

HEDGING STRATEGIES AND IMPLEMENTATION CHALLENGES UNDER NEW US STATUTORY AND GAAP REPORTING STANDARDS FOR EQUITY BASED PRODUCTS

NOVEMBER 19, 2019

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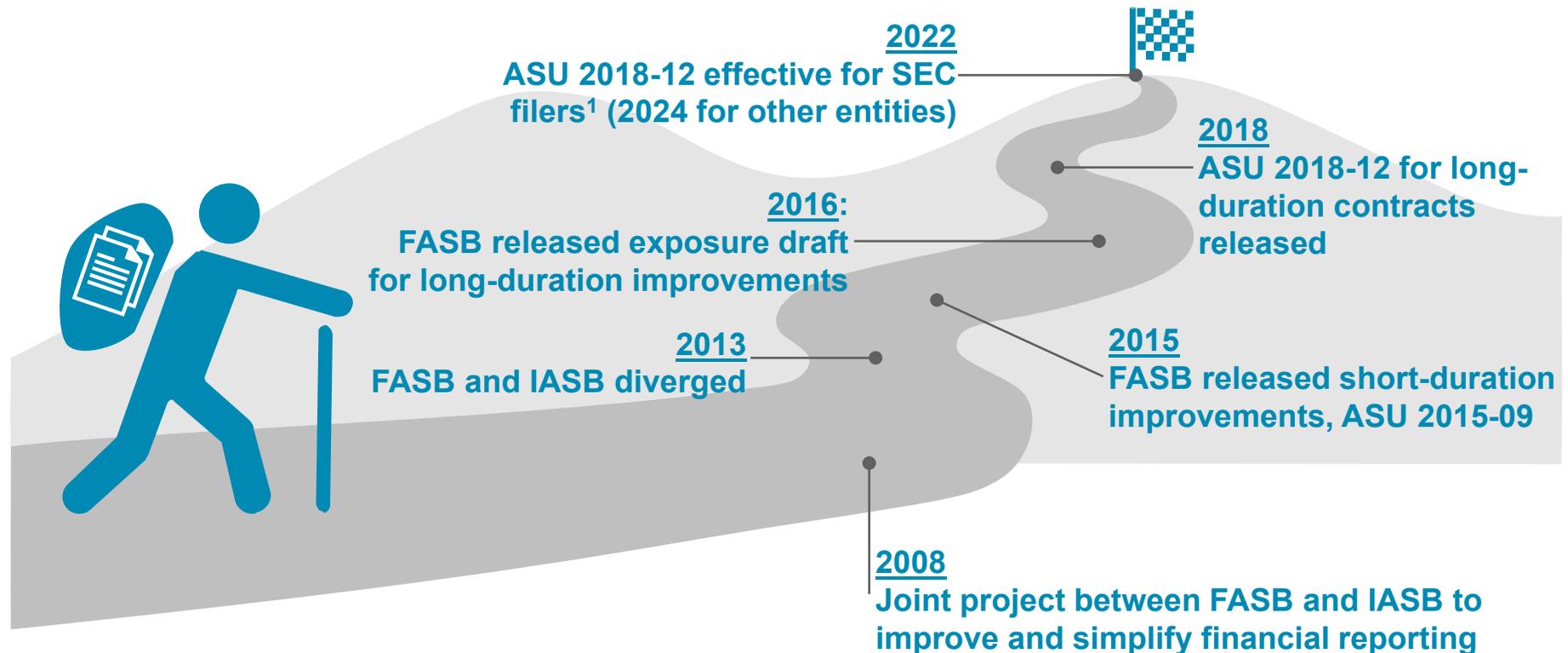
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Section 1 | MRBs under GAAP LDTI

GAAP Long Duration Targeted Improvements background and timeline

FASB's LDTI represents the first major insurance GAAP accounting change in 30 years; changes are retrospective and effective January 2022



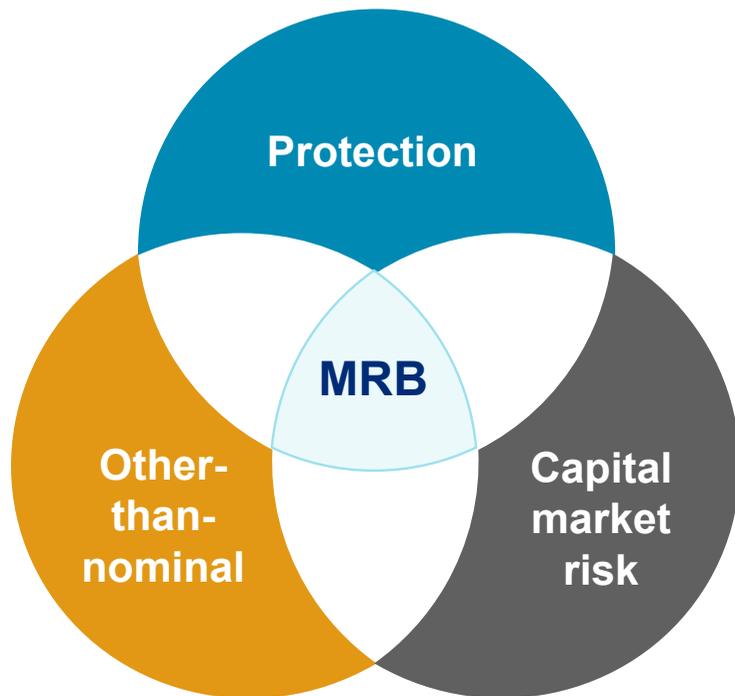
Early adoption is permitted but not expected to be common

