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NAIC VA Reserve and Capital Reform: Perspectives “at the Final Turn”

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NAIC VA RESERVE AND CAPITAL REFORM PERSPECTIVES "AT THE FINAL TURN"

EBIG CONFERENCE (BALTIMORE)
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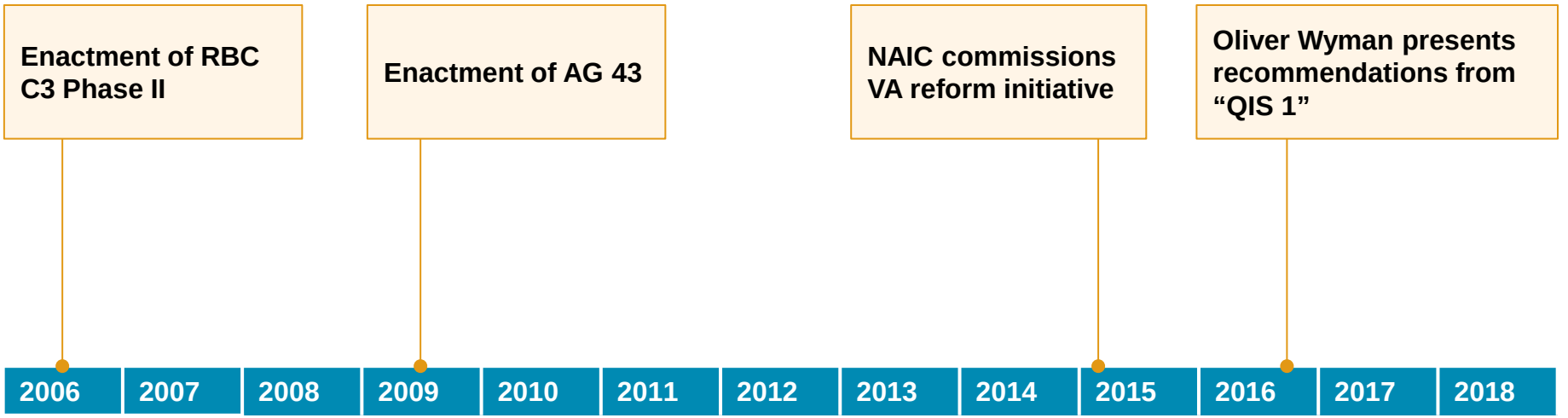
Agenda

- Provide background of the NAIC VA reserve and capital reform initiative
- Recap proposed revisions to AG43 and C3P2
- Selectively detail most salient (and controversial) topics for revision

Recent history of VA statutory reserve and capital standards

Timeline
2006-2018



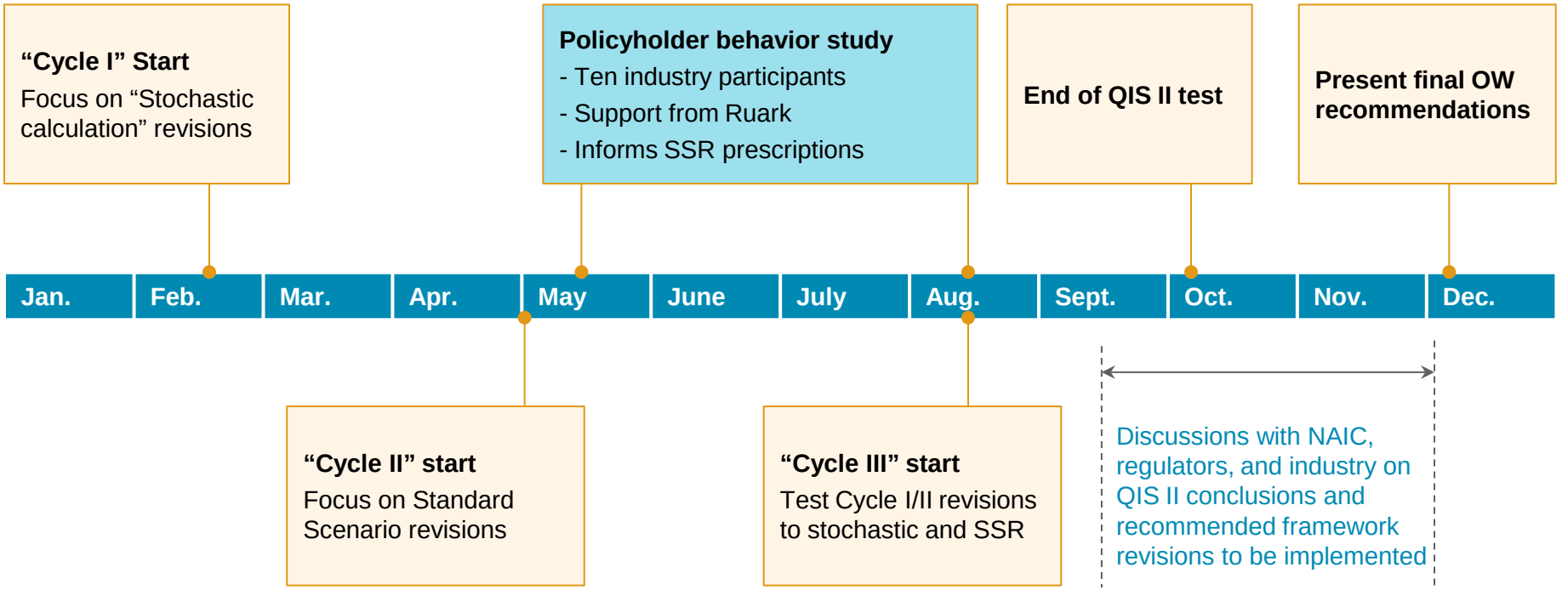
"Rise of VA captives"

- Poor alignment of statutory risk factors with economic – and GAAP – risk profile
- Increasing variation in company hedging objectives
- (Nearly) continuously falling interest rates

QIS

QIS II consisted of three 10-week Test Cycles and concluded in October
Stochastic, Standard Scenario, Combined revisions examined in sequence

QIS 2 timeline



Recommended framework revisions support five enhancement objectives
Sixth “implicit” objective identified during QIS2

Enhancement objectives	Description
Ensure robust funding requirements	• Funding should be adequate to ensure liability defeasance with reasonable confidence
Promote sound risk management	• Risk mitigation should reduce funding requirements and minimize balance sheet volatility
Promote comparability across insurers, products	• Standardize assumptions across companies and products where appropriate • Ensure comparable level of conservatism in framework provisions
Preserve current construct where feasible	• Retain core constructs of the current framework, where possible – e.g., – Adherence to principles-based reserving – Book value approach to valuation using “real world” scenarios
Minimize implementation complexity	• Reduce computational complexity, improve interpretability, and minimize model risk
Improve “governability”	• Simplify to enhance regulator “confidence” in framework • Show regulators industry is incentivized to manage risk prudently

List of pending recommendation topics
Public release targeted for week of November 20

