Wilary Winn University 2026: Integrated Risk Modeling

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Integrated Risk Modeling

Objectives & Resources

Session details, objectives, and reference materials

1. **Identify the structural failures** that result from managing ALM, CECL, concentration risk, and pricing in isolation
2. **Explain path-dependent risk** and why cumulative exposure matters more than pint-in-time snapshots
3. **Describe how cash flows serve** as the unifying architecture across all four risk frameworks
4. **Recognize how concentration risk** amplifies losses, liquidity stress, and capital drawdowns nonlinearly
5. **Apply integrated assumptions** to align pricing with expected loss, funding cost, and concentration effects

Polling questions will be included throughout the session.

White Paper: Integrated Risk Modeling

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Integrated Risk Modeling

Session Agenda

The Case for Synchronized Risk Management

Intro	Introduction & Why This Matters
Part 1	Why Siloed Frameworks Fail
Part 2	Path-Dependence & Cash Flow Architecture
Part 3	Concentration Risk as a Loss Amplifier
Part 4	Pricing as Front-Line Control
Part 5	Governance & Implementation Steps
Q&A	Key Takeaways & Questions

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Part 1: Why Siloed Frameworks Fail

Four Frameworks. Four Silos.

ALM

Manages interest rate & liquidity risk

Key Metric:

NIM Sensitivity
Duration Gaps
Net Economic Value

CECL

Estimates lifetime expected credit losses

Key Metric:

Allowance Coverage
Reserve Volatility

Concentration Risk

Limits exposure to correlated risks

Key Metric:

Exposure Limits
Portfolio %

Loan Pricing

Maximizes yield & competitiveness

Key Metric:

Nominal Margin
Spread to Index

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Part 1: Why Siloed Frameworks Fail

Local Optimization Creates System Vulnerability

Table 1: Framework Objectives vs. System-Level Outcomes

Framework	Primary Objective	Metric Optimized	Unintended Downstream Effects
ALM	Stabilize earnings and manage IRR/Liquidity	NIM sensitivity, duration gaps, liquidity ratios	Treats credit losses as exogenous shocks rather than endogenous outcomes of pricing and portfolio construction
CECL	Estimate expected lifetime credit losses	Allowance coverage ratios, reserve volatility	Reserves react to realized deterioration rather than informing upfront risk selection and pricing decisions
Concentration Risk	Limit exposure to correlated risks	Exposure caps, portfolio percentages	Reduces complex correlation effects to static limits, failing to quantify amplification of losses and liquidity stress
Loan Pricing	Maximize yield and competitiveness	Nominal margin, spread to index	Elevated cash flow volatility, mispriced credit and liquidity risk, downstream earnings and capital strain

Optimizing one framework in isolation often increases vulnerability elsewhere in the system.

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Part 1: Why Siloed Frameworks Fail

These are not errors related to model selection or sophistication.

These are architectural failures as a result of disconnected systems.

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Part 2: Path-Dependence

Risk is a Trajectory, not a Number

Origination & Structure

Rate, term, amortization, covenants

Cash Flow Path

Prepay, default, severity, timing

Outcomes

Credit loss, liquidity stress, NIM

Constraints

Capital & liquidity limits

Strategy Response

Pricing adjustments, concentration limits

Sequence Matters

When losses arrive relative to funding needs.
When rate moves occur relative to repricing windows.
When correlated stress hits multiple segments.

Compounding Is Nonlinear

Slightly weaker structure, modestly mispriced credit, or marginally higher correlation can produce disproportionate outcomes.

Averages Conceal Risk

Point-in-time measures hide the sequence of events.
Static snapshots treat risk as existing "now" rather than accumulating "through."