1. Does not include Smaller Reporting Companies (SRC), generally defined by the SEC based on public float (less than \$250M) or annual revenue (less than \$100M)

Market risk benefit (MRB)

Definition and scope

“A contract or contract feature that both provides **protection** to the contract holder from **other-than-nominal capital market risk** and exposes the insurance entity to other-than-nominal capital market risk”

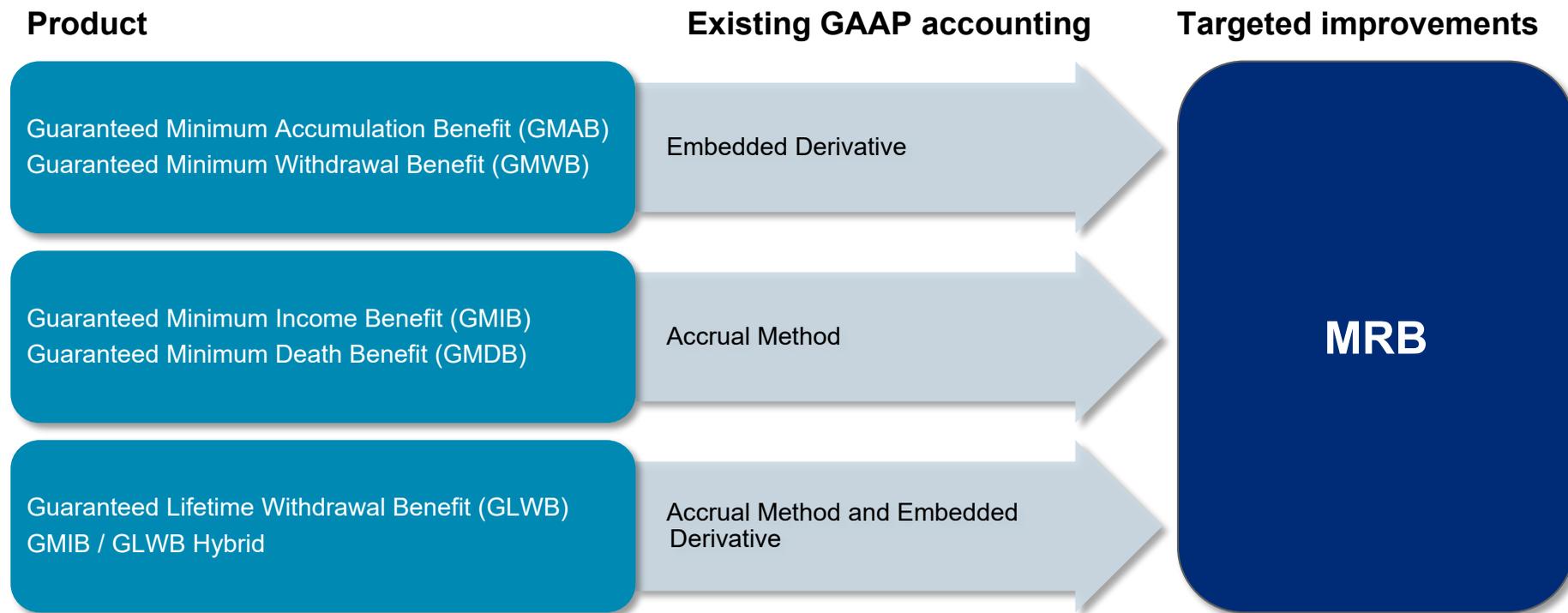


- **Protection:** refers to the transfer of a loss in, or shortfall of the contract holder’s account balance from the contract holder to the insurance entity, with such transfer exposing the insurance entity to capital market risk that would otherwise have been borne by the contract holder
- **Nominal risk:** is a risk of insignificant amount or remote probability of occurring
- **Capital market risk:** includes equity, interest rate and foreign exchange risk
- **In scope:** GMxB’s on VA and FIA, annuity purchase guarantee ¹
- **Out of scope:** FIA indexed benefits, MGIR on general account, VUL DB, UL NLG

1. Assume other-than-nominal capital market risk. Analysis and conclusions reached will vary depending on contract features