Ideas for revision	Topics for recommendations
1 **Stochastic calculation**	• Scenario definition (IR generator, equity criteria, proprietary generators, implied volatility governance)
	• GPVAD calculation (working reserve removal, deficiency discount rate)
	• Asset projections (NII projection, “NII vs. borrowing rate margin”)
	• Reflection of hedging (methods to reflect hedging, error factor guidance)
	• Revenue sharing (affiliated funds vs. non-affiliated funds, CTE High vs. CTE Low)
2 **Standard Scenario**	• Governance of CTE High vs. Low (AG43 SS vs. C3P2 SS)
	• Projection method (use of GPVAD, adjusted vs. best-efforts)
	• Capital markets path (conform to CTE level vs. fixed path, apply prescriptions to stochastic)
	• Reserve calculation (“benefit of doubt” buffer)
	• Refresh prescribed policyholder behavior assumptions to align with industry experience
3 **C3 Charge**	• Calculation mechanics (role of tax reserves, impact of additional SS reserve)
4 **Disclosure requirements**	• Capital markets scenarios (Sharpe Ratio principle adherence)
	• CDHS reflection (modeled vs. actual, implicit method qualification, “beating the market”)
	• Actuarial assumptions and impact (experience reporting, cumulative decrement projections)
5 **Other topics**	• Admitted assets (derivatives and DTA), Reserve Allocation
	• Phase-in mechanics

Topics further detailed later

1 Stochastic scenarios

Regulatory directions received to-date
Testing of alternative equity calibration criteria for CTE calculations

Questions posed to regulators

- **What equity calibration criteria should be tested for CTE calculations?**
- Should equity calibration criteria be linked to prevailing interest rate conditions?
- Should equity calibration criteria with different mean or volatility be tested?

Current equity calibration criteria
Gross Wealth Ratio for S&P 500

Percentile	1 year	5 year	10 year	20 year
2.5%	78%	72%	79%	
5.0%	84%	81%	94%	151%
10.0%	90%	94%	116%	210%
90.0%	128%	217%	363%	902%
95.0%	135%	245%	436%	1170%
97.5%	142%	272%	512%	

Regulator guidance received

- Current calibration criteria should be tested
- Criteria linked to interest rates do not need to be tested, as data is not sufficient to demonstrate historical relationship
- Criteria with lower mean returns and higher volatility should be tested by Oliver Wyman in Cycle 2
- Criteria calibrated with longer US history – e.g., data from pre-Depression – should be tested by participants in Cycle 3
- Market-sensitivity in funding requirement should be driven by equity performance and IR levels, but not equity or IR volatility given long-term nature of liabilities

Next steps

- Oliver Wyman to present additional internal model results on impact of alternative calibration criteria to VAIWG
- Oliver Wyman to provide participants stochastic scenarios reflecting alternative calibration criteria for testing in Cycle 3
- Participants to test alternative scenarios in Cycle 3

Regulators affirmed the broad market risk profile of the framework

"Pro-cyclicality" of funding requirement vs. typical hedge programs
By market risk factors

Market risk factor	VA funding requirement	VA hedge program
Equity levels	↑	• Equity derivatives increase in value
Interest rate levels	↑	• Interest rate derivatives increase in value
Implied equity volatility	→	• Equity **options** increase in value
Realized equity volatility	→	• **Linear** equity derivatives increase in value
Implied IR volatility	→	• Interest rate **options** increase in value
Realized IR volatility	→	• **Linear** interest rate derivatives increase in value
Corporate spreads	↓	• *Few companies hedge corporate spreads*

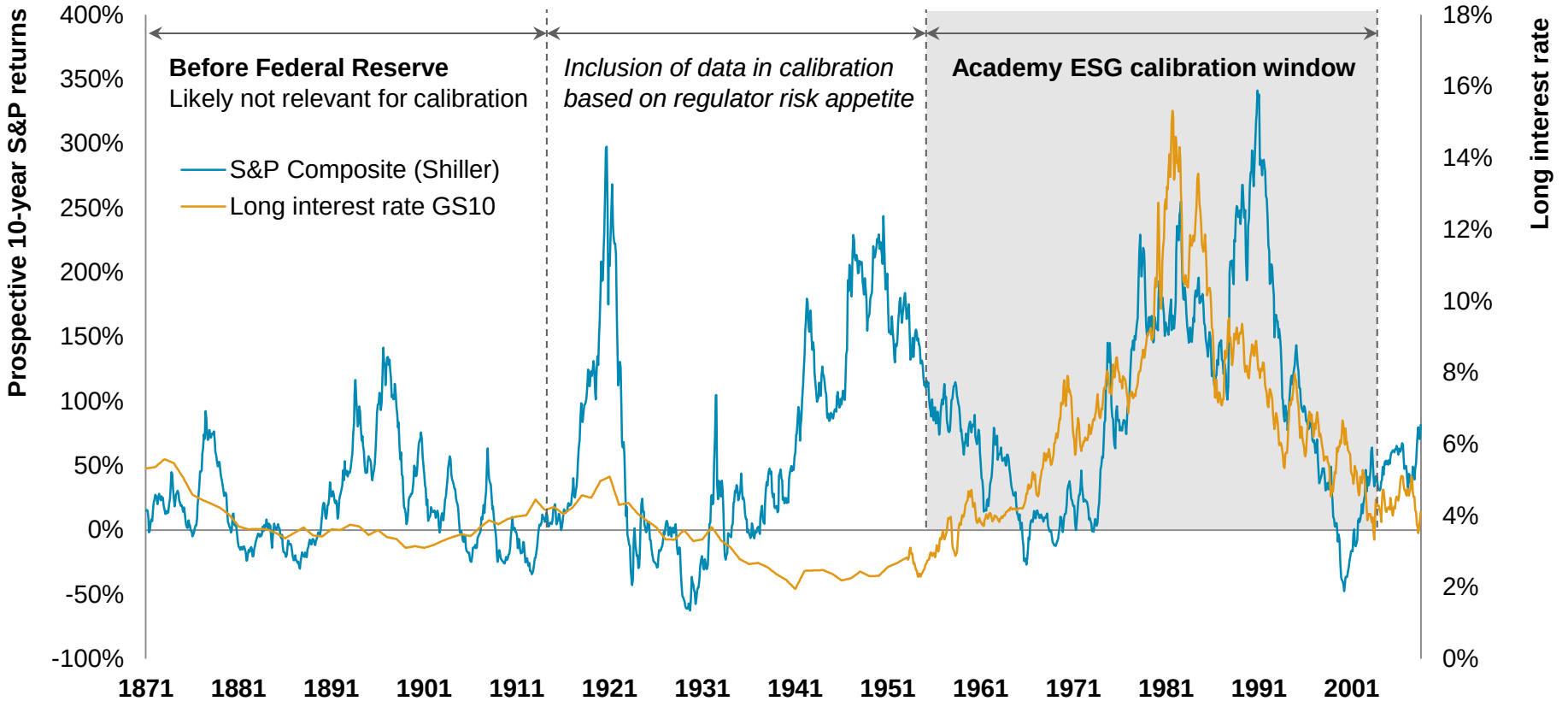
“Real world” scenarios reflect a subjective view of potential market outcomes
Relationships assumed – or not assumed – are solvency risk factors

Scenario generation conservatism across equity scenario parameterizations

Academy ESG represents historical data within its calibration window well, but regulators must decide whether the current window is appropriate

US economic data, 1871 to 2016[1]