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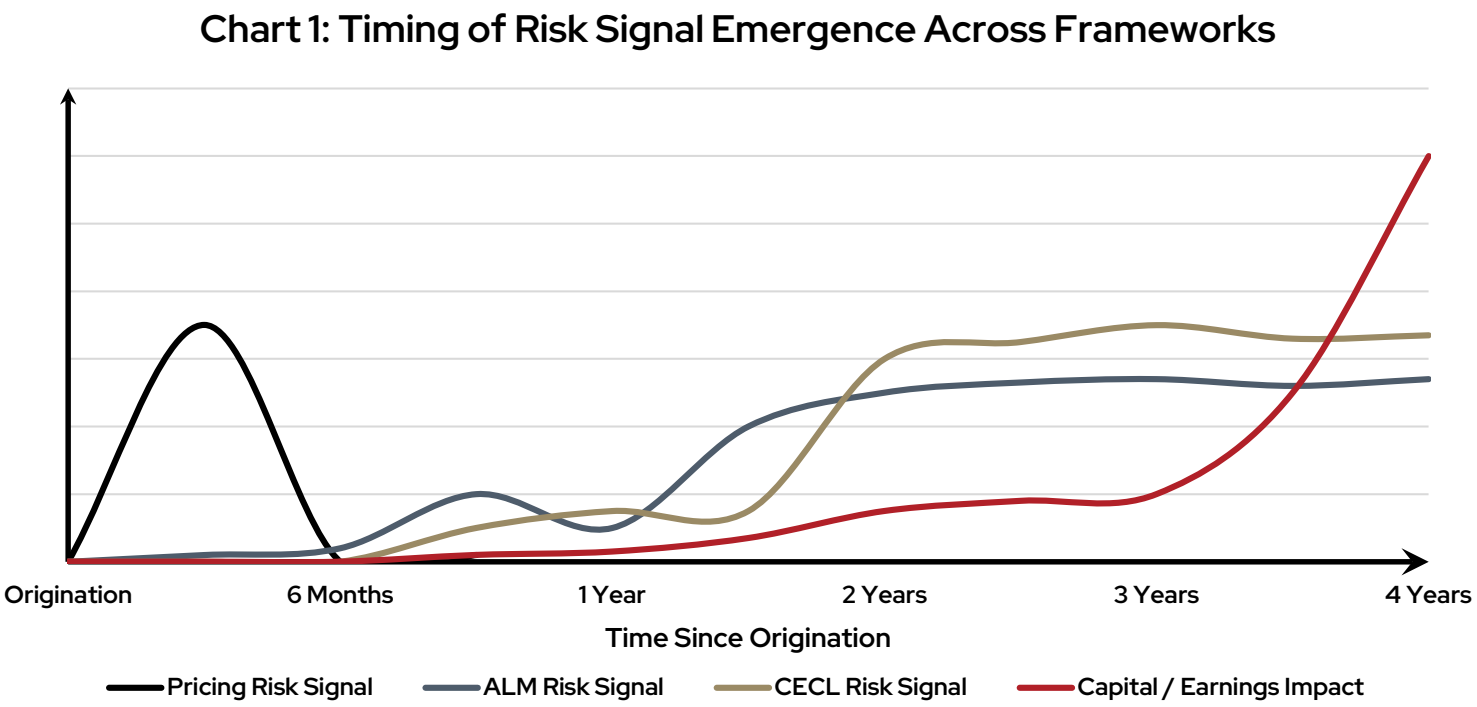
Part 2: Path-Dependence

Risk Signals Emerge at Different Times



Isolated monitoring delays recognition and compresses response time.

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Part 2: Cash Flow Architecture

One Language: Cash Flows

The underlying question is always the same across every framework:

What cash will arrive, when will it arrive, how reliable is it, and what happens if it doesn't arrive?

