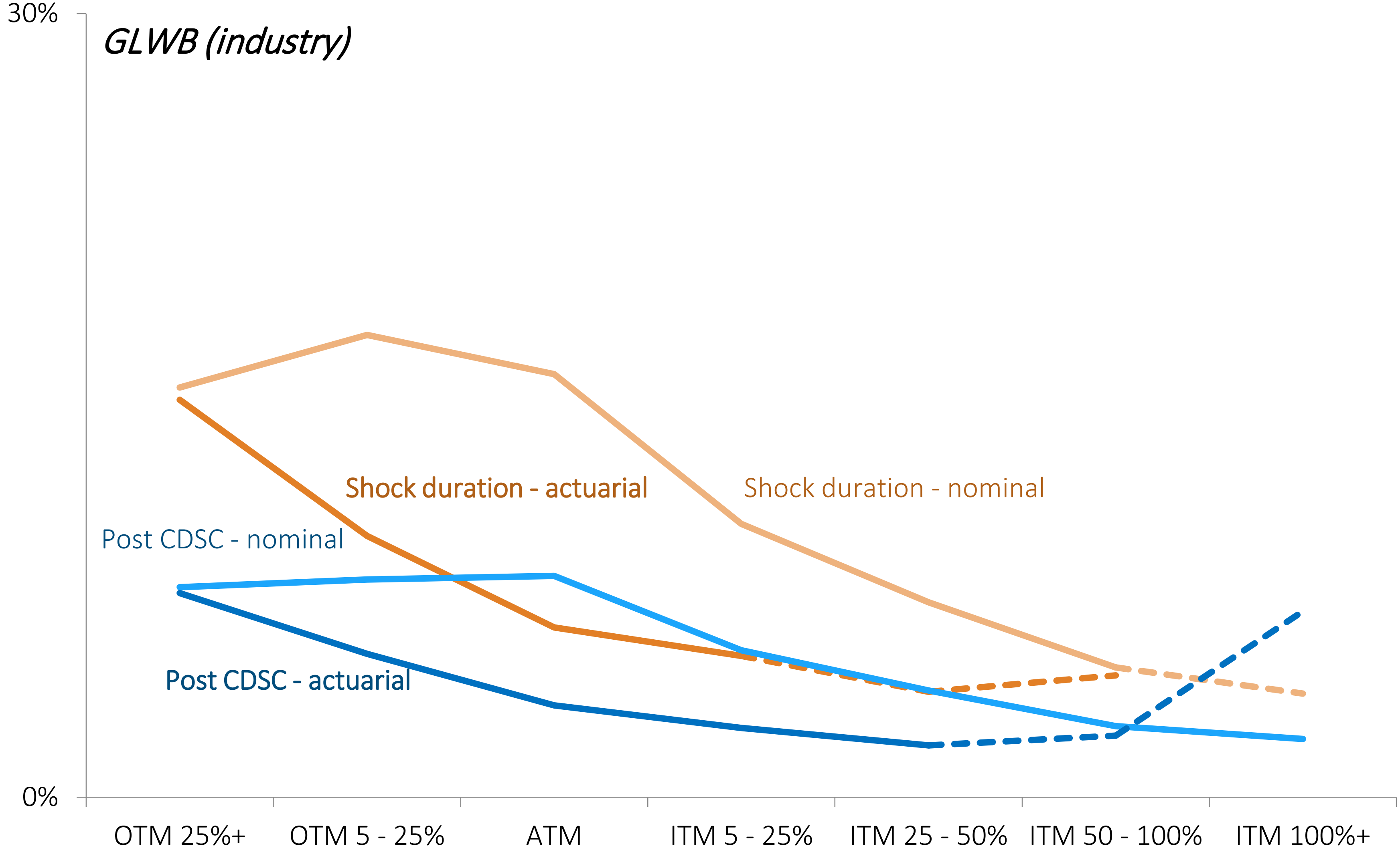
…and by partial withdrawal history



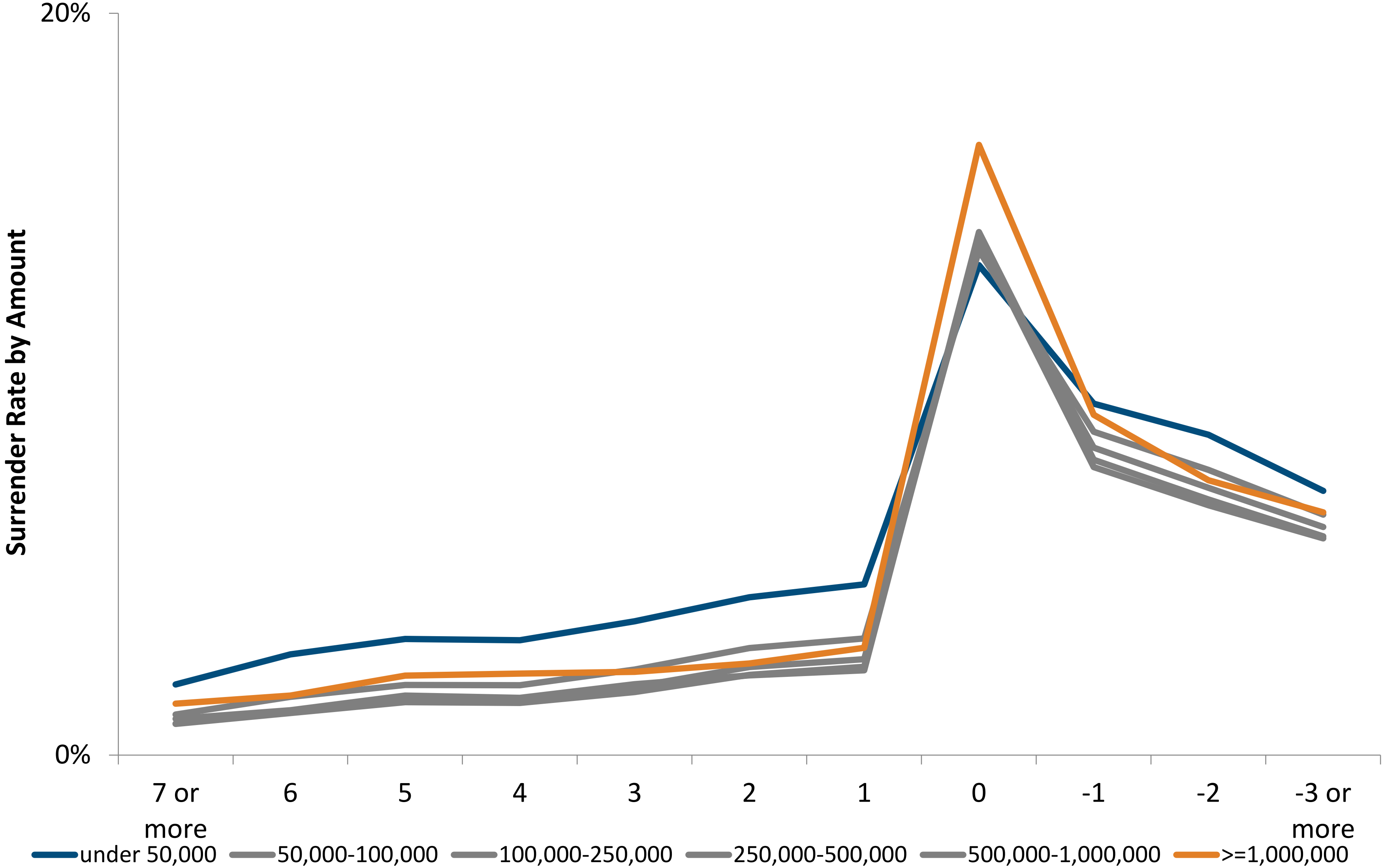
…and over time