Prospective 10-year S&P cumulative returns and long interest rates

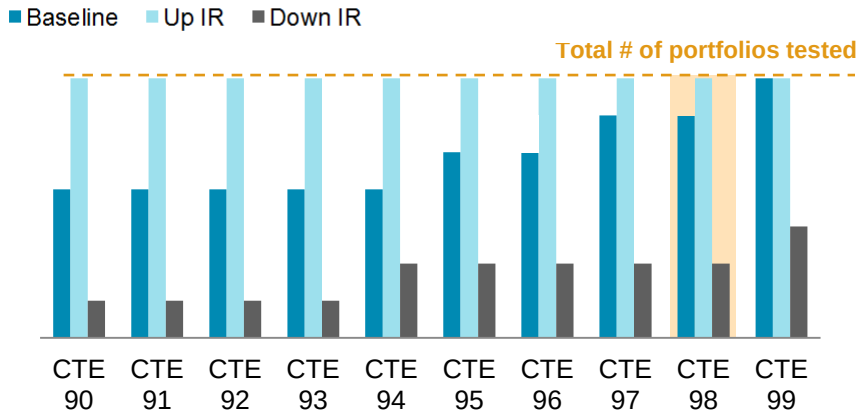


1. **Source**: http://www.econ.yale.edu/%7Eshiller/data.htm

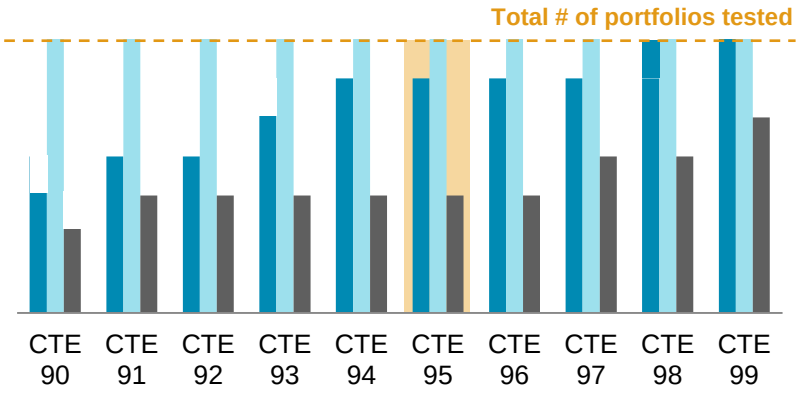
OW “internal model” highlights challenge to motivate hedging at TAR in low interest rate environments – more conservative equity scenarios only “helps”

Share of portfolios tested for which hedging reduces funding required for 400% RBC – fair value hedging, 10% error factor

Current equity calibration

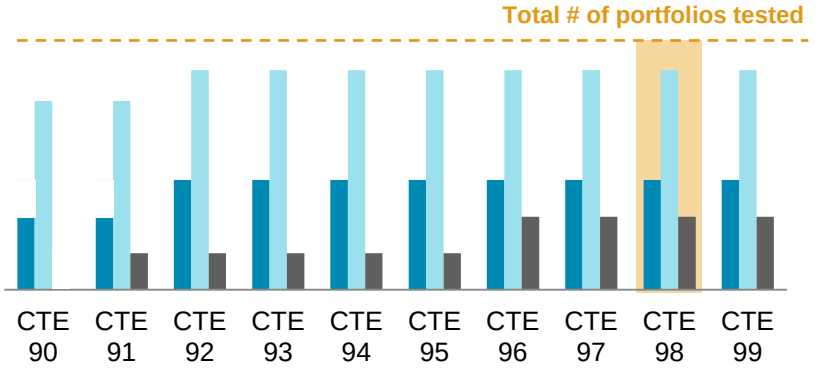


Alternate equity calibration

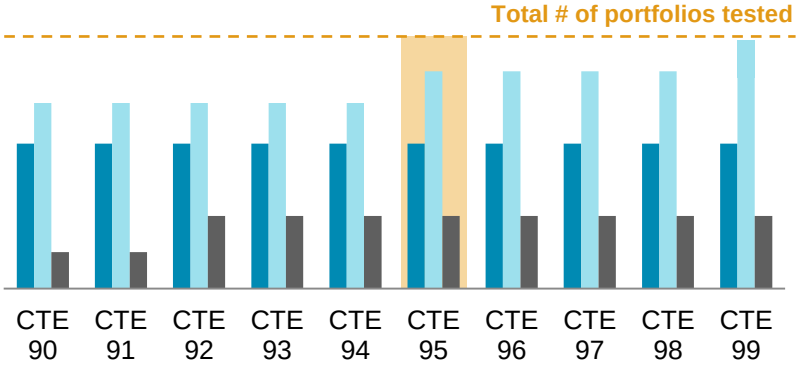


Share of portfolios tested for which hedging reduces funding required at TAR (100% RBC) – fair value hedging, 10% error factor

Current equity calibration



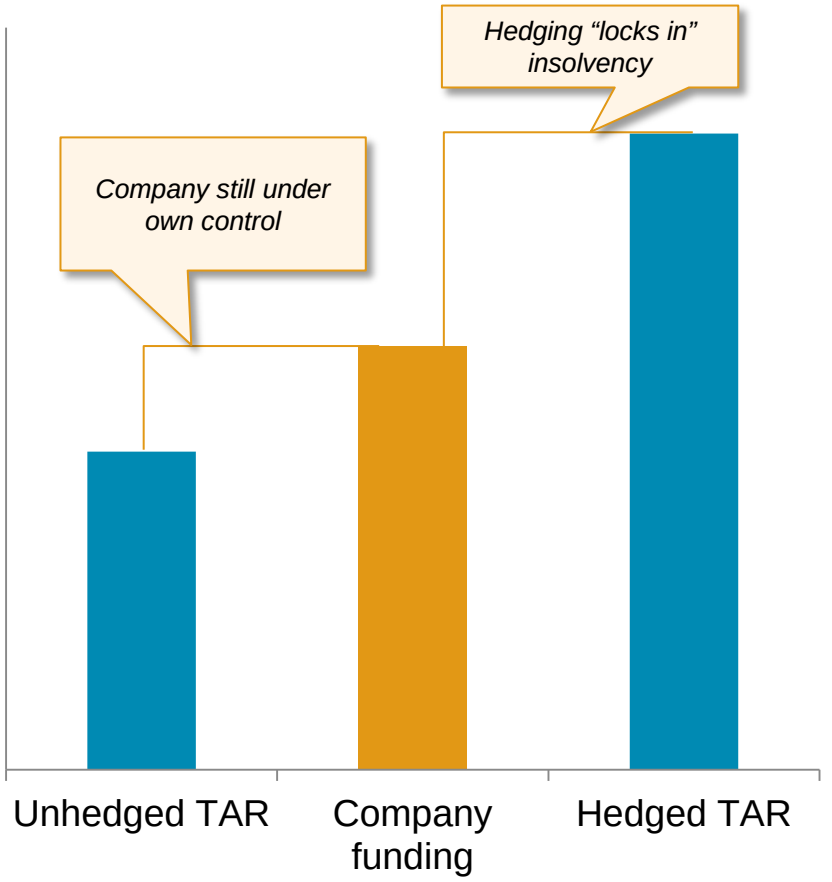
Alternate equity calibration



Source: OW internal model

Why is “promoting hedging” at TAR so important?
Incentives in “distressed insurer” scenario matter, if circumstance reached

