

# Solvency II & Regulatory Capital Implications

Session 16 · How GE-LAV changes insurance capital calculations

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Primary Text: Liquidity Illusion (Forthcoming, 2026)

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# What we'll cover today

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## Solvency II overview

Pillar 1 quantitative requirements

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## Current PE treatment

Standard formula illiquidity premium

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## Why DCF marks mislead

Capital adequacy under stress

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## GE-LAV-based alternative

State-contingent risk weight

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## Industry implementation path

Realistic adoption timeline

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# Solvency II: how insurance regulators set PE capital

## PILLAR 1

### Quantitative requirements

Capital requirements (SCR), valuation rules, technical provisions. Private equity treated as 'Type 2 equity' with specific risk weight.

→ Standard formula: 49% capital charge

## PILLAR 2

### Governance & risk management

ORSA (Own Risk and Solvency Assessment) requires forward-looking risk analysis. Liquidity stress testing required.

→ Where GE-LAV most relevant

## PILLAR 3

### Disclosure

SFCR (Solvency and Financial Condition Report) and QRT (Quantitative Reporting Templates). Public disclosure of risk profile.

→ GE-LAV-informed disclosures

## Current treatment: a flat 49% capital charge

Solvency II Standard Formula treats all PE holdings the same — 49% solvency capital regardless of state.

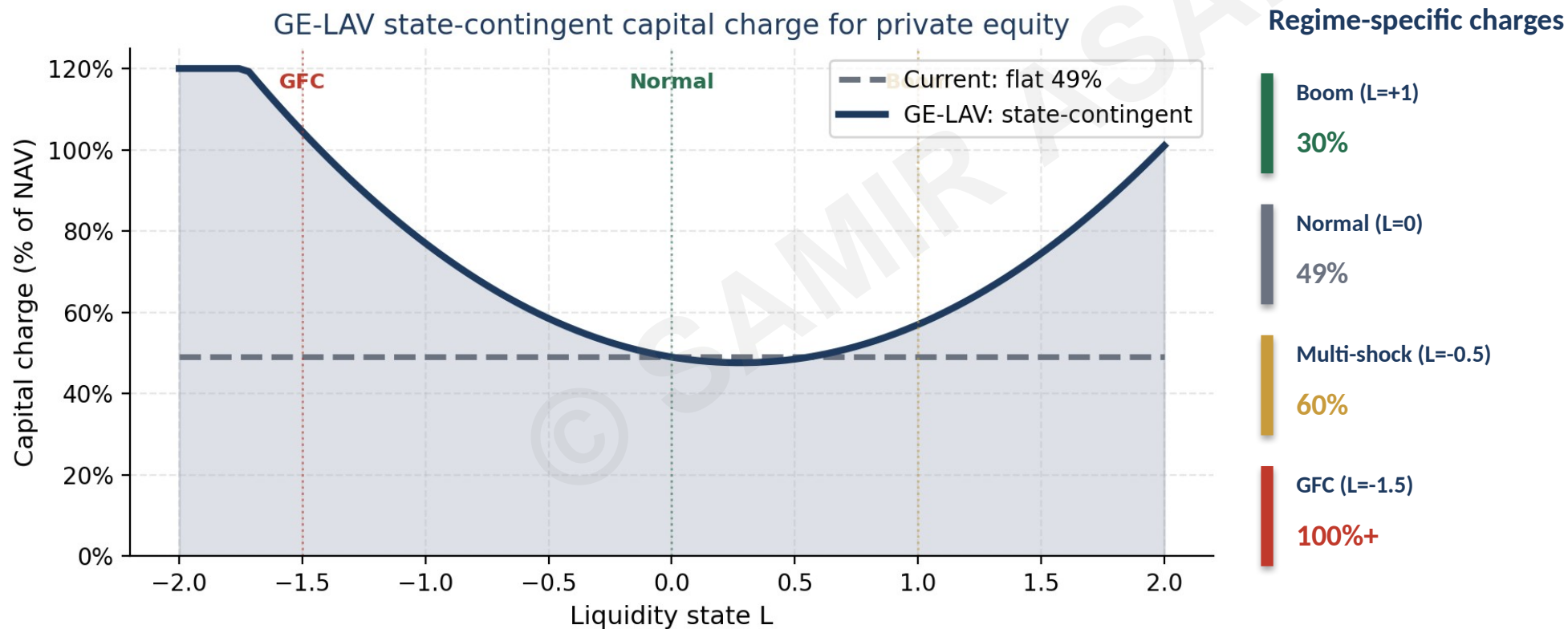
What this implies for capital allocation:

Scenario	Underlying NAV	Solvency Capital	Implied 'capital cost'
Normal markets (L=0)	\$100M reported	\$49M (49%)	≈ 4.9% per year of capital cost
Multi-shock (L=-0.5)	\$100M reported	\$49M (49%)	Same 4.9% — even though underlying is more risky
GFC depth (L=-1.5)	\$100M reported	\$49M (49%)	Same 4.9% — although true value is ~\$30M
Boom (L=+1)	\$100M reported	\$49M (49%)	Same 4.9% — although true value is ~\$115M

**Flat 49% misallocates capital. Real risk varies dramatically with the liquidity state.**

# GE-LAV alternative: state-contingent capital charge

Replace the flat 49% with a function of  $L(t)$  reflecting actual amplification:



Aggregate capital: similar to current. Distribution: dramatically different.