Changes to MRBs

Comparison of ALM treatment for major GMxB types



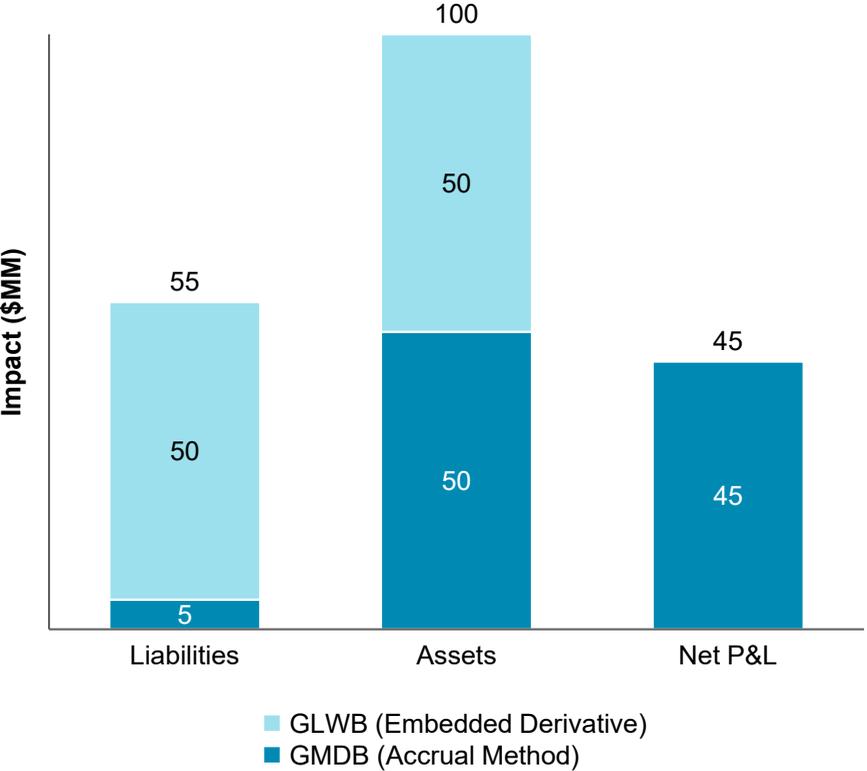
Current framework

1. Accrual method has less delta and rho sensitivity, which may cause volatile net GAAP income under economic hedges
2. Embedded derivative aligns with economic hedging

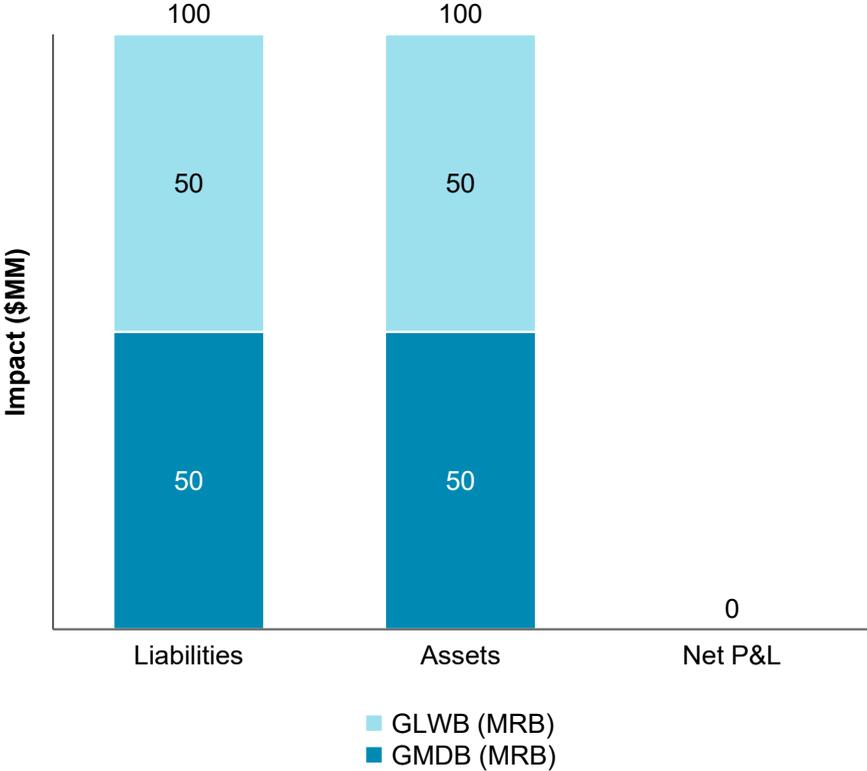
LDTI will allow all market risk benefits to be fully hedgeable

Changes to MRBs – illustrative example

Pre-LDTI



Post-LDTI



Moving GMxB riders valued under the accrual method to a market risk benefit methodology aligns the change in liability with the change in market value of assets

LDTI implementation considerations for MRBs (1/3)

Enhanced GMDBs and living benefits clearly fall under the MRB scope; ROP GMDBs and base contract guaranteed annuitization benefits are less certain

Question: How does a company determine if a ROP DB is considered an MRB?