Illustrative sample company funding position

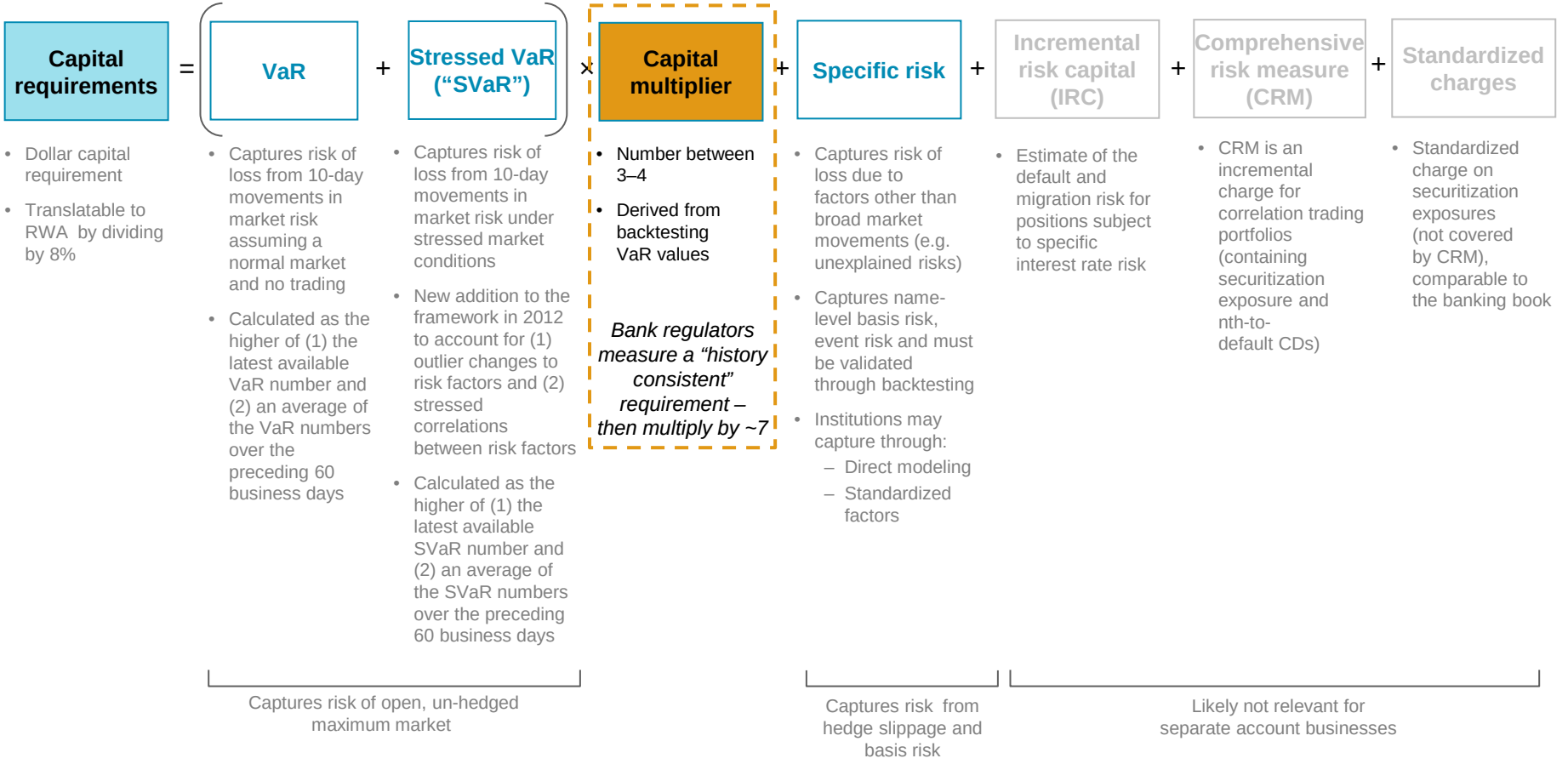


Explanation

- Illustration shows incentives and ability to hedge for a “distressed insurer” (RBC ratio near 100%)
- Company must decide whether to:
  - Hedge market risk
  - Reflect hedging in TAR calculation
- In example, company incentive to cease hedging – raising risk of “catastrophic failure”
- Framework not “self-regulating” – increasing burden on regulators

For reference: how do bank regulators use historical data to govern (somewhat) analogous risk exposures?

Capital requirements for trading book under Value-at-Risk (VaR) – Overview



2 Standard Scenario

Recap from 2016 EBIG – 2016 proposed Standard Scenario revisions
But…could we do better?

Proposed revisions

1 Align to stochastic construct

- Calculate Standard Scenario as if it were another stochastic scenario, but with a prescribed market path and behavioral assumptions

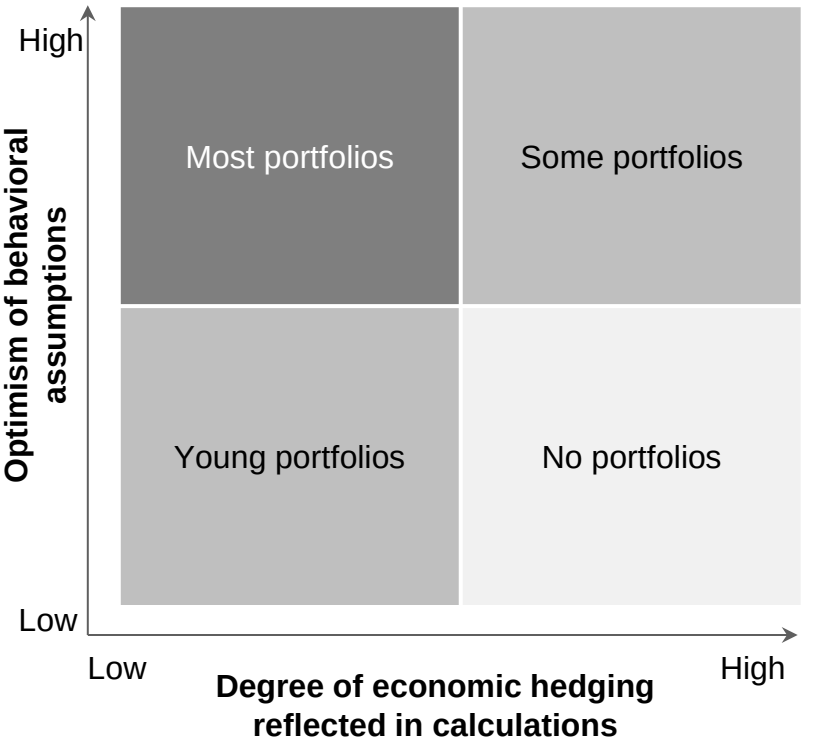
2 Prescribe policyholder behavioral assumptions

- Revised assumptions reflect product features of modern VAs and emerging industry experience

3 Prescribe three market paths

- Prescribe three "drop and recovery" market paths differing in initial stress but identical thereafter
  - Stress covers both equity and interest rate risk
  - SS Amount is largest of three scenarios