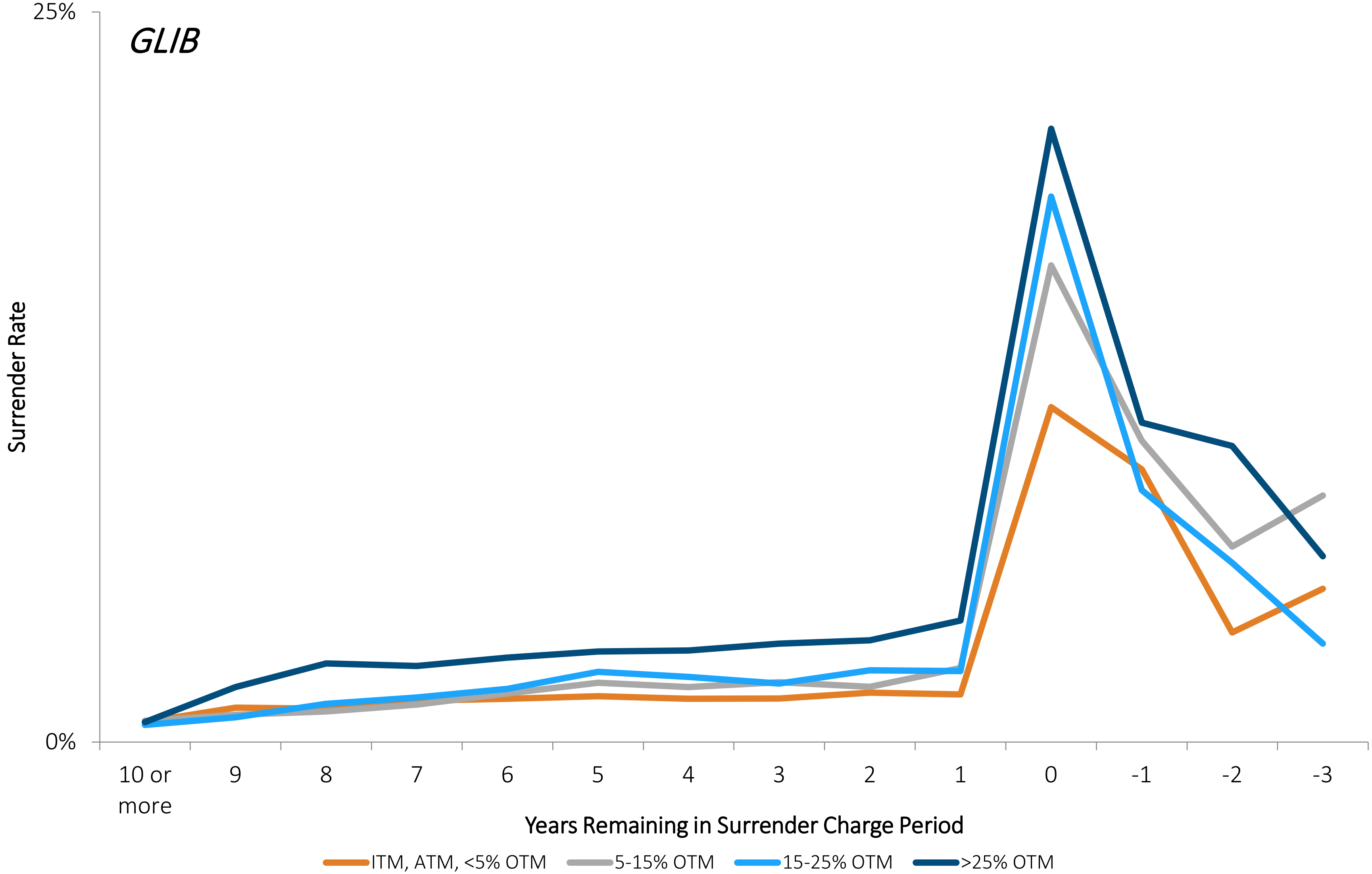
VA surrenders decrease with moneyness



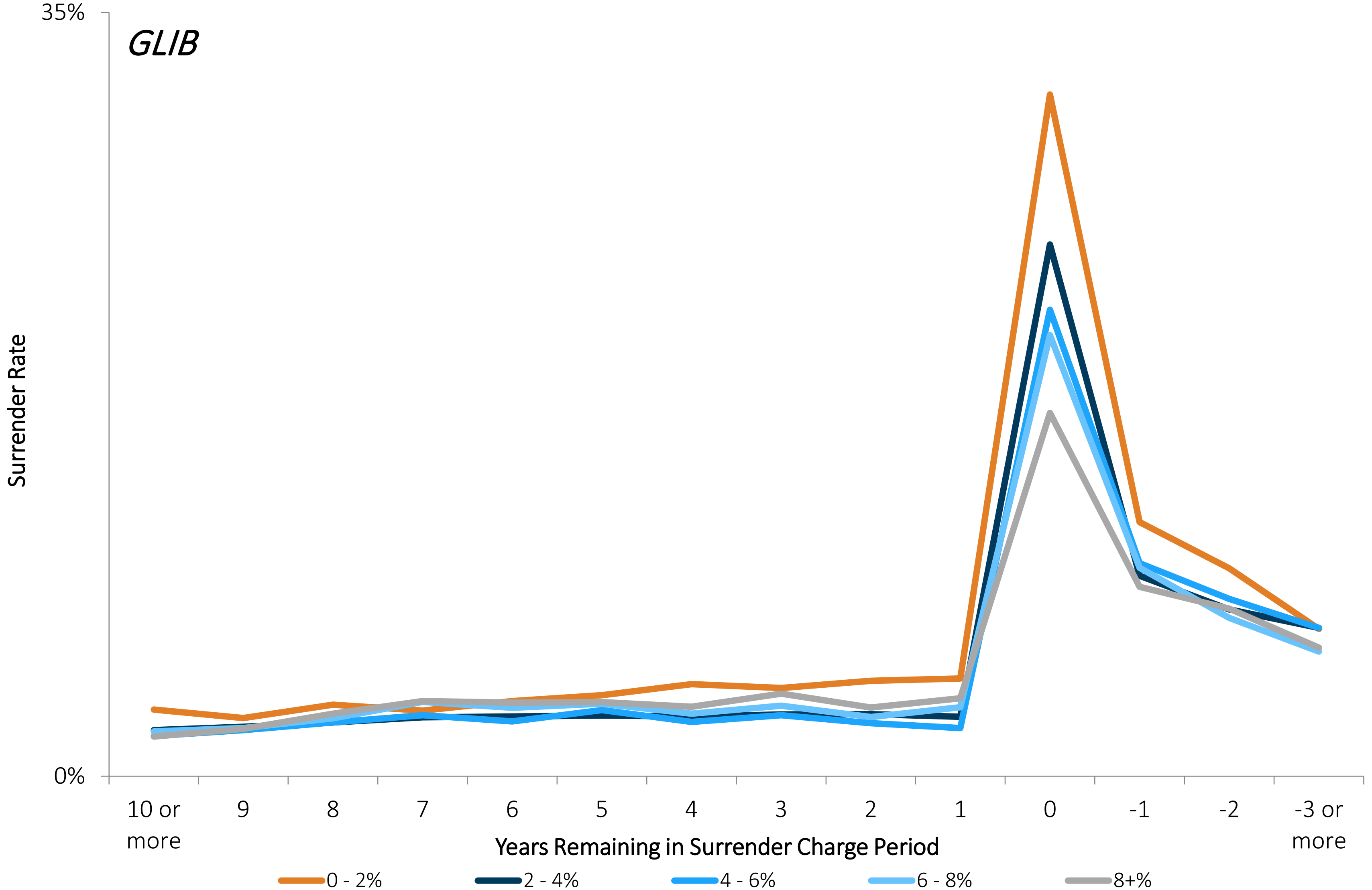
Largest and smallest VA contracts behave differently