Potential approach for assessing if market risk is other-than-nominal:

- Use a set of real-world scenarios to test DB claims
- Assume no elective policyholder behaviour; model mortality
- Review the PV of claims as a percentage of premium; weight by in-force characteristics at issue
- Discuss results with auditor

PV of DB claims as a percentage of initial premium

Percentile \ Issue age	50	60	70	80	Weighted average (average age = 55)
50%	0.0%	0.0%	0.1%	0.0%	0.0%
75%	0.1%	0.2%	0.4%	1.3%	0.2%
90%	0.3%	0.8%	1.5%	4.0%	0.5%
95%	0.6%	1.6%	4.0%	8.5%	1.1%
99%	2.5%	4.0%	10.0%	17.0%	3.3%

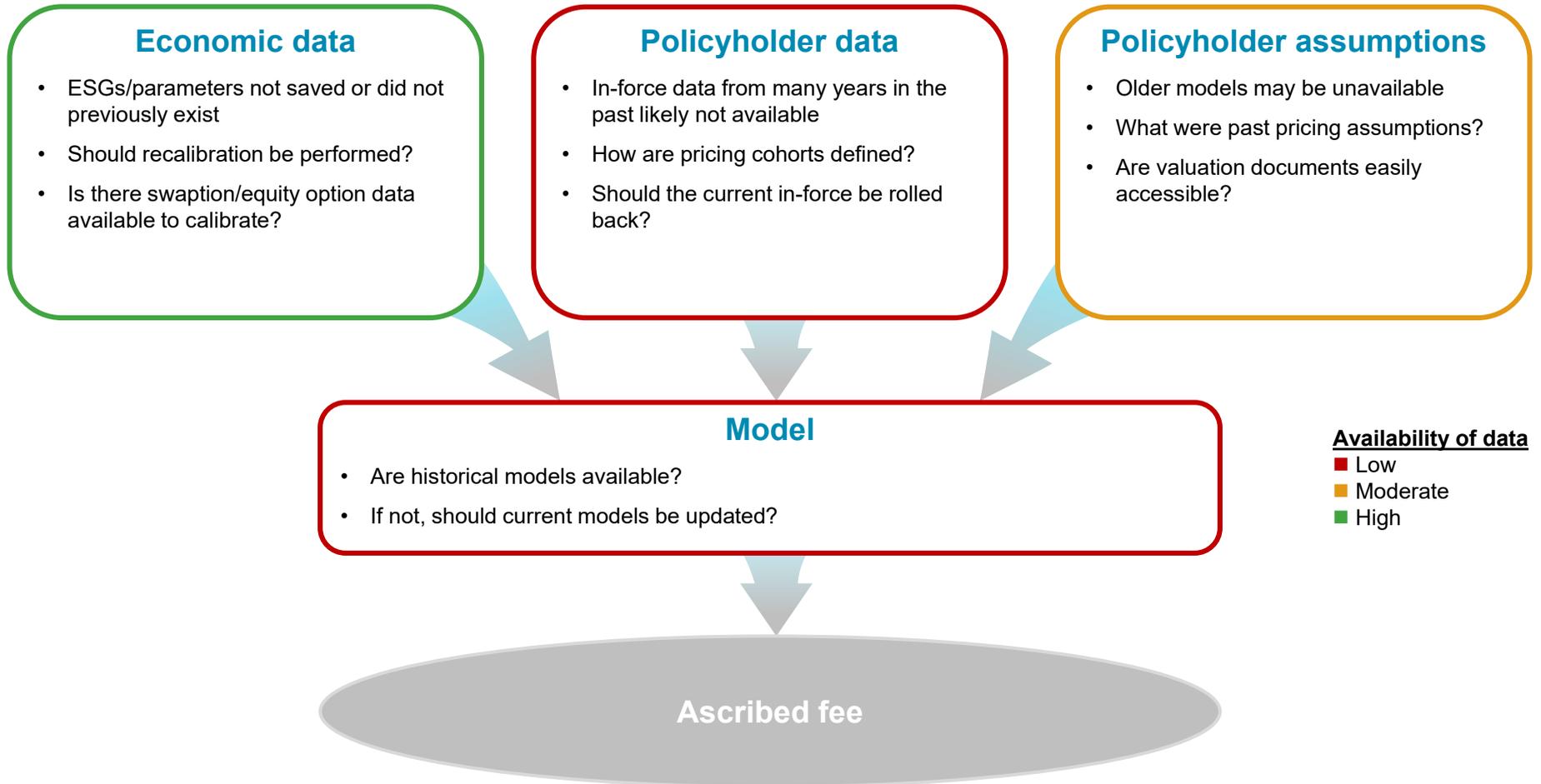
LDTI implementation considerations for MRBs (2/3)