1	**ALM:**	Model of cash flow timing & repricing – how mismatches translate into NIM, IRR, and liquidity exposure
2	**CECL:**	Model of expected shortfalls in cash – present-value impact of missed principal & interest payments
3	**Concentration Risk:**	Model of correlation of cash flow failures – synchronized weakness amplifies reserves, capital, and liquidity stress
4	**Loan Pricing:**	Model of compensation for cash flow uncertainty – spread must cover credit, duration, and optionality

1. What is the “common language” that connects ALM and CECL most directly?

    a. Net worth ratio
    b. Budget vs. actual results
    c. Peer benchmarking
    d. Cash flows (timing and amount)

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Part 2: Cash Flow Architecture

Three Shared Assumption Categories Drive All Four Frameworks

01

Prepayment & Repayment Behavior

- Governs timing and magnitude of cash inflows
- Consumer: rate incentives, seasonality, borrower attributes
- Commercial: renewal structures, maturity balloons
- Deposits: beta, decay, migration, effective maturity

Affects ALM duration, CECL exposure window, and pricing optionality cost

02

Default Timing & Severity

- Time-dependent transitions: when shortfalls occur
- Severity embeds collateral dynamics and workout costs
- Must be consistent across CECL, concentration stress, and pricing

Inconsistency leads to pricing that undercharges for risk

03

Macroeconomic Conditioning

- Behavior shifts when conditions change
- Baseline, moderate stress, severe stress must mean the same thing across ALM, CECL, and pricing

Ensures a rate shock means the same thing across models

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Part 2: Cash Flow Architecture

Assumption Drift: A Subtle but Corrosive Problem

Table 3: Assumption Drift Across Risk Functions

Assumption	ALM	CECL	Concentration Risk	Loan Pricing
Prepayment	Modeled for IRR scenarios, sometimes simplified	Explicitly modeled, cohort-based	Rarely incorporated directly	Often static or implicitly assumed
Default	Treated as shock or scenario input	Explicitly modeled, cohort-based	Implicit via exposure metrics	Typically embedded as average loss
Severity	Usually ignored or held constant	Explicitly modeled, collateral dependent	Not directly incorporated	Often fixed or approximated
Economic	Scenario-based, often rate-centric	Forecast-driven, multivariable	Generally absent	Minimal or judgmental

The remedy: a centralized, versioned assumption library applied consistently across all frameworks.

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Part 3: Concentration Risk as a Loss Amplifier

Concentration Is a Correlation Problem, Not a Quantity Problem

Traditional View (Insufficient):

"How much exposure do we have in each segment?

Are we within policy limits? ✓

Box checked. Move on."

Integrated View (Necessary):

"How do these cash flows behave together when conditions change? What is the probability and impact of correlated failures?"

Exposures Are Not Independent

If exposures were independent, losses average out. Correlation means they cluster – turning ordinary shocks into systemic stress.

Policy Limits Miss the Story

A portfolio can appear diversified by percentages while concentrated in the factors that matter most under stress: credit quality, industry cyclicality, collateral type.

The Relevant Question

Not "*how big is the exposure?*" but "*what happens to all these cash flows simultaneously when the economy turns?*"