FIA GLIB surrenders decrease with moneyness

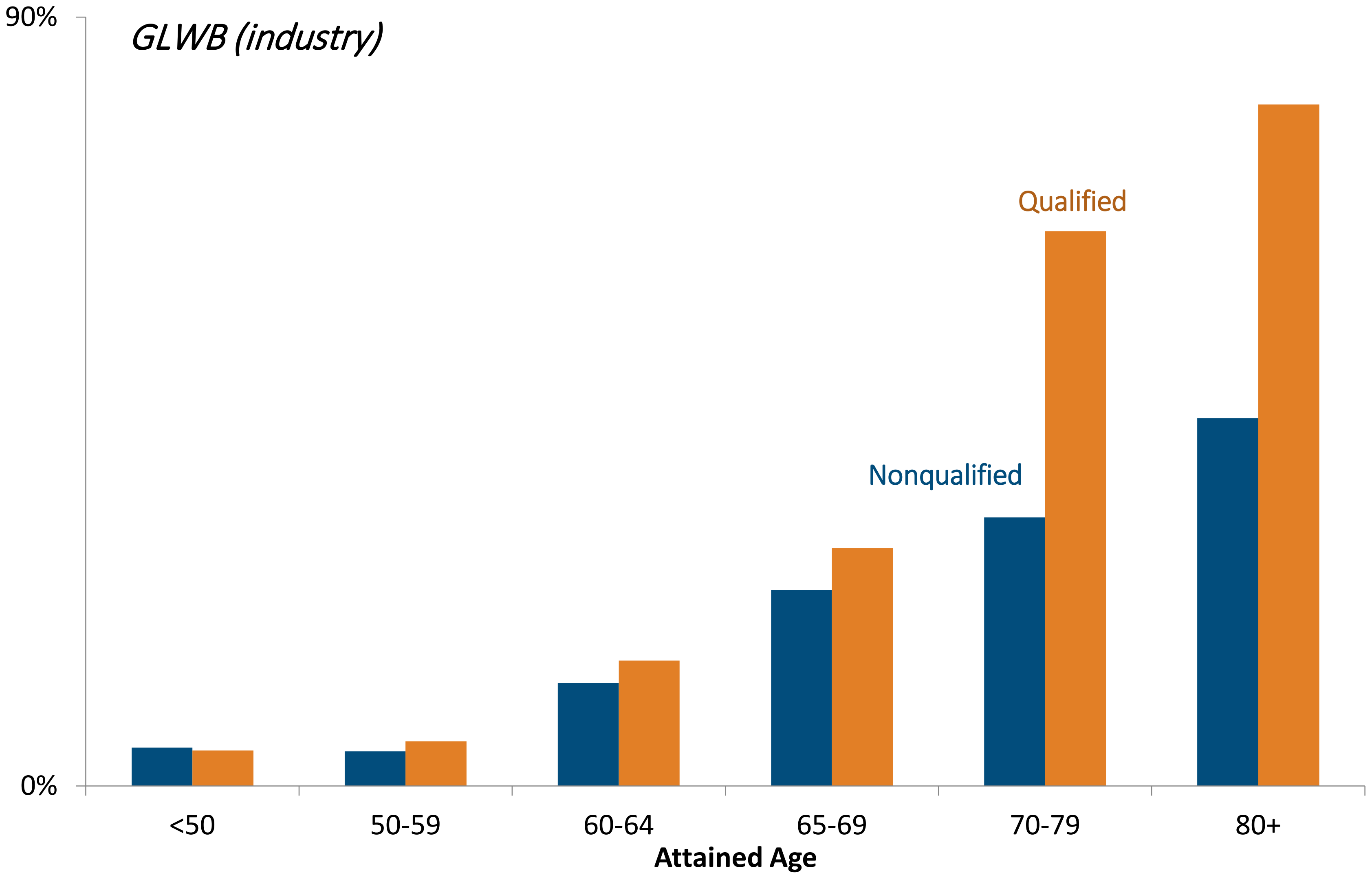


FIA GLIB surrenders vary by credited rates

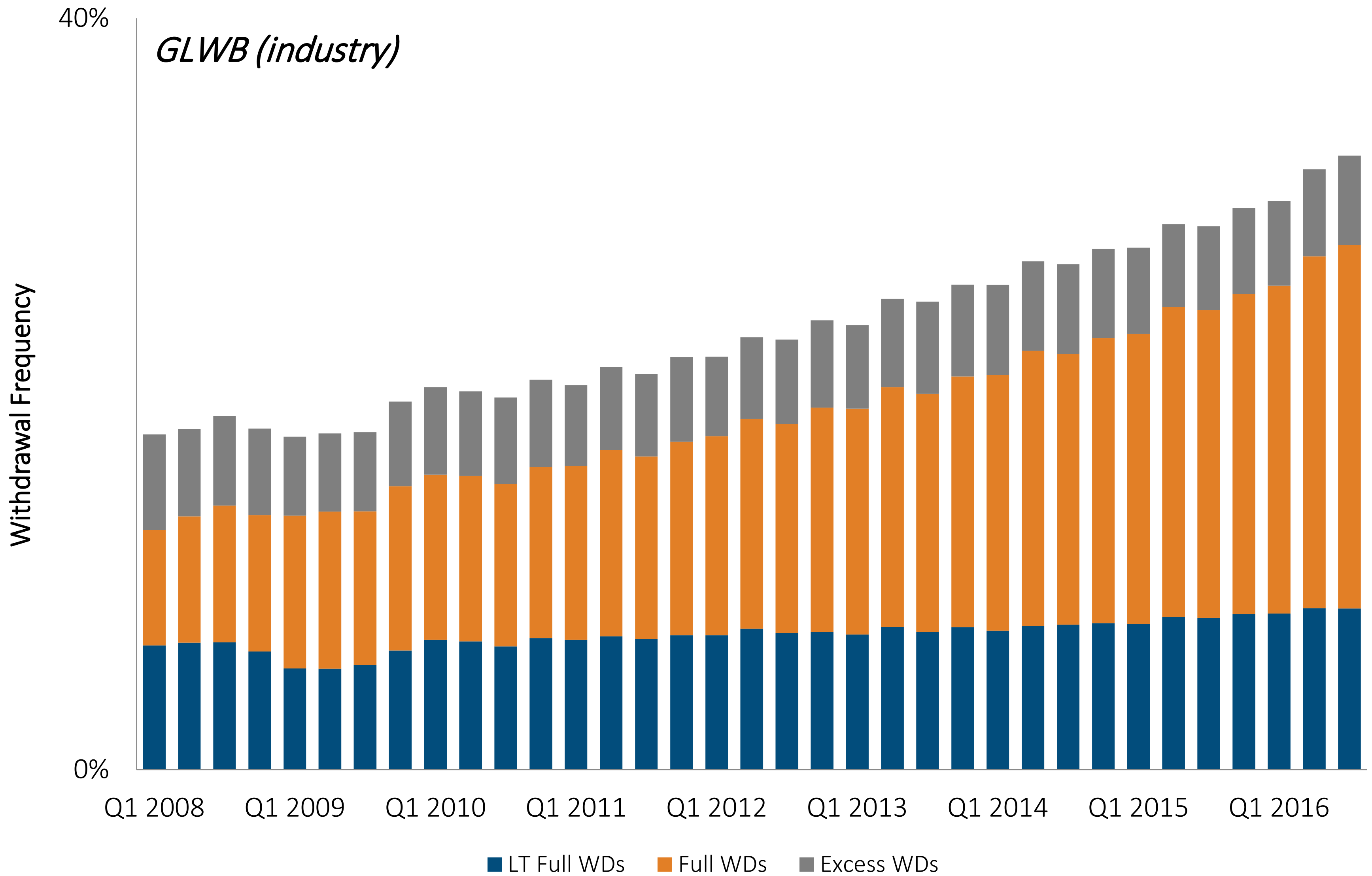


Partial Withdrawals

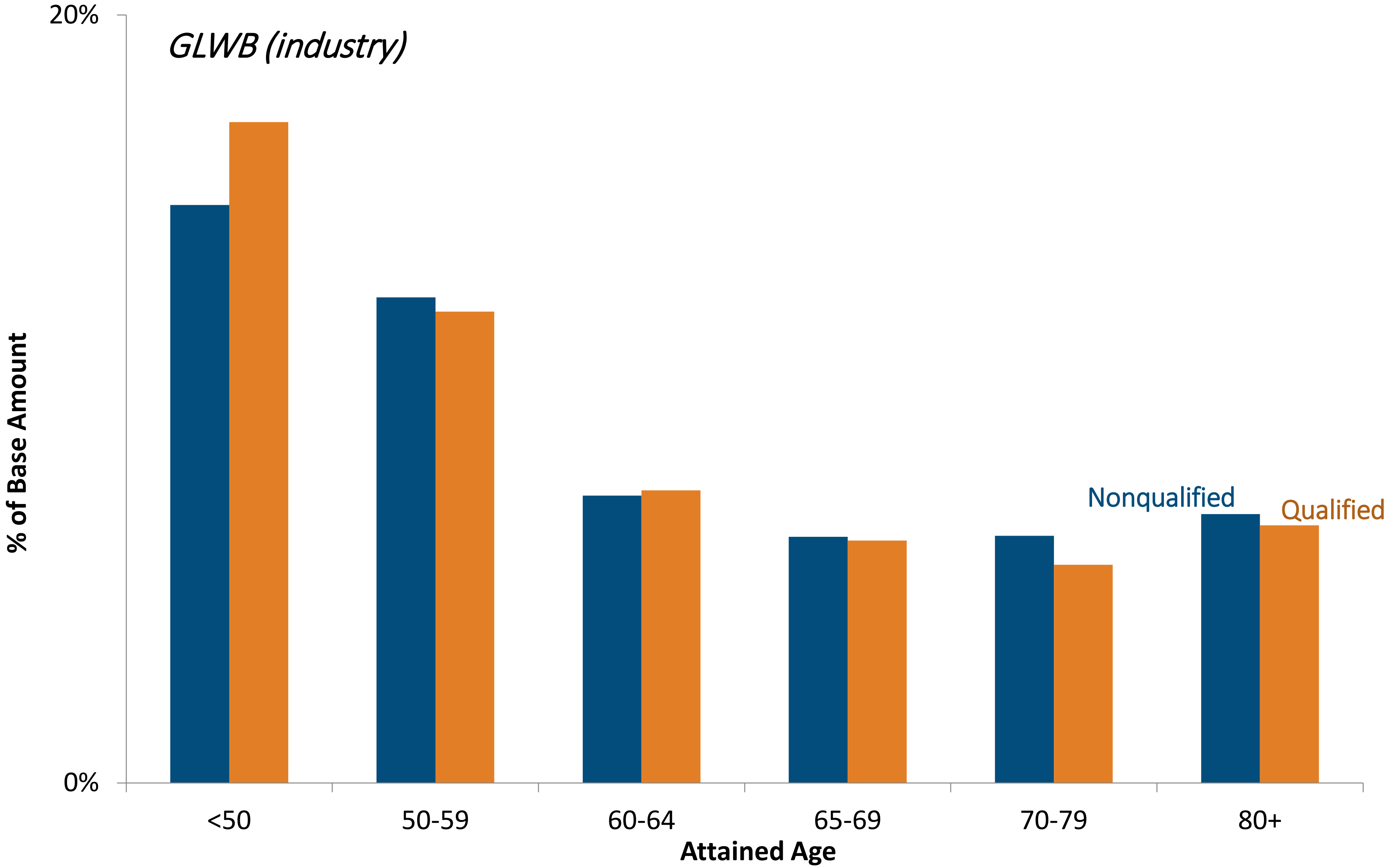
Age and tax status are drivers of VA withdrawal frequency