Methodology decisions

Methodology	Considerations
1 Scenario generator	<ul style="list-style-type: none">• Companies that previously had SOP 03-1 business will require a risk-neutral economic scenario generator (ESG) for MRB• Using the same ESG as hedge target can align GAAP liability with hedged liability
2 Risk-free reference rate	<ul style="list-style-type: none">• A majority of companies currently use LIBOR swap rates. Going forward LIBOR will be discontinued• Companies may switch to US treasury rates or secured overnight financing rates
3 Volatility assumption	<ul style="list-style-type: none">• Based on results from a recent OW VA ALM survey, majority of participants use a maximum tenor of 5 years or less; while some use up to 10 years of market implied volatility• Companies are split between using the full volatility surface (e.g., via calibrating a stochastic volatility model for equity returns) and ATM term structure
4 Illiquidity premium	<ul style="list-style-type: none">• Companies are split on use of illiquidity premium for discounting payout phase claims• SSAP 100 does not allow companies to include NPR for discounting; using an illiquidity premium can help align GAAP and Stat balance sheets
5 Risk margins	<ul style="list-style-type: none">• Could be included to price for inherent uncertainty in cash flows• Important to set appropriate aggregate risk margin and capture explicit risks
6 Ascribed fees	<ul style="list-style-type: none">• Ascribed fees cannot be greater than total fees on book• May be characterized in terms of all contract fees or just fees associated with the guaranteed benefits; influenced by hedging strategy (e.g., including base contract fees may increase equity delta)

LDTI implementation considerations for MRBs (3/3)

Ascribed fee calculations



Significant work is required in coding and validating these items

LDTI summary

Key takeaways



1 Effective date

- GAAP LDTI is effective starting 1/1/2022 for public filers

2 Definition of MRB

- Protection from other-than-nominal capital market risk

3 ALM treatment

- All MRBs can be economically hedged without causing significant GAAP net income volatility

4 Scope

- Analysis should be performed, auditor needs to be on-board

5 Methodology decisions

- Many decisions to be made, particularly around scenarios and market parameters

6 Ascribed fee calculations

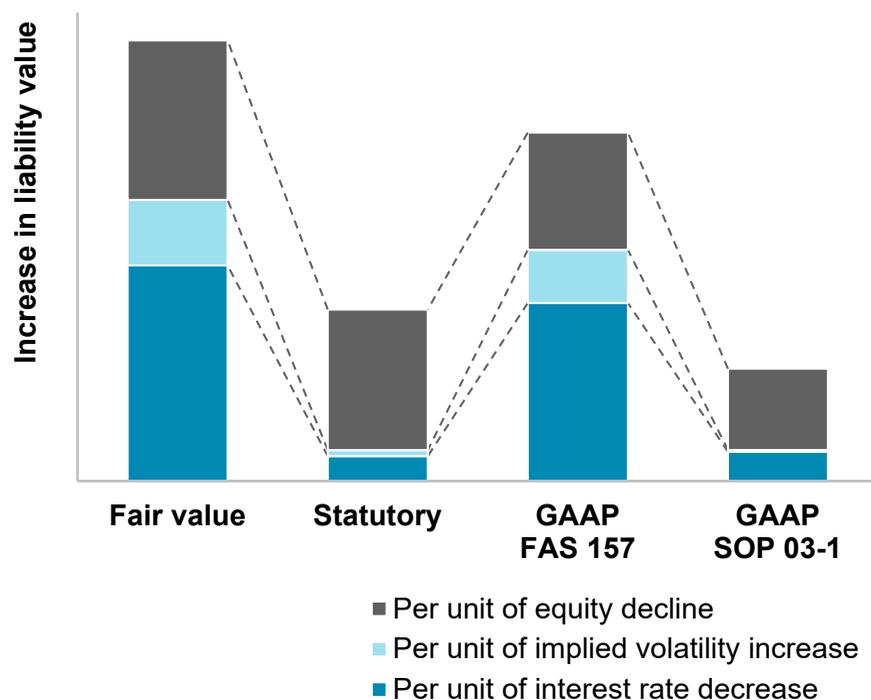
- A lot of inputs and data to track down
- Requires significant effort and resources!

Section 3 | ALM implications

Existing accounting frameworks discourage comprehensive, fair value-based hedging – as a result of mismatched measurement bases