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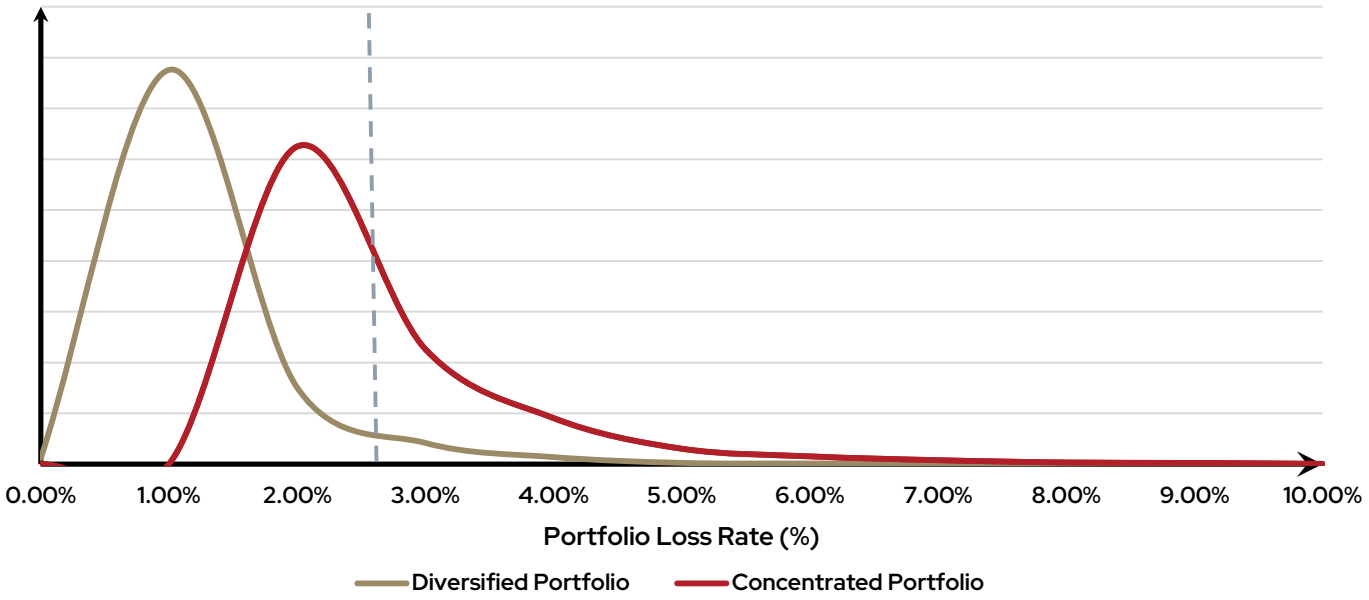
Part 3: Concentration Risk as a Loss Amplifier

Concentration Amplifies Extreme Outcomes

Chart 2: Concentration Risk as a Loss Amplifier



CECL Volatility

Correlated segments deteriorate simultaneously → sharper reserve swings → earnings volatility issue

Liquidity Stress

Concentration affects liquidity through losses (missed payments) and timing (slower paydowns)

Capital at Risk

Shortens the distance between 'normal' and 'severe' – multiple adverse forces arrive simultaneously