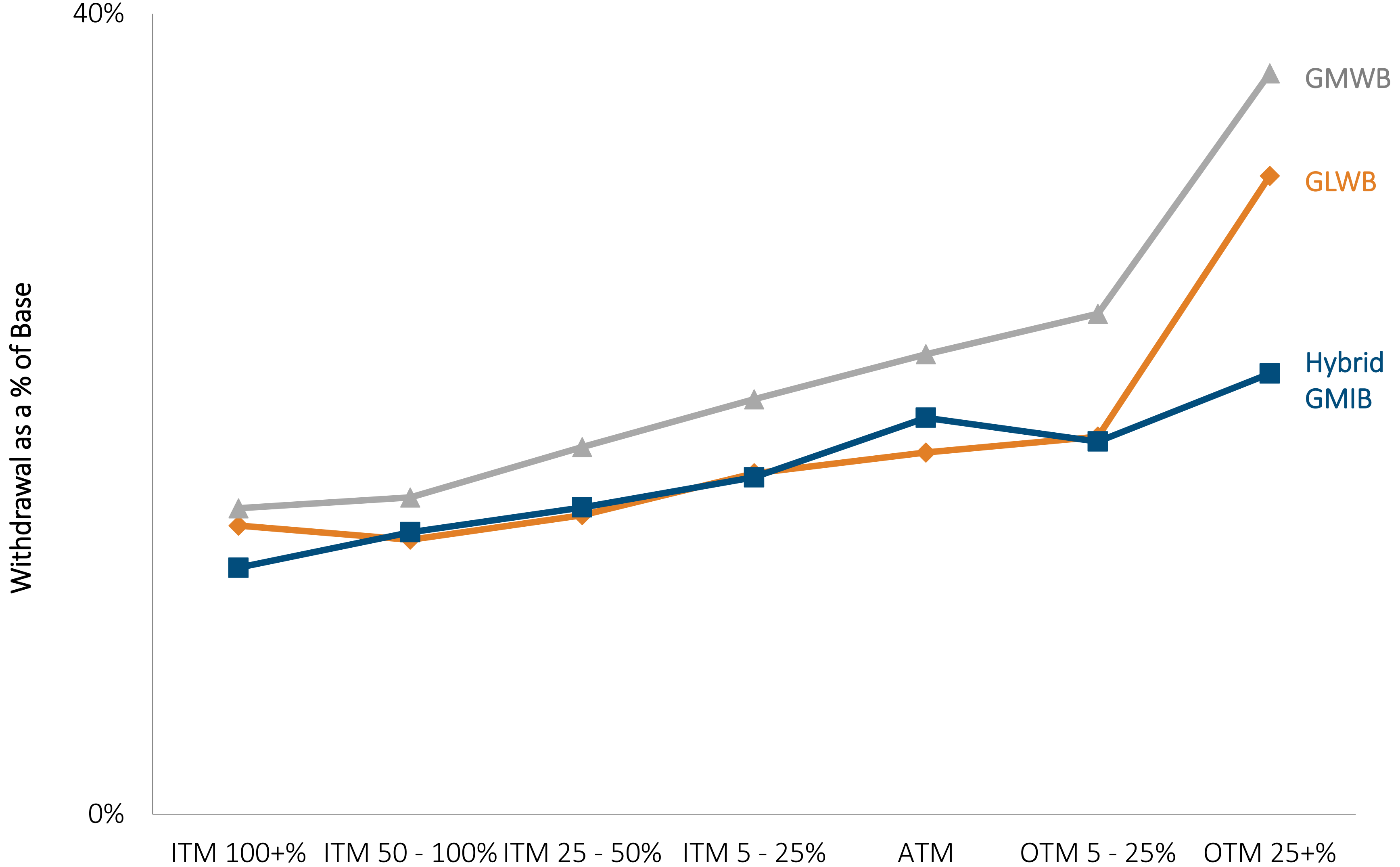
VA withdrawal behavior is becoming more efficient



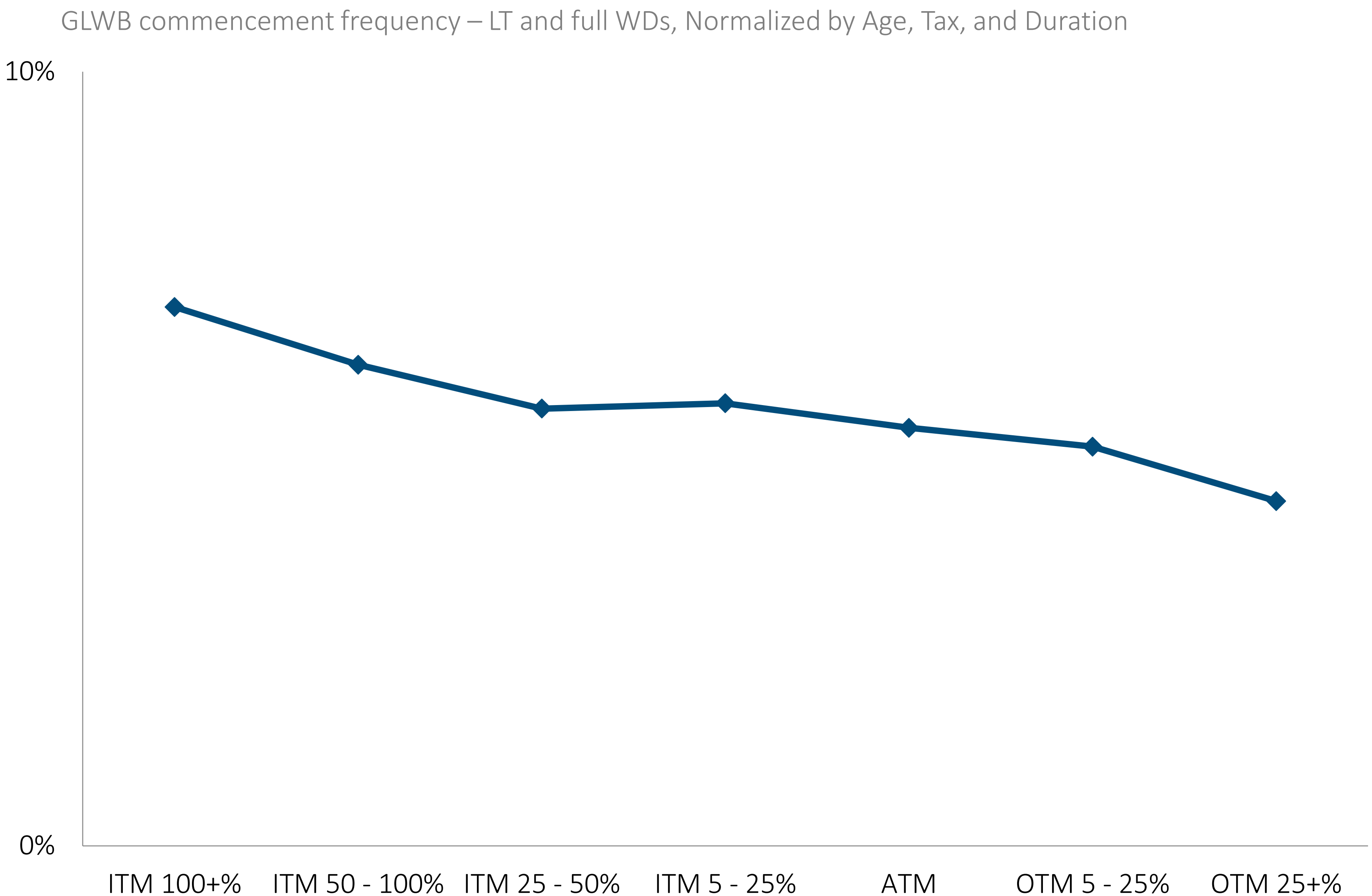
Age and tax status are drivers of VA withdrawal amounts