Typical VA market sensitivity, by valuation lens

Increase in liability value for different market shocks

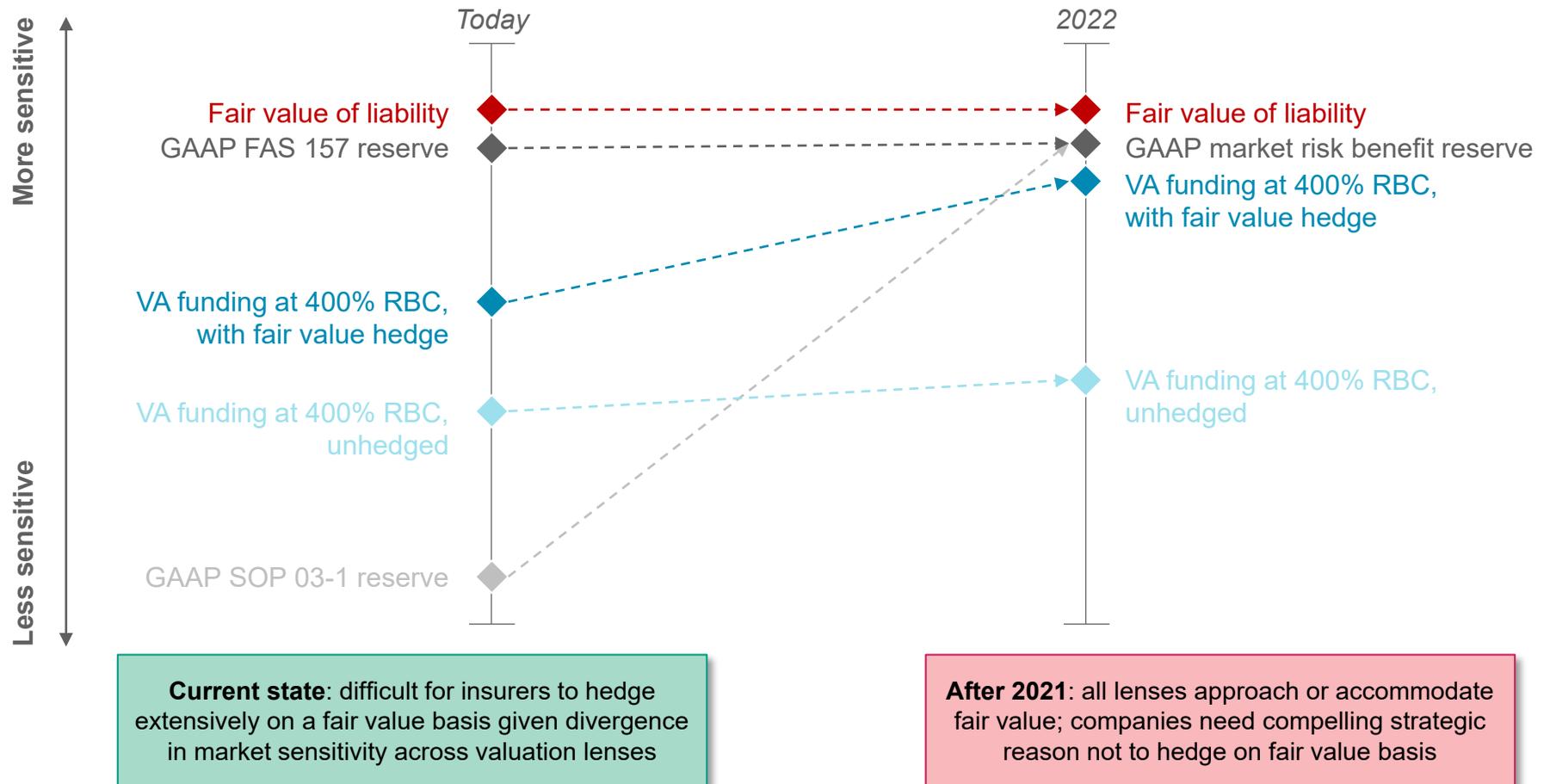


- Existing accounting frameworks treat derivatives – i.e., hedging instruments – in similar manners
- However, market sensitivity of the VA business differs markedly across valuation lenses
 - **Fair value**: reflects the greatest sensitivity
 - **GAAP FAS 157**: similar sensitivity as fair value
 - **Statutory**: generally less sensitivity, but exact levels change with guarantee in-the-moneyness
 - **GAAP SOP 03-1**: generally the least sensitive
- Even within an accounting framework, market sensitivity of the same liability may differ notably across companies
 - **Statutory**: no guidance for interest rates scenario generation, which drives interest rate sensitivity
 - **GAAP SOP 03-1**: divergent practices across industry in selecting equity mean reversion target and timeframe – which drives all market sensitivity

Under the current GAAP and statutory frameworks, insurers cannot hedge all valuation lenses effectively at the same time given their vastly different risk characteristics

The concurrent NAIC and FASB reforms will encourage public companies to adopt more comprehensive fair value-based hedging programs