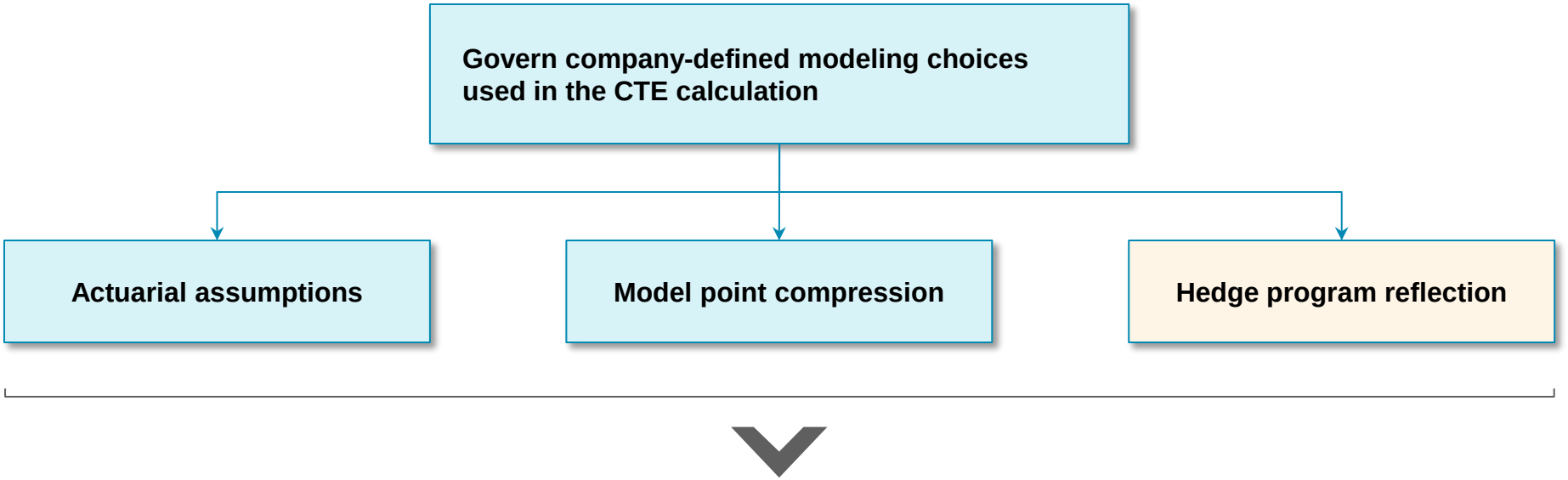
Portfolios for which Standard Scenario is binding



Standard Scenario designed to promote hedging and guard against insufficient prudence in actuarial assumptions

The VAIWG articulated the purpose of the Standard Scenario as governing company-defined model choices – not to add stringency to CTE scenarios

VAIWG's stated purposes for the Standard Scenario



For effective governance, the Standard Scenario Amount should be binding if and only if:

- A company uses assumptions or practices that substantially deviate from industry experience or accepted practices
- Such deviations result in materially-lower CTE 70-based reserves

Accordingly, if the same actuarial assumptions, model points, and hedge reflections were used in both the Standard Scenario and CTE calculations, the Standard Scenario Amount should be slightly below CTE 70

Two target properties for the Standard Scenario construct to meet purpose (1/2)

Assuming that the same actuarial assumptions, model points, and hedge reflections were used in both the Standard Scenario and CTE calculations across the industry at all times, then …

Target Property #1

… Standard Scenario Amount should be slightly below CTE 70 for most companies in industry

A suitable Standard Scenario construct should be effective in governing most, if not all, of the in-force portfolios within the scope of AG 43

Target Property #2

… for a given company, Standard Scenario Amount should have similar market-sensitivity as CTE 70

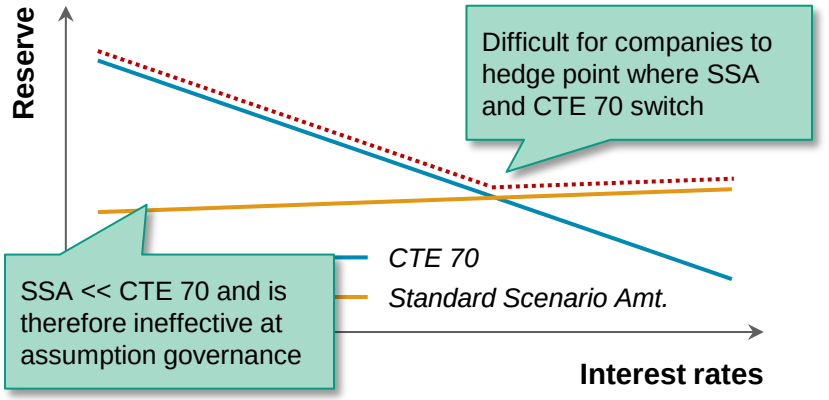
A suitable Standard Scenario construct should ensure effective assumption governance – which requires staying close to CTE 70 – across all market conditions

Two target properties for the Standard Scenario construct to meet purpose (2/2)

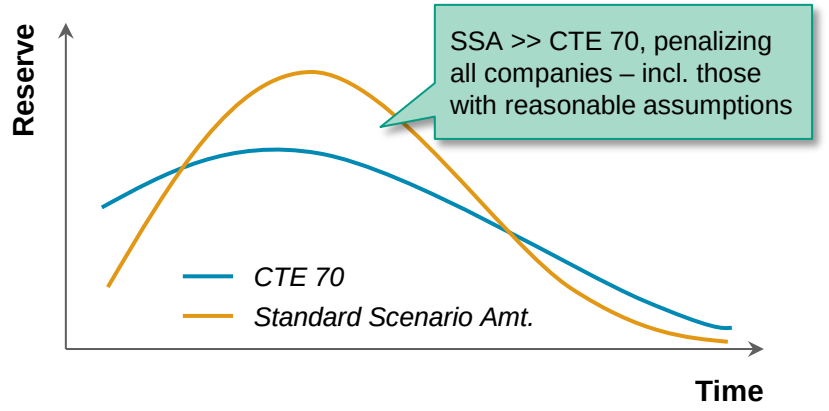
Sample company with actuarial assumptions that are materially less conservative than those in the Standard Scenario

If target properties are not met (e.g., current framework)