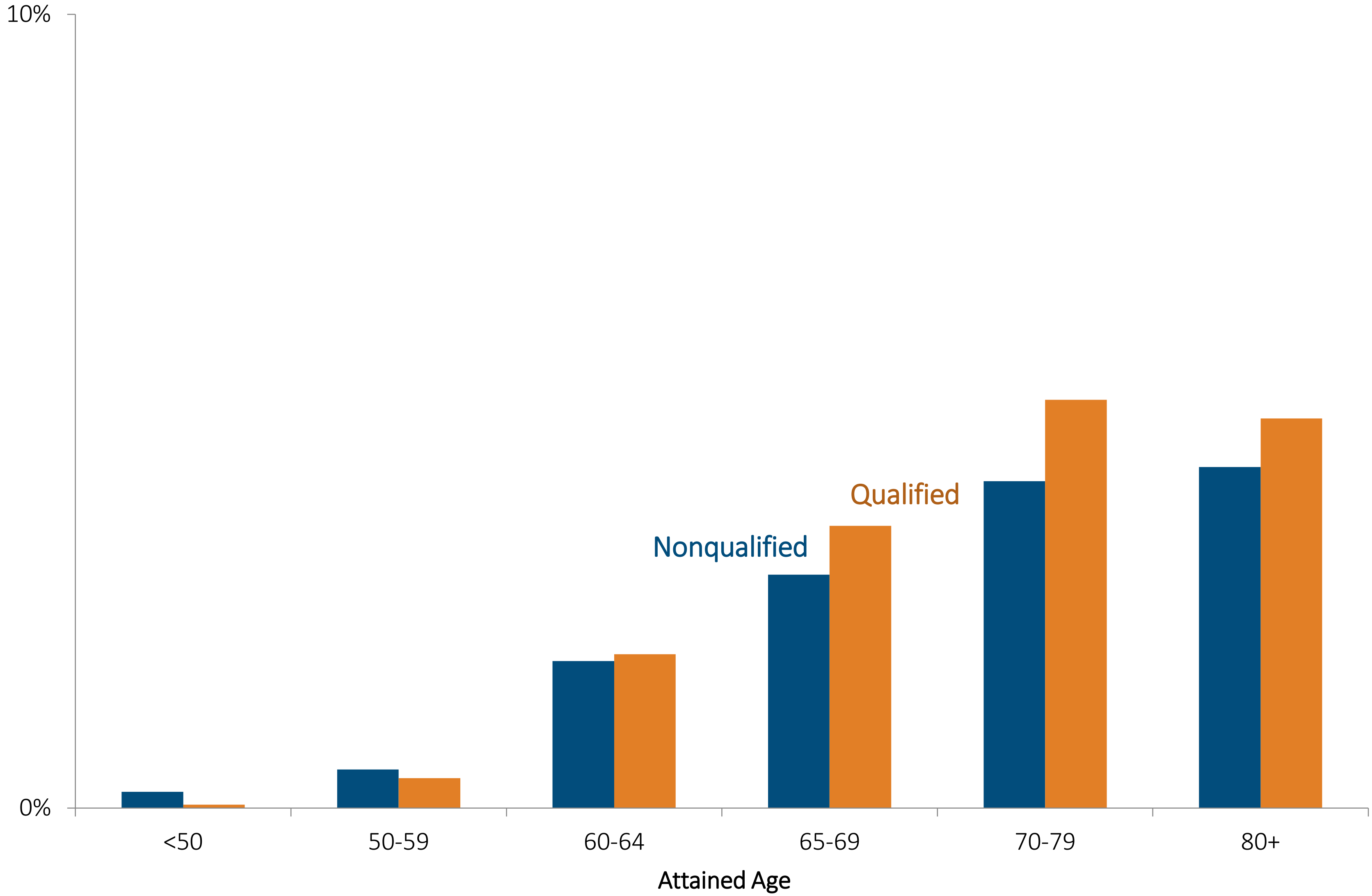
VA moneyness has different effects on excess WDs…



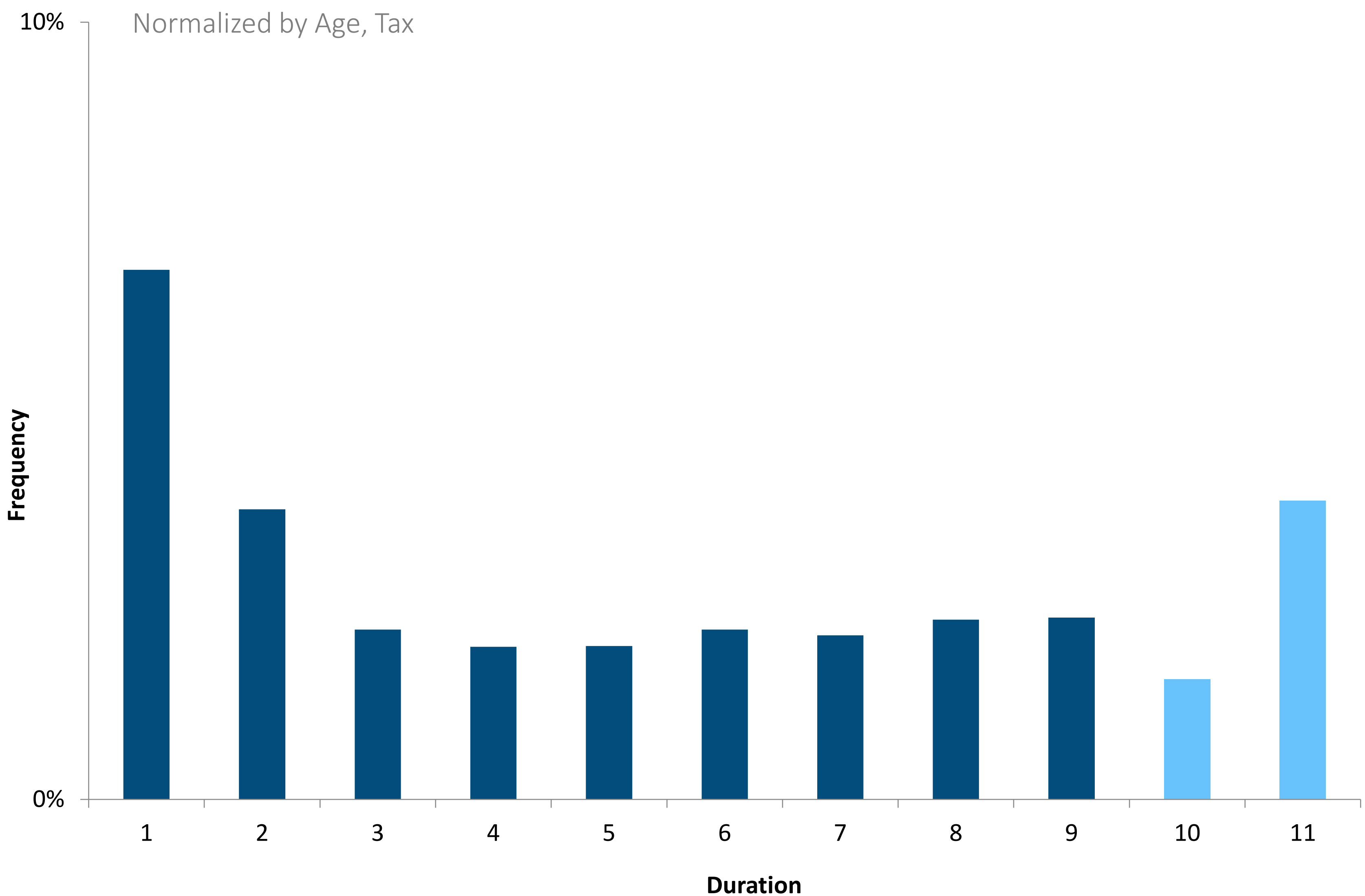
…and WDs at or below the maximum



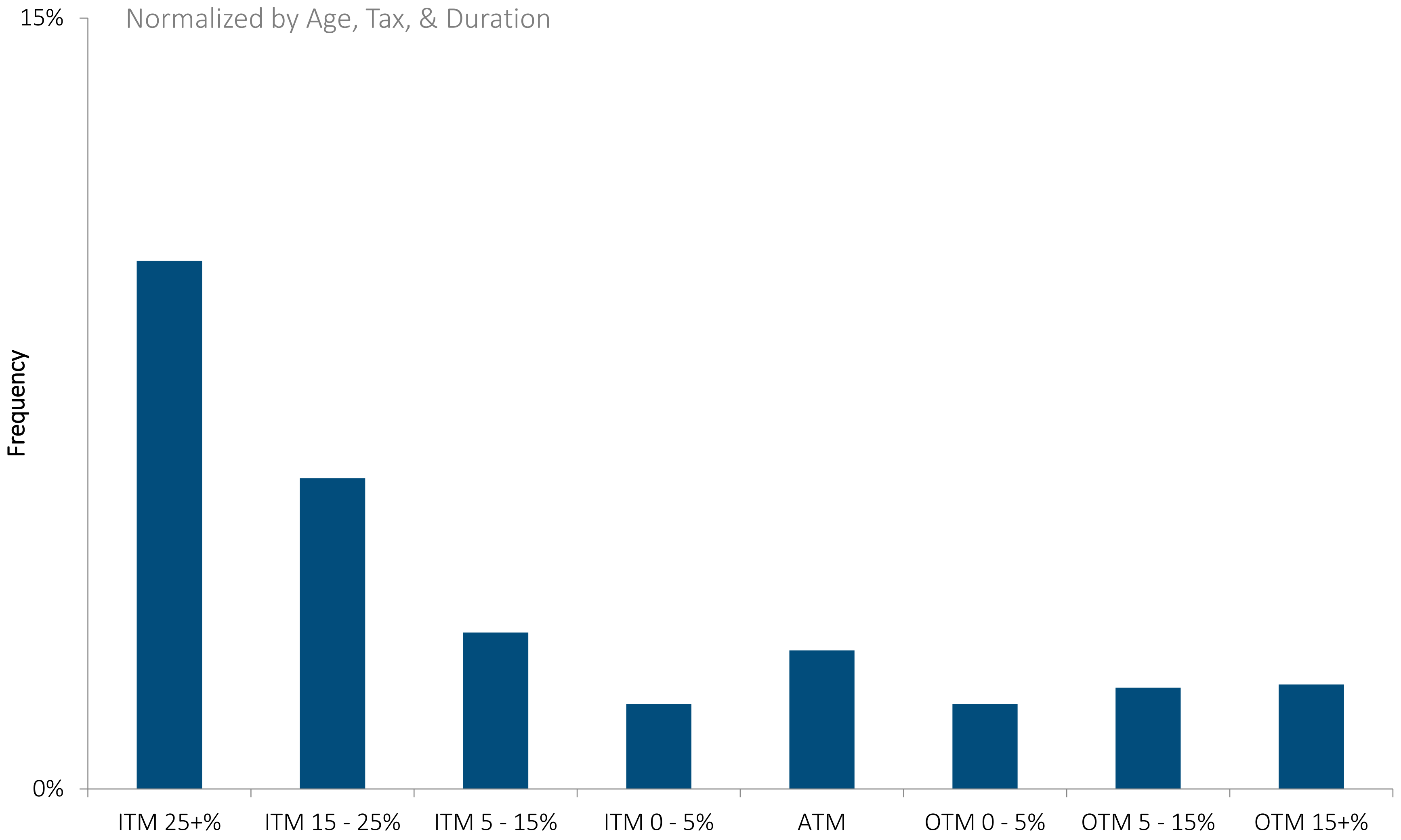
FIA GLIB commencement rates vary by age…