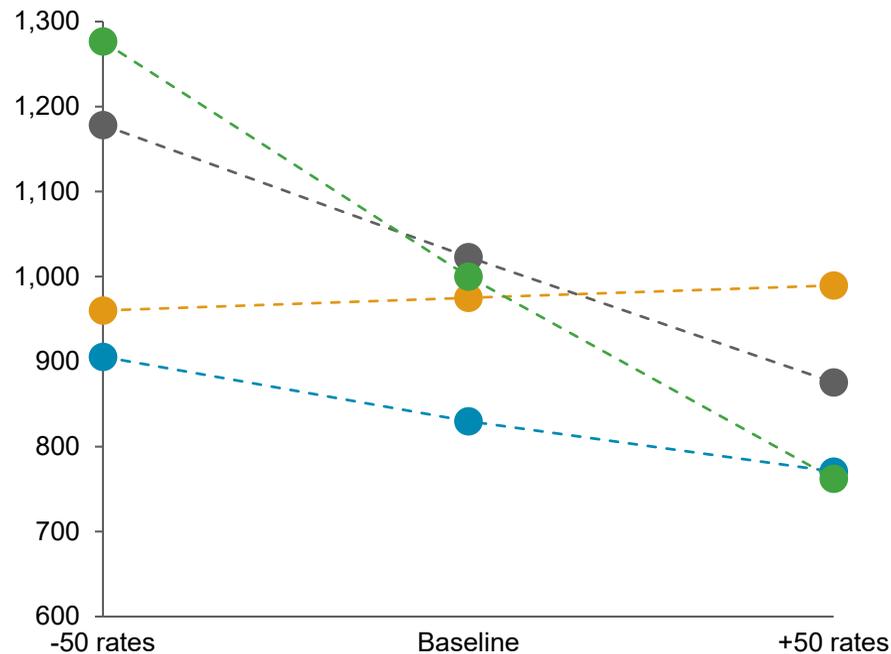
Market sensitivity of liability valuation Across different valuation frameworks



Removing the Standard Scenario floor and allowing companies to use a higher proportion of the Best Estimate run aligns the Statutory Reserve market sensitivity profile with the economic liability (hedge target)

Sample legacy block: interest rate sensitivities

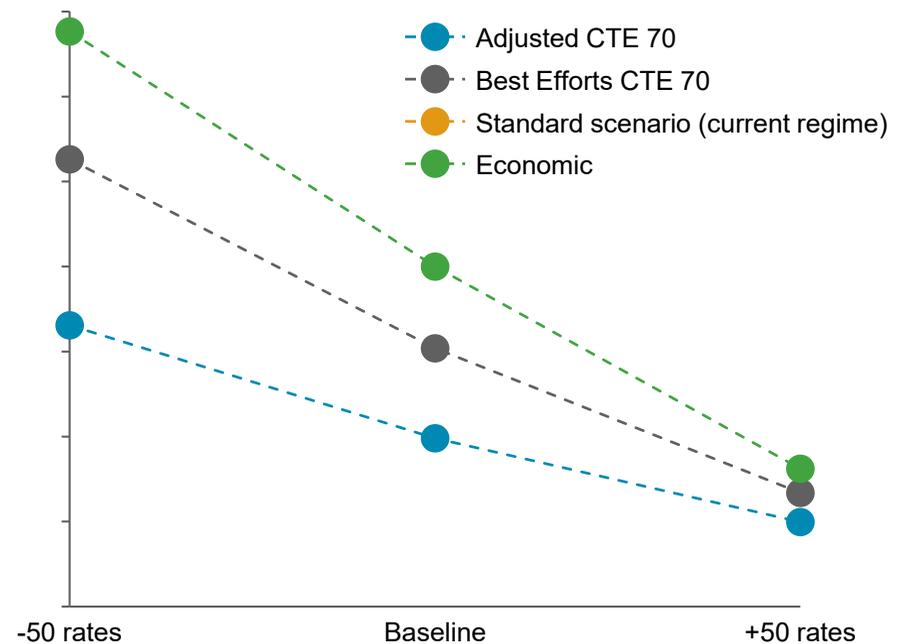
Current regime



- The Standard Scenario does not have the same interest rate sensitivity profile as other bases due to valuation rates being locked in at issue; the Standard Scenario can dominate as interest rates increase causing an ALM disconnect
- Best Estimate weight is capped at 70% under current regime even if modeling accuracy supports a higher weight; the adjusted run has minimal Rho exposure

Sample legacy block: interest rate sensitivities

Post-reform



- Removing the working reserve allows for more rate sensitivity in the Best Estimate reserve better aligning it with the economic profile
- The Best Efforts weight can be up to 95%, if supportable
- The changes better align the asset and liability sides of the Statutory balance sheet