Reserves across different market conditions

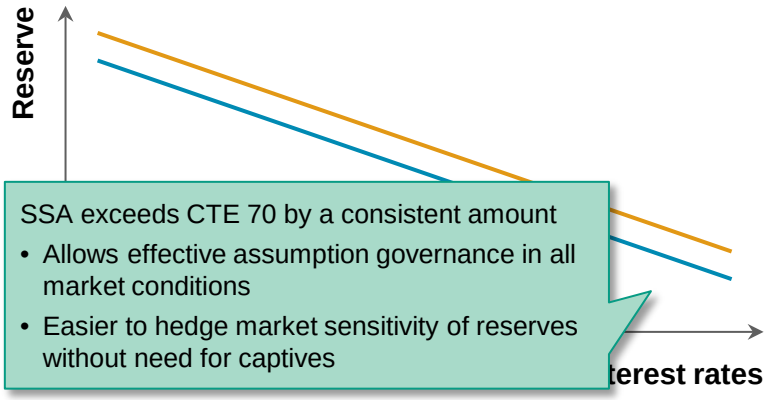


Reserves evolution through time

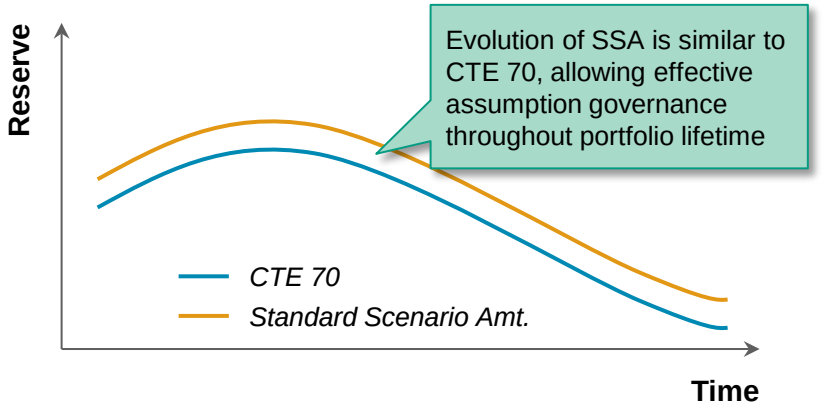


If target properties are met

Reserves across different market conditions

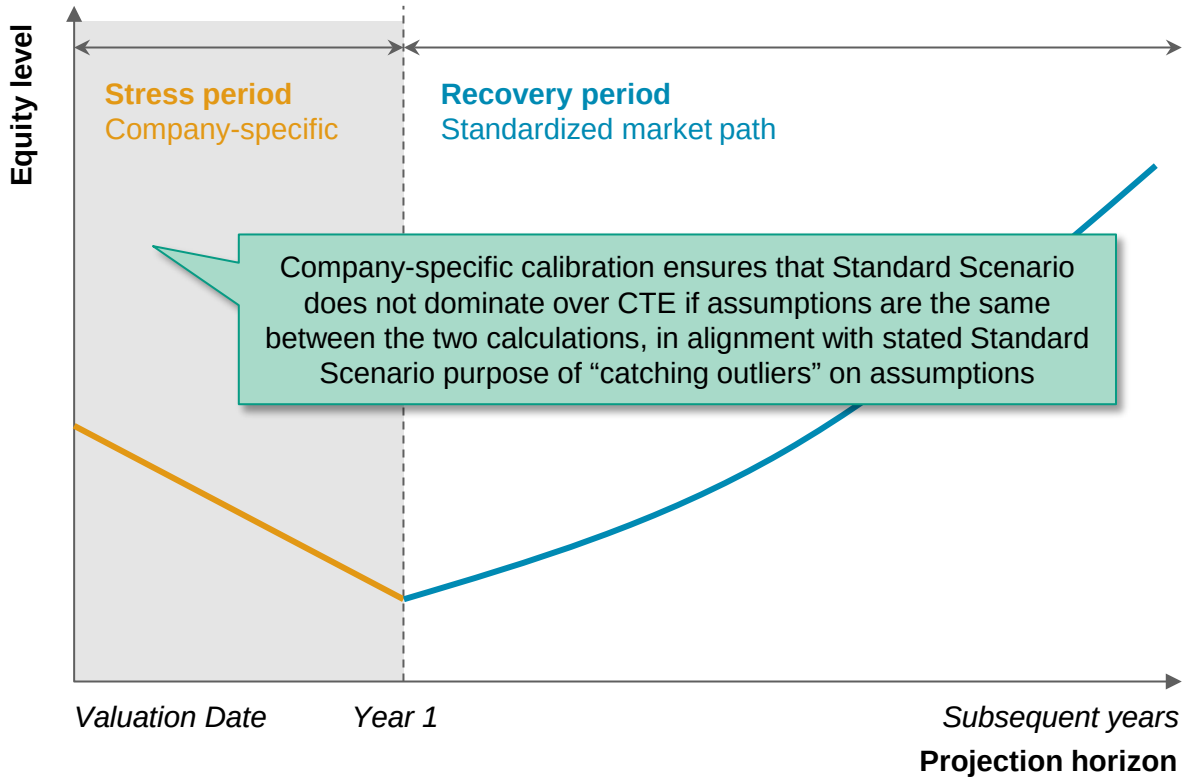


Reserve evolution through time



Theory supports a company-specific initial market shock

Potential alternative Standard Scenario market path construct
Based on company-specific calibrations



Stress period

- Initial stress occurring over full year, calibrated on a company-specific basis
- Calibrated such that Standard Scenario Amount is between CTE 65-70 from the "adjusted" run – i.e., no CDHS – when using Prudent Estimate assumptions
- Hedge reflection should be consistent with "adjusted" CTE run – i.e., run-off of currently-held hedges only; no CDHS

Recovery period

- Uniform prescribed market path
  - Separate account returns follow constant p.a. returns
  - Interest rates follow "mean path" from Academy ESG, reverting back to the NAIC-defined MRP
- Run-off of currently-held hedges only

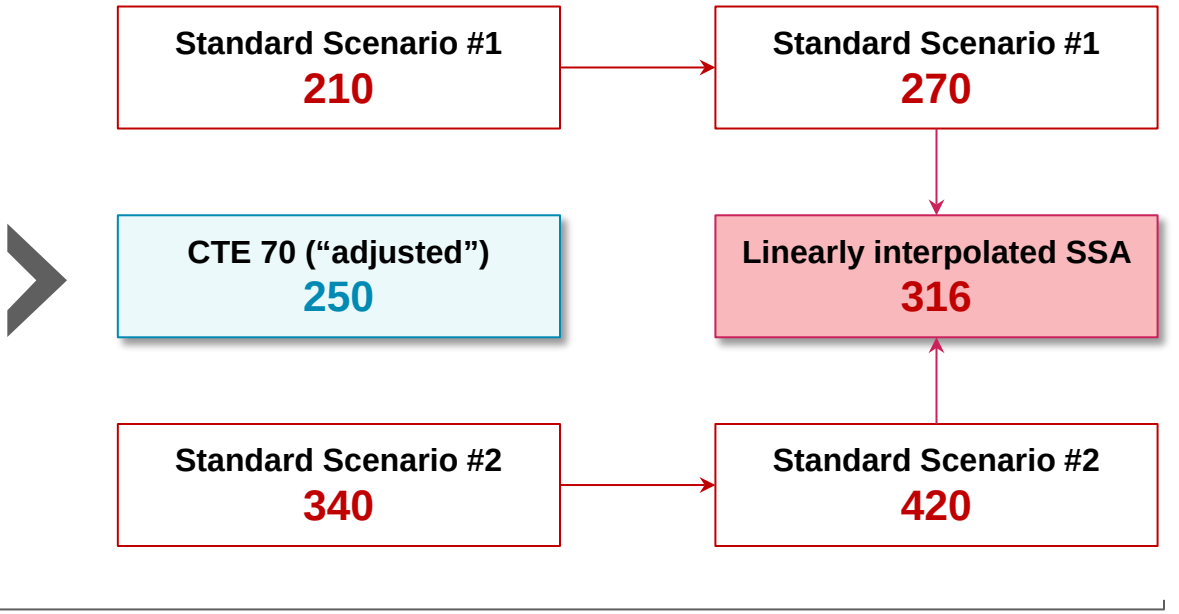
Under this approach, companies would run a common set of paths using own assumptions, then re-run "equivalent" scenario with prescribed assumptions