…and duration



…and actuarial moneyness



2018 VALUATION ACTUARY SYMPOSIUM

Developing Behavioral Models

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Google it (or dust off your exam materials)

- Generalized linear model, logistic regression model
- Train and test data
- Goodness-of-fit, Bayesian Information Criterion
- Predictive power, standard error
- Bias-variance trade-off
- Overfitting

Meta-modeling

- What is the functional form of the model?
- How will you solve for the model parameters?
  - How will you choose between alternative models?
  - How will you quantify goodness-of-fit and predictive power?
  - Do you have a specific objective function?
- How often will you update the model?
- How will you communicate this to stakeholders?

Sample 1: solving for model parameters

Bootstrapping approach for goodness-of-fit

Apply this to train data to determine preferred models that best fit the train data for each number of model factors.

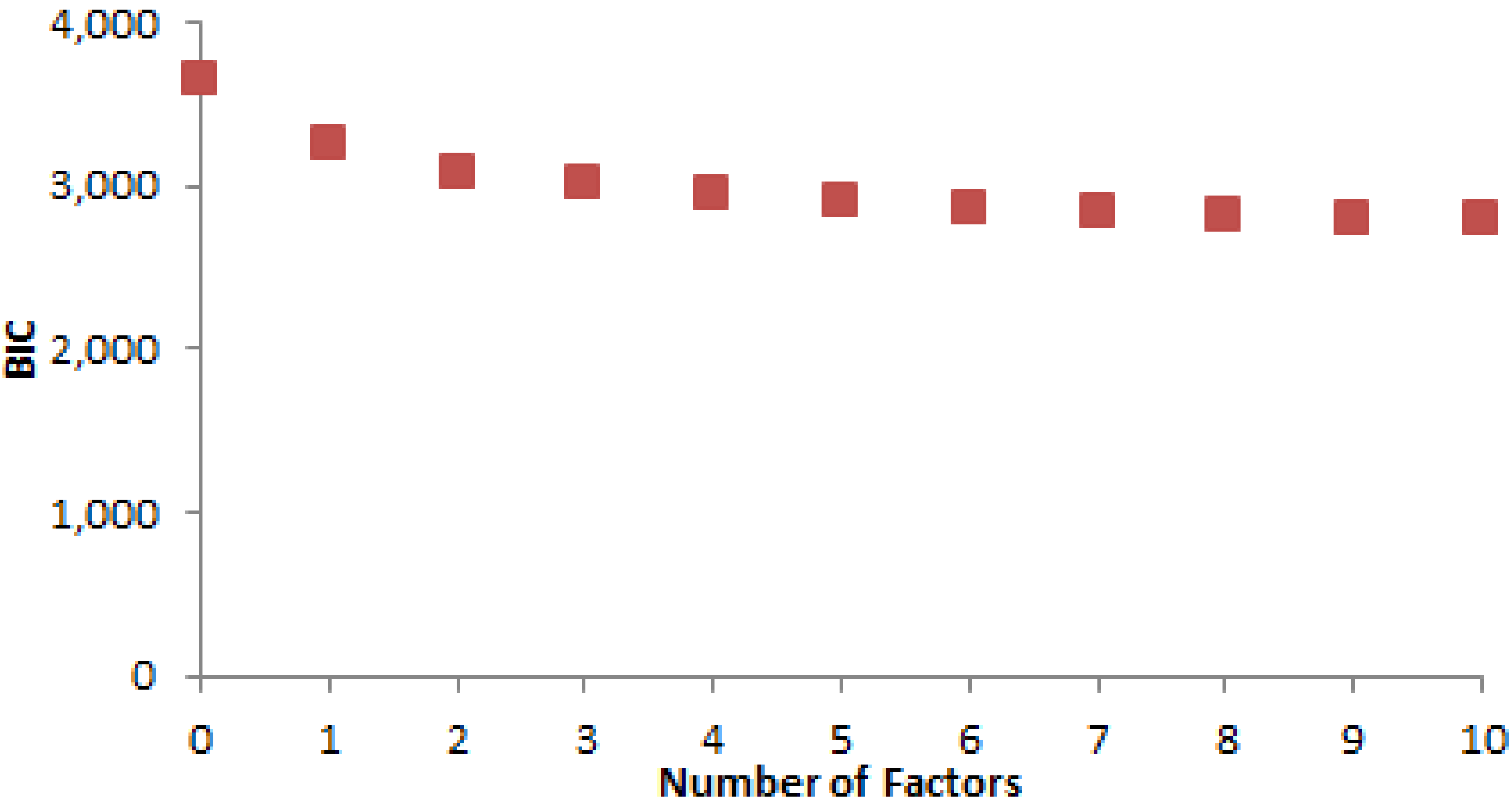
For k=1 to n, determine the k-factor preferred model based on best goodness-of-fit metric (e.g. lowest BIC score).

Then for each k, determine (k+1)-factor preferred model with best goodness-of-fit metric.

Continue, and stop at n-factor preferred model when further improvements in goodness-of-fit metric become immaterial.

Number of Factors	Preferred Model	Sample factors for annuity surrenders
0	Constant	Trivial model, such as average surrender rate across data period
1	Factor 1	Years Remaining in Surrender Charge Period
2	Factors 1, 2	Years Remaining in Surrender Charge Period, Partial Withdrawal History
3	Factors 1, 2, 3	Years Remaining in Surrender Charge Period, Partial Withdrawal History, Presence of Living Benefit
4	Factors 1, 2, 3, 4	Years Remaining in Surrender Charge Period, Partial Withdrawal History, Presence of Living Benefit, Moneyness of Living Benefit
...	...	...
n	Factors 1, 2, 3, 4, ..., n	Years Remaining in Surrender Charge Period, Partial Withdrawal History, Presence of Living Benefit, Moneyness of Living Benefit, Contract Size, Interaction Terms