Hedge strategy implication for public companies

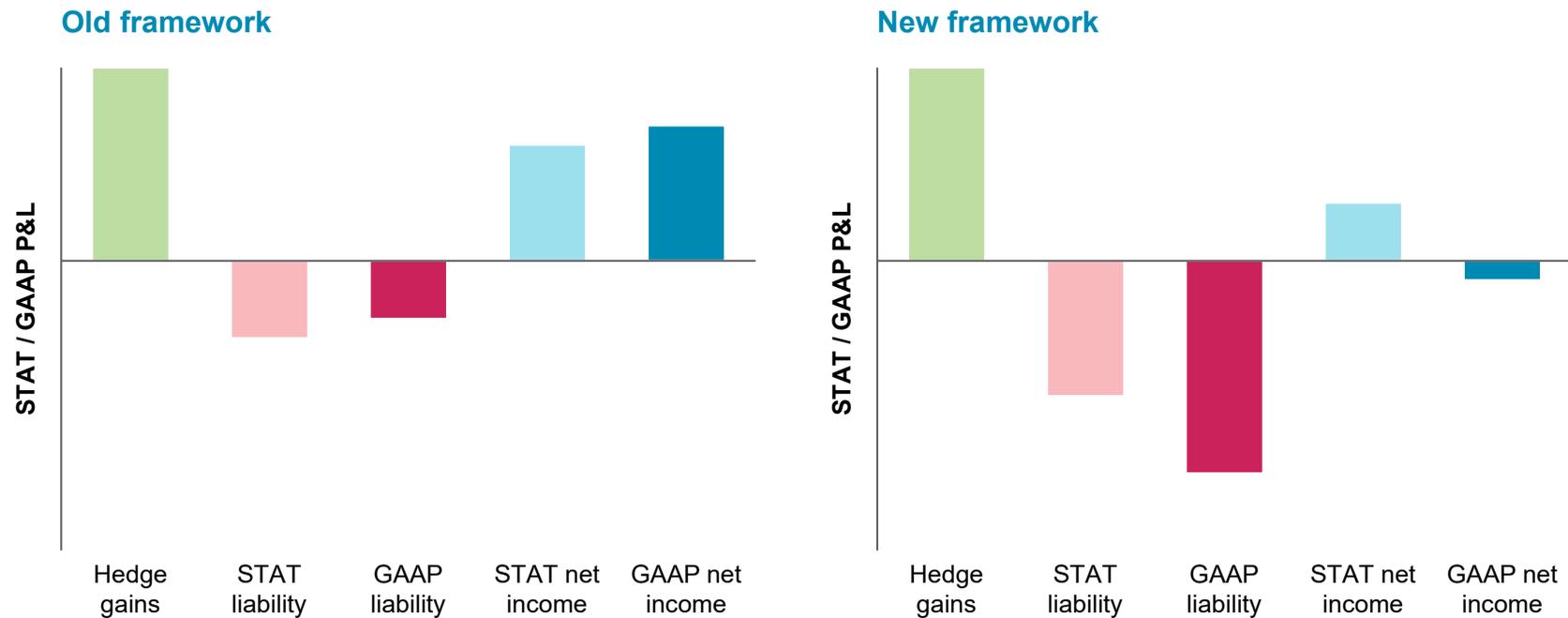
GAAP liabilities	Riders	Current practices	Expected future practices
FAS 157 liabilities	<ul style="list-style-type: none"> • GLWB • GMWB • GMAB • Some hybrid GMIB 	<ul style="list-style-type: none"> • Liabilities are typically hedged dynamically (e.g., daily) • Hedge targets typically follow GAAP liabilities or modified market-consistent • Delta and Rho are the most commonly hedged risk factors; some short-term Vega hedging 	<ul style="list-style-type: none"> • Hedging treatment likely aligned for all GMxBs • Comprehensive Delta and Rho coverage • Vega hedging dependent on how companies using market-quoted implied volatility to calculate fair value reserves
SOP 03-1 liabilities	<ul style="list-style-type: none"> • GMDB • Traditional GMIB 	<ul style="list-style-type: none"> • Either unhedged or hedged through a Statutory capital / distributable earnings macro hedge; rebalancing is less frequent (e.g., quarterly) • GAAP liability is infrequently used as a hedge target • Delta is more prevalent than Rho for GMDBs 	<ul style="list-style-type: none"> • Reduction in prevalence of macro hedging strategies due to alignment of Stat and GAAP liabilities and market value of hedge assets

GAAP revisions make VA reporting more transparent and standardized across products and companies; GAAP net income stabilization likely to play a greater role in setting VA hedge objectives

Hedging impacts – illustrative example

STAT and GAAP financial reporting changes reduce balance sheet volatility

Consider a 100bps interest rate decrease:



Increased liability rho sensitivity results in better asset/liability matching

SSAP 108

New accounting guidance for certain derivative contracts hedging VA guarantees under VM-21 subject to fluctuations from interest rate risk

Highlights

- Effective 1/1/2020 (early adoption was permitted 1/1/2019)
- Companies may designate specific risks that are hedged using a specified derivative portfolio
- Deferred assets/liabilities may be established for any fair value change in the designated hedge instruments due to interest rate movements that are above/below the change in VM-21 reserve, and amortize into realized gains/losses
- Deferred assets/liabilities shall be amortized into realized gains using a straight line method over a period equal to the Macaulay duration, capped at 10 years
- Derivative portfolio must be proven to be highly effective and be included in a CDHS and in the VM-21 reserve

Example

- Hedged item: Rider claims less rider fees
- Hedged risk: 100% of rho
- Market movements: Interest rates increase, while markets decrease
- Change in liabilities:
 - FV of rider claims less rider fees due to rates: (500)
 - FV of full contract due to rates: (700)
 - Change in FV due to rates from hedged item: 71%
 - VM-21 liability due to all changes: 400
 - VM-21 liability due to rates: (300)
- Amount reflected in income: $(214) = 71\% * (300)$
- Deferred asset: $286 = (1) * [(500) - (214)]$

SSAP 108 may smooth Statutory B/S for non-economic changes; however, implementing may be operationally challenging

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