# Realistic adoption timeline

*Solvency II rules change slowly. Realistic GE-LAV adoption path:*

## Phase 1 (2025-2026): Industry research

Trade associations (CFA Institute, IPEV) commission papers on stochastic liquidity premium

*Light academic adoption*

## Phase 2 (2026-2028): ORSA stress testing

Pillar 2 (governance) requirement to incorporate GE-LAV into liquidity stress tests

*Voluntary, internal use*

## Phase 3 (2028-2030): EIOPA review

European regulator considers standard-formula modification

*Consultation period, no rule change yet*

## Phase 4 (2030-2032): Pillar 1 transition

Standard-formula recalibration to incorporate GE-LAV intuitions

*May not be exact GE-LAV; will be GE-LAV-informed*

# Solvency II overview: the three pillars

*How insurance regulation handles illiquid assets.*

## **Pillar 1**

Quantitative: capital requirements based on SCR (Solvency Capital Requirement)

## **Pillar 2**

Qualitative: ORSA, risk management framework

## **Pillar 3**

Disclosure: market discipline through transparency

## **Standard formula**

Treats PE as a single 'other equity' bucket: 49% capital charge

## **Internal model option**

Insurers can use proprietary risk model for SCR

## **GE-LAV opportunity**

Internal model can apply GE-LAV-consistent stress

# Session 16 summary

## What we accomplished today

- 1 Solvency II currently treats all PE with flat 49% capital charge — state-independent
- 2 This misallocates capital: too high in boom, too low in crisis
- 3 GE-LAV alternative: state-contingent charge ranging 30-100%+ based on  $L(t)$
- 4 Realistic adoption timeline: 5-7 years through Pillar 2 first, Pillar 1 later

### Next session

Session 17: Market clearing in the secondary market — GE-LAV's general equilibrium

# The Solvency II problem with PE

*Why standard formula is wrong for private capital.*

## **Lumping**

All PE treated identically: same 49% charge for buyout and VC

## **State-blind**

Capital charge doesn't vary with L<sub>t</sub> state

## **No mean reversion**

Doesn't credit OU dynamics; perpetuity of stress

## **Empirically wrong**

Charge implies tail risk 4-5× realized · over-capitalized

## **Economic cost**

Insurers under-allocate to PE by 5-10pp due to charge

# GE-LAV-consistent capital charges

What charges would look like if state-aware.

L_t state	Std formula	GE-LAV charge	$\Delta$
Boom (L=+0.5)	49%	32%	-17pp (release capital)
Normal (L=0)	49%	41%	-8pp
Mild stress (L=-0.5)	49%	54%	+5pp
Severe stress (L=-1.0)	49%	67%	+18pp
GFC (L=-1.5)	49%	83%	+34pp
Implication	Cyclical: builds when needed, releases otherwise	—	—

# Implementing GE-LAV in an internal model

*Step-by-step for an insurer's actuarial team.*

## Step 1

Document GE-LAV methodology · cite book Ch. 16

## Step 2

Calibrate  $\kappa$ ,  $\sigma$ ,  $\pi$ -params for own portfolio

## Step 3

Estimate current  $L_t$  (book Ch. 5)

## Step 4

Compute state-dependent SCR contribution

## Step 5

Run stress scenarios (regulator-specified)

## Step 6

Submit to regulator for approval (~12 mo process)

# Comparison with Basel (banking)

*Different regulators, similar issues.*

## Basel III

Banks holding PE/RE: state-blind risk weights

## Basel revisions (2023)

Added some procyclical adjustments

## Liquidity Coverage Ratio (LCR)

Doesn't recognize PE as liquid

## Net Stable Funding (NSFR)

Long-term funding required for PE positions

## Comparison with Solvency II

Banks slightly more state-aware; still gaps

## GE-LAV applicability

Same framework, different parameter calibration

# Pillar 2 ORSA: where GE-LAV lands cleanly

*ORSA = Own Risk and Solvency Assessment.*

## ORSA requirement

Insurer must self-assess capital adequacy

## Required components

Stress testing, scenario analysis, risk appetite documentation

## GE-LAV alignment

Natural fit: state-dependent stresses with quantified tail

## Regulator expectations

Increasingly: 'show me your L<sub>t</sub> model'

## Time horizon

5-year forward-looking; matches GE-LAV master equation

## Documentation

Methodology, validation, governance • ~80 pages typical

# Worked example: insurer SCR calculation

European life insurer with €40B AUM, 12% in PE.

## PE allocation

€4.8B

## Standard formula SCR (PE)

$€4.8B \times 0.49 = €2.35B$

## Current $L_t$ estimate

$L = -0.3$  (mild stress)

## GE-LAV charge at $L=-0.3$

48% →  $€4.8B \times 0.48 = €2.30B$

## Stress add-on (Pillar 2)

+€0.20B for outlier vintages

## Total SCR contribution

€2.50B; capital release of €0.15B available

# Bridge to Session 17

*Solvency II answers the regulator's question. What about the market?*

## Regulator focus

Capital adequacy of individual insurer

## Market focus

Where does the secondary market clear?

## Connection

Market-clearing price determines insurer's MTM

## Session 17 covers

GE-LAV market-clearing math: supply meets demand

## Practical link

Insurer's actuary needs the market price (S17) to compute SCR (S16)

## Reading

Book Ch. 17 covers full equilibrium derivation