Sample 1: solving for model parameters



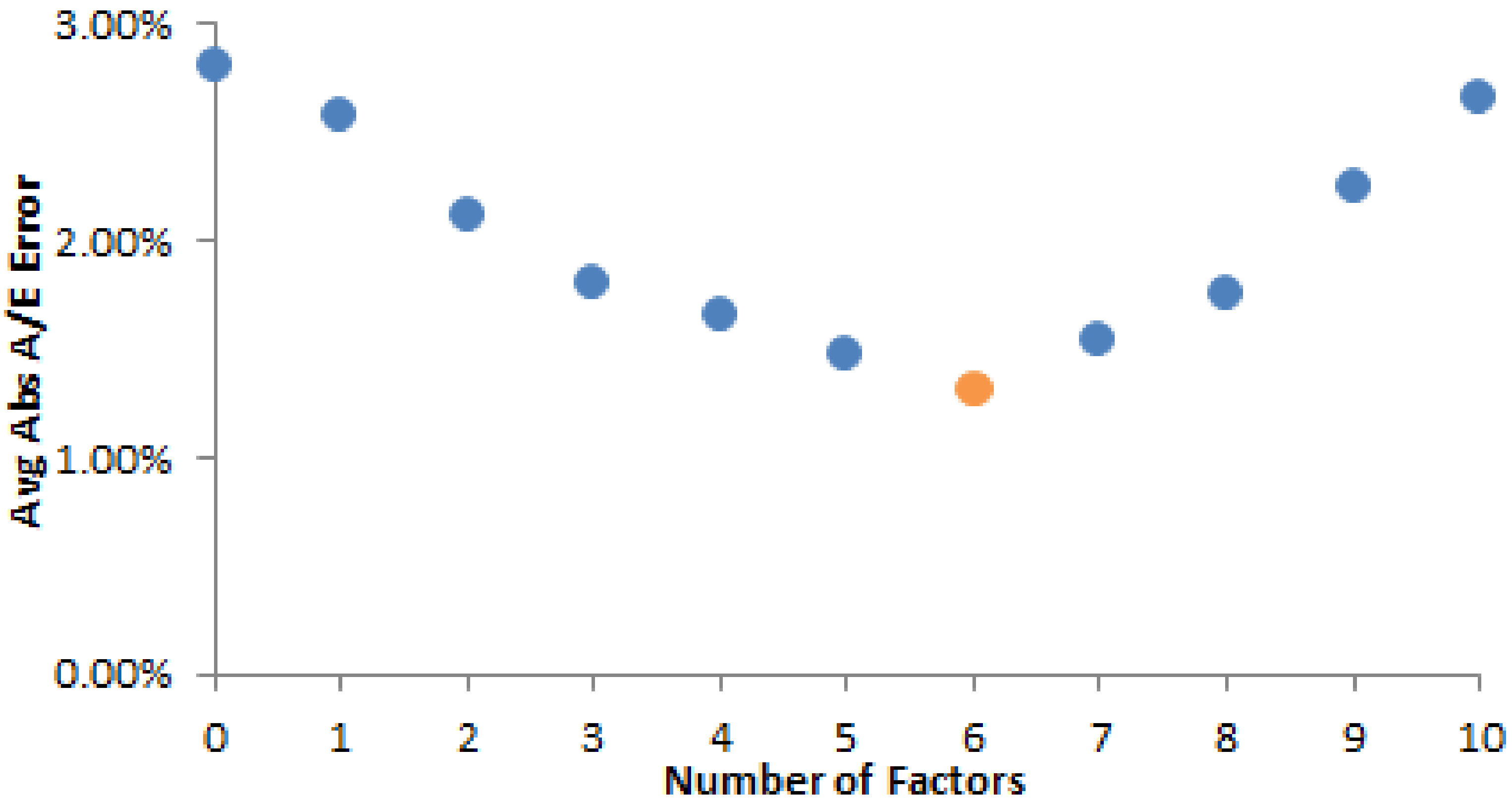
Sample 1: solving for model parameters

Testing predictive power

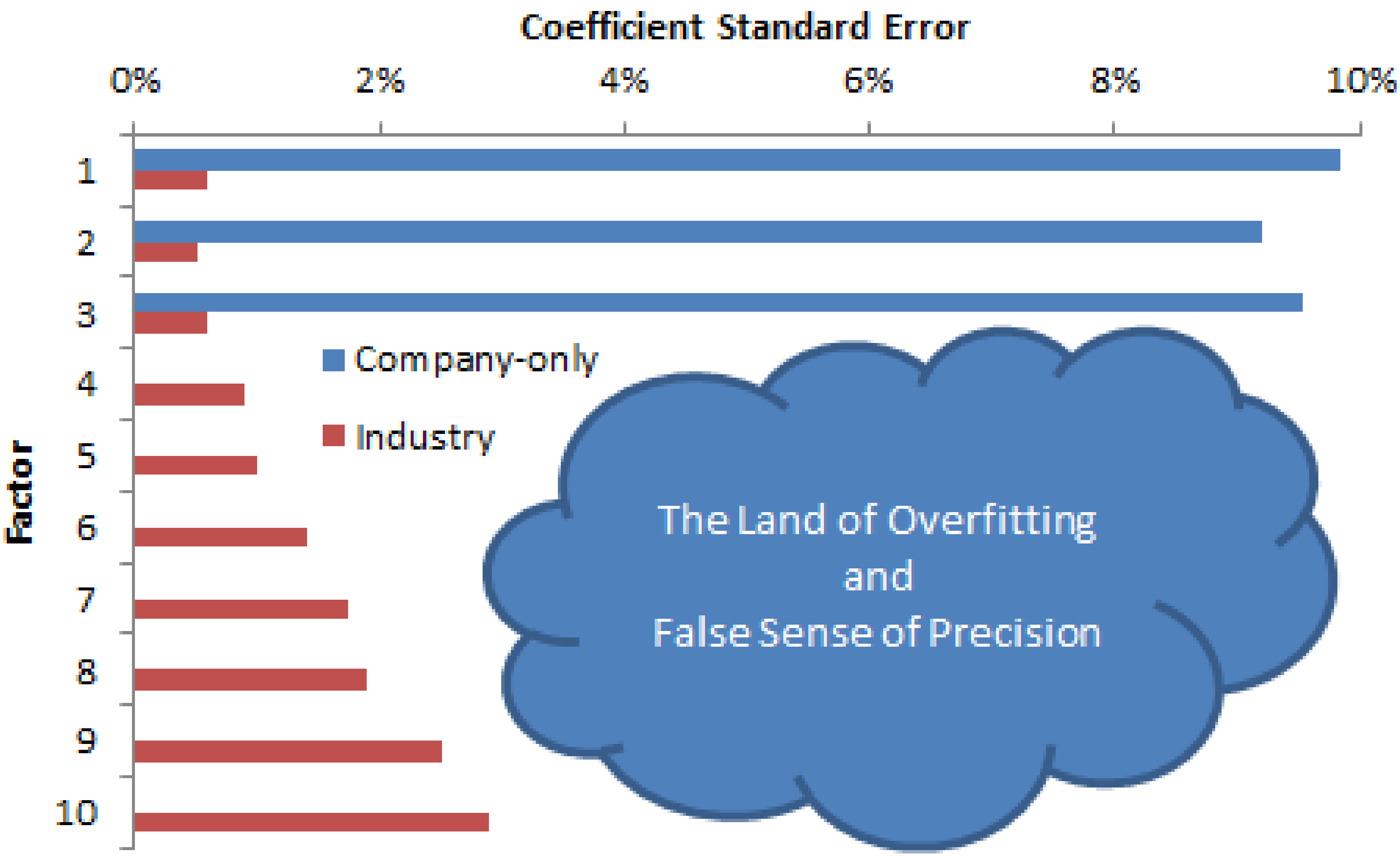
Apply this to test data to determine which of the n models above has the best predictive power.

For each of the n models above, perform j-fold cross-validation to determine average absolute A/E error across the j folds.

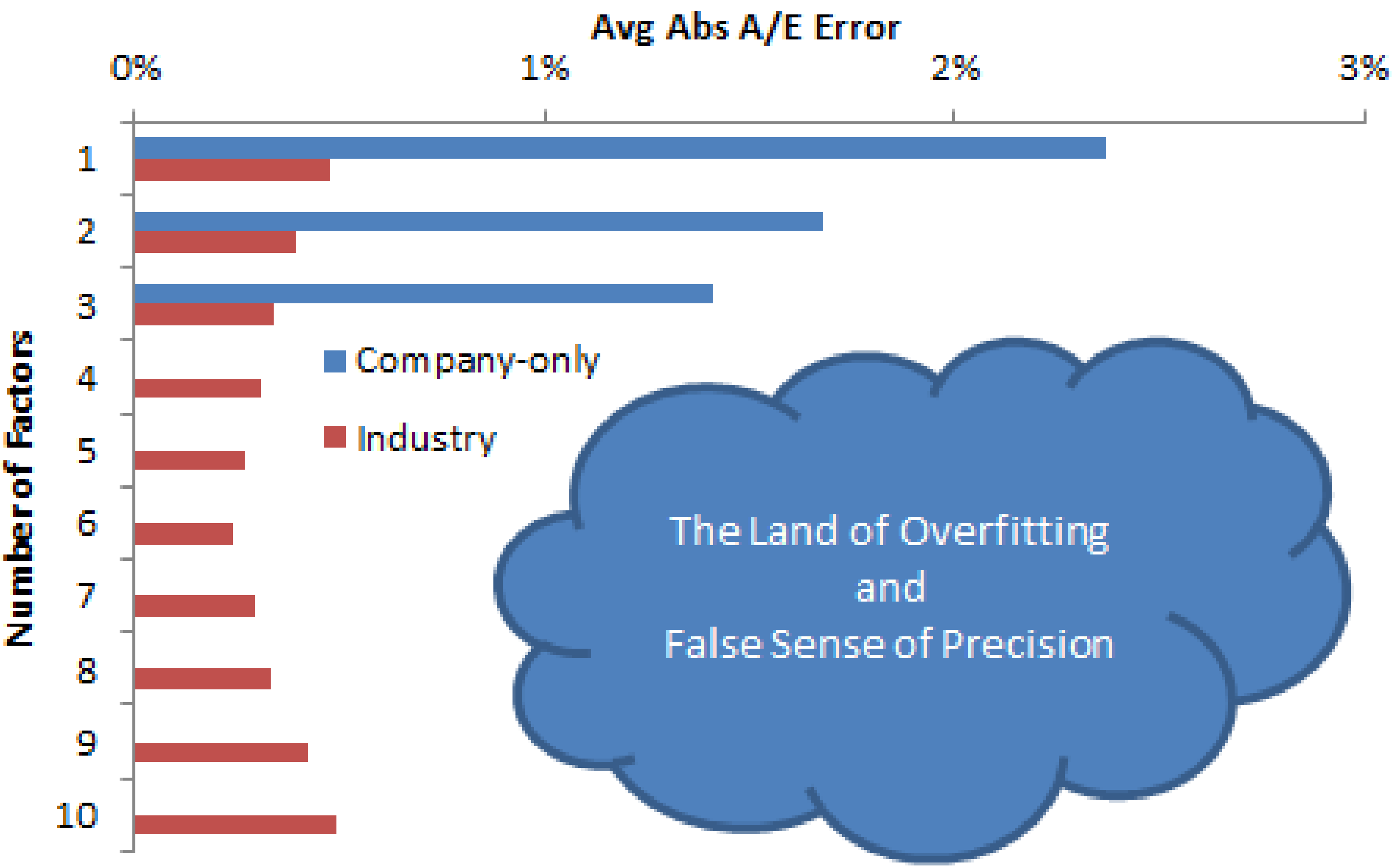
Choose the model with lowest average absolute A/E error.