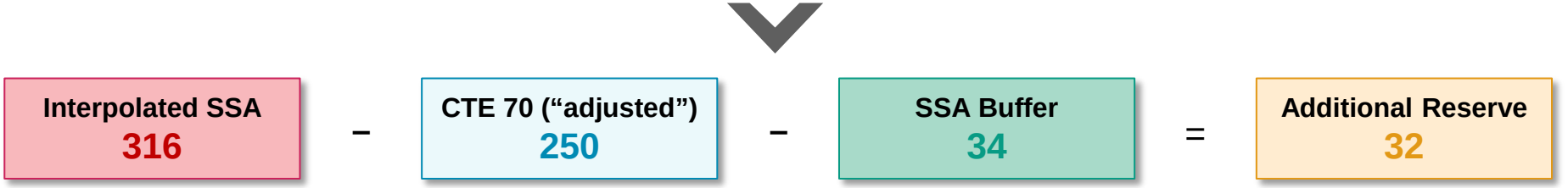
1 Run standard set of market paths with companies' own assumptions

	Stress	Recovery	SSR
1	-0%	3.0% p.a.	-
2	-2%	3.0% p.a.	10
3	-4%	3.0% p.a.	20
4	-6%	3.0% p.a.	30
5	-8%	3.0% p.a.	50
6	-10%	3.0% p.a.	80
7	-12%	3.0% p.a.	130
8	-14%	3.0% p.a.	210
9	-16%	3.0% p.a.	340
10	-18%	3.0% p.a.	550

2 Select two paths with results closest to CTE 70 (adjusted)

3 Re-run under prescribed behavioral assumptions

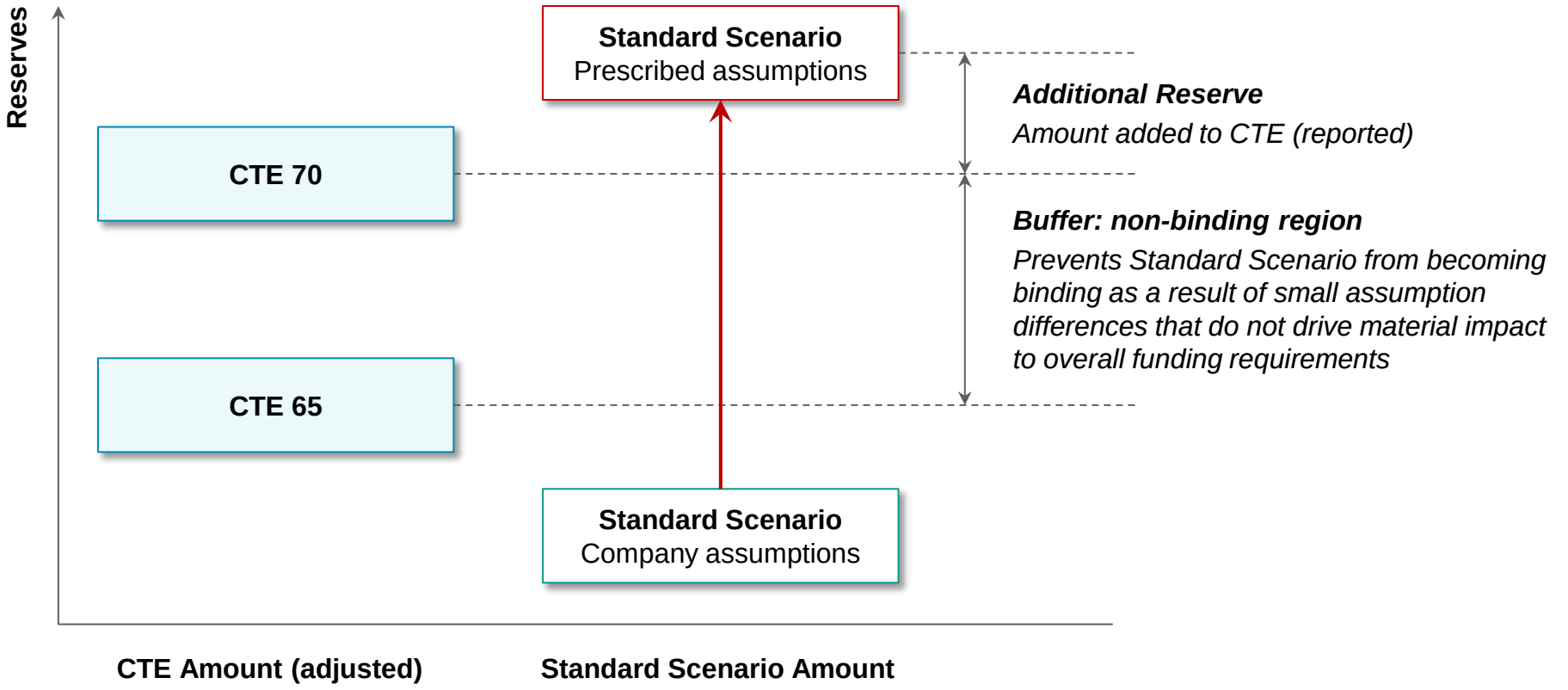




The difference between CTE 65 and 70 represents a “benefit of doubt” buffer; size of this buffer determines definition of “outlier” caught by Std. Scenario

Illustrative Standard Scenario results

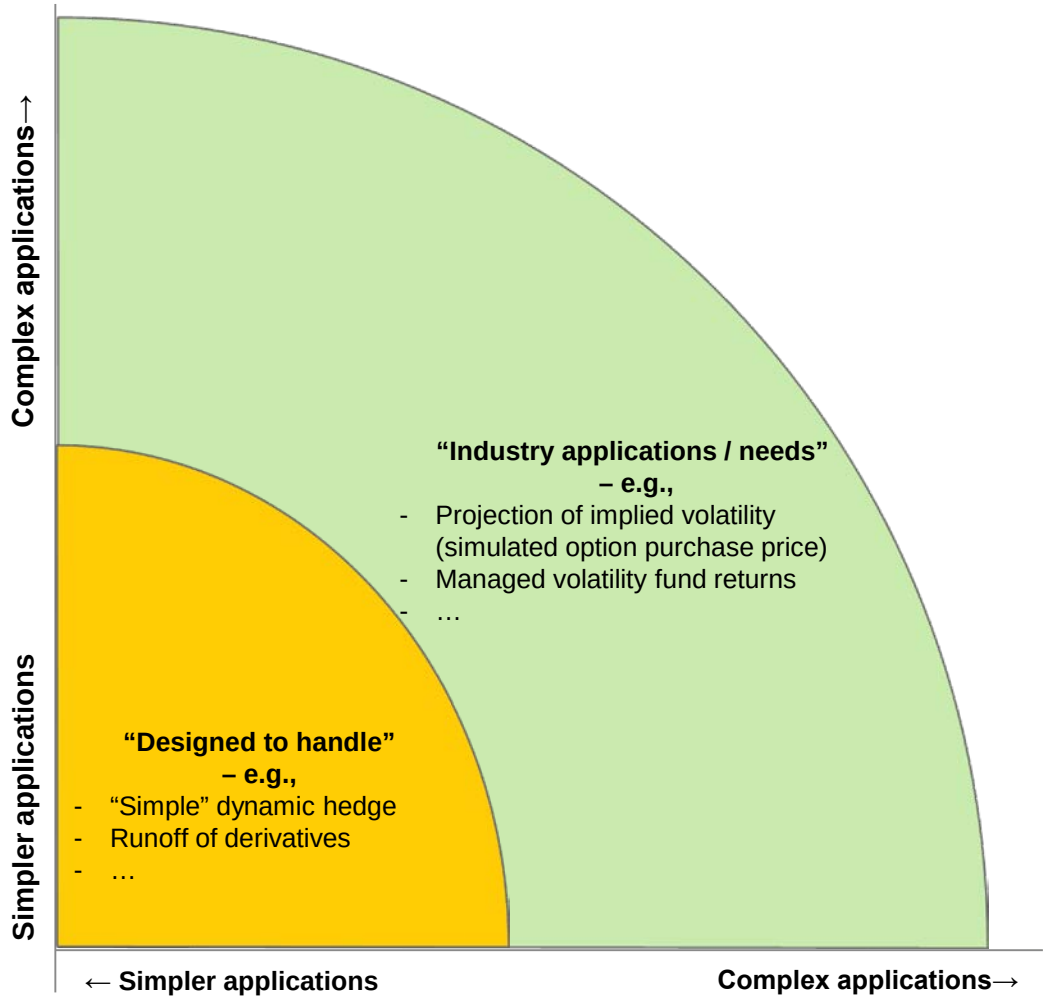
For a sample company for which the Standard Scenario is binding



3 Disclosures

Disclosures assist regulators assess the reasonability of "framework uses"
Principles needed to safeguard use of regulatory infrastructure beyond intent

"Design vs. actual" applications of regulatory infrastructure – Illustrative



Commentary

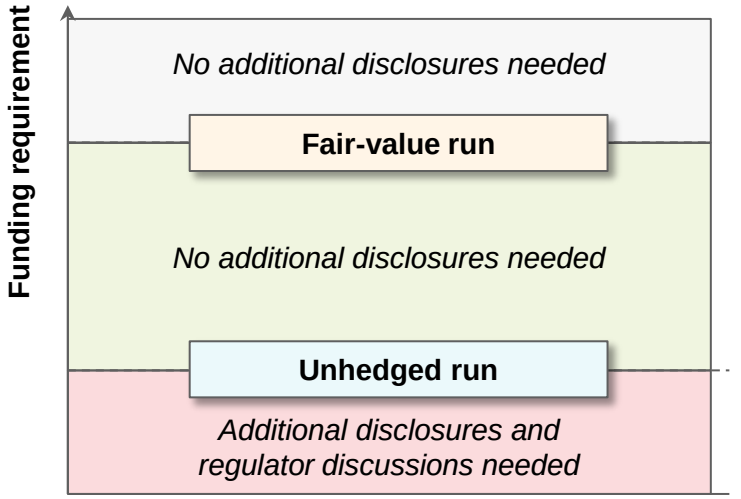
- Regulatory infrastructure designed to support a limited set of applications
- Complexity of industry risk management techniques exceed what regulatory infrastructure can support
- Consequence is inconsistent extrapolation of regulator infrastructure across firms
- Need to establish additional principles (with associated disclosures) to govern extrapolation of infrastructure

1 Impact of "Clearly Defined Hedging Strategy" (CDHS) – disclosure
Principle: your CDHS cannot "outperform the market"

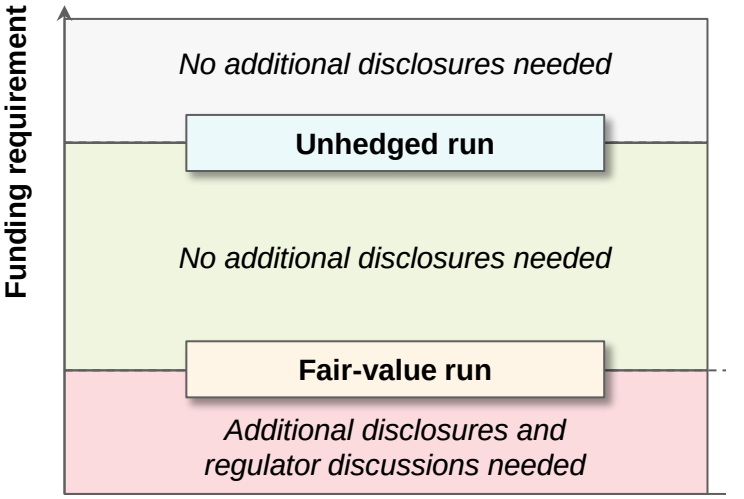
Potential disclosure to the risk-neutral value of CDHS

- Unless a company is "over-hedging", reflecting hedging should cause the best-efforts CTE to converge towards full-contract fair value
- Best-efforts CTE should be (i) between unhedged CTE and fair value, or (ii) higher than the fair value (e.g., transactional costs or hedge ineffectiveness increase the cost of hedging)
- Companies disclose whether their best-efforts CTE is:
  - A. Higher than the full-contract fair value
  - B. Equal to or lower than the full-contract fair value, but between fair value and unhedged CTE
  - C. Lower than the lesser of the full-contract fair value and the unhedged CTE
- Additional disclosures and regulator discussions are required if outcome at bottom is observed

In low interest rate environments
Fair value of total contract liability higher than unhedged CTE



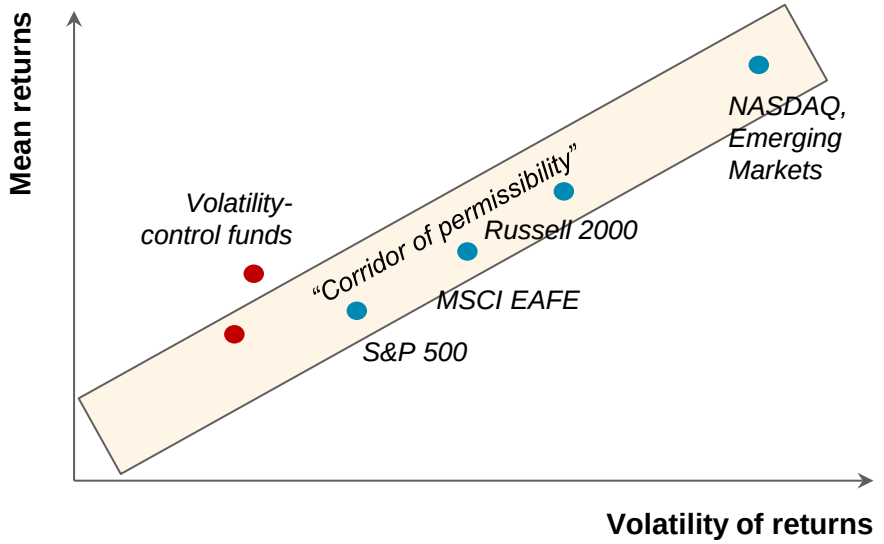
In high interest rate environments
Fair value of total contract liability lower than unhedged CTE



2 Proprietary scenario generation / fund mapping – disclosure
Principle: funds expected return must conform to level of risk

Example: volatility-control fund returns

- Volatility-control fund modeling often rely on risk factors with no guidance in current AG 43 – e.g., short-term volatility
- Assumptions around these risk factors can cause modeled fund returns to have higher mean and lower volatility than other funds
- AG 43 governs this through broad principle, but adjustments are not always made to account for this mismatch



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