Sample 2: the power of more data, industry ~ 40x company



Sample 2: the power of more data, industry ~ 40x company



Sample 2: the power of more data, industry ~ 40x company

More data and/or relevant industry data

→

Art+science, subject matter expertise, and actuarial judgment

→

More statistically justifiable model factors, and dramatically improved fit and predictive power.

ruark

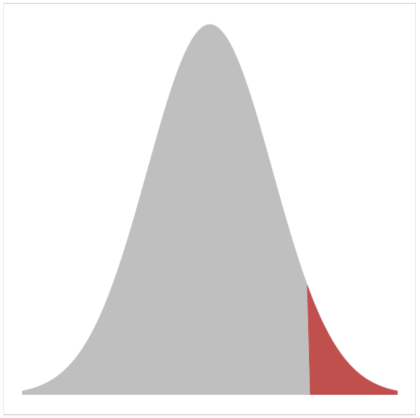
THE Actuary June/July 2018

http://theactuarymagazine.org/when-is-your-own-data-not-enough/

2018 VALUATION ACTUARY SYMPOSIUM

Using Models for Risk Management and Reinsurance

SOCIETY OF ACTUARIES®

Behavior = Model + 

Risk transfer considerations

- Behavioral component vs bespoke cover
- Claim trigger
- Term relative to underlying
- Maximum claim amount
- Keeping it fair
- Basis for updating the model
- Counterparties

Discussion

Canada Life™ Reinsurance

Advanced Reinsurance Treaty Considerations

- Judy Brillert, Manager, Reinsurance Treaties, Canada Life Re
- Christine Peloghitis, VP Reinsurance Treaties, Canada Life Re

GREAT-WEST LIFECO INC.

CHANGES IMPACTING REINSURANCE TREATIES

Privacy

Confidentiality

LIBOR

FATCA

Jumbo Breaches

Upcoming Considerations

GDPR – General Data Protection Regulation

- In effect as of 25 May 2018
- Aim is to protect the personal data of all EU residents and to ensure the transparency and fair processing of personal data
- Global reach as it applies to all companies that process or control the personal data of EU residents
- Cedant would be required to have agreement from the Reinsurer complying with GDPR's rules for transfer of personal data

Canada Life™ Reinsurance

California Privacy Act of 2018

- In effect as of 1 January 2020 (signed 28 June 2018)
- Aim is very similar to the GDPR consumer protections but specific to CA residents
- Compliance required if company exceeds any one of 3 thresholds:
  - — Annual gross revenues >$25M
  - — Obtains personal info of 50,000+ CA residents
  - — 50%+ of annual revenue is from selling CA resident personal info

Confidentiality – Stand Alone and Treaty Article

- Be mindful of consistency with wording of an eventual reinsurance agreement
- Negotiate only what is really needed or done in practice
- General sharing of info or specific to one proposed transaction
- Term
  - 2-3 years from end of discussions if not pursued
  - Upon execution of a definitive agreement
  - Align the timing requirements of the confidentiality clause of treaty which has its own effective date.

Confidentiality – Securities Procedures Clause

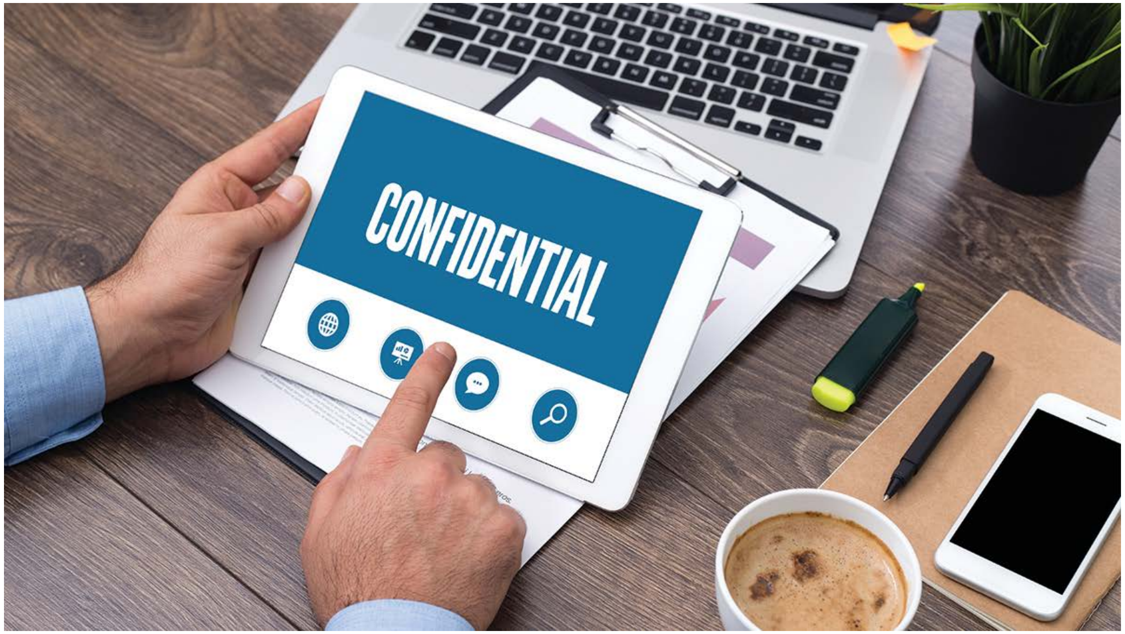
- Vendor Self-Assessments
- SSAE, SOC Questionnaires
- Encryption

Document Security

- Password protect docs
    - — Internal: Only send network path of file on share drive
    - — External
        - Secure emails TLS – transport layer security
        - Assign general password for all information exchanges
- Autofill of emails
- Remove metadata

Privilege and Confidential

- Must be a lawyer
- Must be for purpose of providing legal counsel
- Cannot further distribute email
- Avoid saving emails on company network



Canada Life™
Reinsurance

Access to Records

- Purpose is to ensure Cedant is complying with terms and conditions of the agreement
- One-way right for Reinsurer
  - Cedant provides all the information
  - If mutual, Reinsurer should exclude its pricing and retrocession files
- Availability records
  - Offsite records management
  - Preserving privileged status
- Access to third party administrators, claims adjusters, uw agents, etc

Canada Life™ Reinsurance

Access to Records

- Frequency
  - — Maximum visits per year
  - — Expanded access in time of dispute
  - — Current on all payments on undisputed amounts
- Right to copy
- Designated representative
  - — Auditor from firm the CC had bad experience with may not be welcome
  - — Consultant or prior employee with intimate knowledge
  - — Adversarial relationships
  - — Separate confidentiality agreement required

LIBOR

- Phasing out in 2021
- Potential replacements:
    - Sterling Overnight Index Average (SONIA) in place of GBP LIBOR
    - Secured Overnight Financing Rate (SOFR) in place of USD LIBOR
- Not just a simple administrative replacement in the treaty
- Used pervasively in contracts so will need to inventory now.

FACTA – Foreign Accounting Tax Compliance Act

- Effective March 18, 2010
- Companies exchange valid W9 to prove they are not subject to withholding
- If not compliant then Cedant can withhold 30% of premium to pay to IRS on behalf of Reinsurer
- Wording not always included in treaty
- Notice in advance of withholding
- Process on how to recover any amounts withheld
- Assistance in an attempt to recover
- Agreement to pay Reinsurer any recovered amounts

Jumbo Breach

- Automatic policy issued and in force
- Post issue discovered policy exceeded jumbo limit and should not have been automatically ceded, should be facultative
- Underwriting department would investigate
- Possible retrocession implications
- Amend the treaty as outside of treaty terms
- Do an amendment or a letter

Focus on Reinsurance Agreements

- Privacy Laws
- Data and Security Protections
- Benchmark rate changes
- Aligning treaty wording with ever-changing internal practices and regulations
    - IFRS17
    - PBR
    - Rate Guarantee

Canada Life Reinsurance Treaties Team

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