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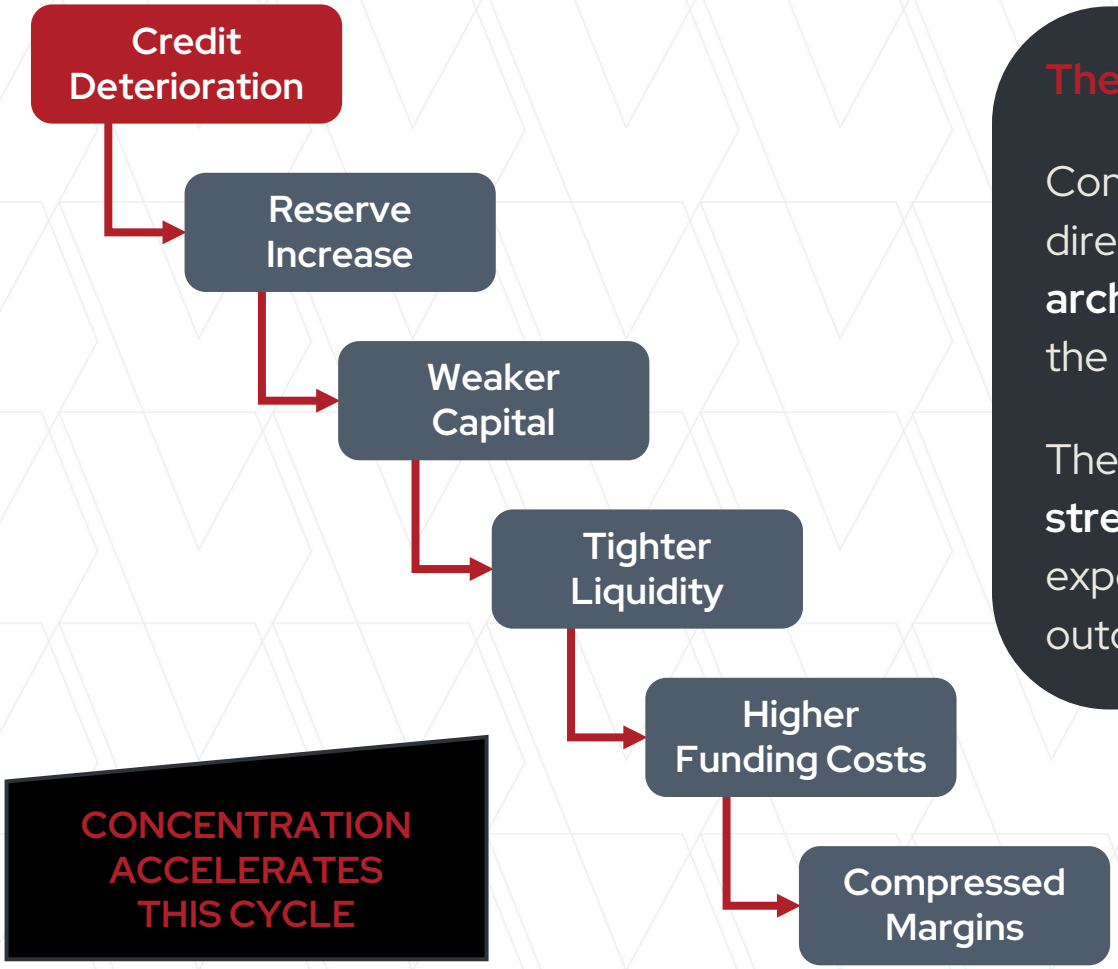
Part 3: Concentration Risk as a Loss Amplifier

Concentration Creates Self-Reinforcing Feedback Loops



The Practical Implication:

Concentration risk should be integrated directly into the institution's **cash flow architecture**. Limits are guardrails, not the primary lens.

The primary lens should be **stress amplification**: how correlated exposures change the distribution of outcomes in adverse scenarios.

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Part 4: Pricing as Front-Line Control

Pricing: Absorb Risk Properly or Transfer It to the Future

In an integrated risk architecture, pricing is the front line of risk management.

The rate is only one component. Term, amortization, prepayment provisions, collateral requirements, covenants, rate type, repricing index, floors, caps, and fees collectively determine how an asset behaves across time.

1. **Earnings Volatility:**
   Mispriced optionality locks in asymmetric behavior – prepayments accelerate when you don't want them, funding costs reprice up while yields stay locked.

2. **Capital Erosion:**
   Risk not paid for appears later as reserve volatility, earnings shortfalls, and capital drawdowns. Mispricing is borrowing capital from your future self.

3. **Liquidity Pressure:**
   Longer terms and slower amortization extend exposure. When cash flows degrade under stress, liquidity tightens when funding is already scarce.

Integrated Pricing Embeds:

- **Expected Loss (CECL)**
  Margin must compensate for expected credit shortfalls across borrower attributes and macro scenarios

- **Funding & Liquidity Cost (ALM)**
  Assets creating duration mismatch or refinancing risk must carry a liquidity premium

- **Concentration Premium**
  Two loans with similar expected losses can have radically different systemic impacts based on correlation

2. In an integrated architecture, pricing is best described as:

   a. A marketing function only
   b. Where risk is either paid for up front or deferred
   c. A tool used only for deposit products
   d. Mostly unrelated to ALM and CECL

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Part 4: Pricing as Front-Line Control

Margin Maximization vs. System Control

Margin Maximization
Traditional Approach

- Optimizes near-term spread without internalizing downstream risk
- Accepts any volume that meets minimum spread threshold
- Ignores funding dynamics → looks profitable on paper
- Risk surfaces later as reserve volatility and capital strain
- Growth strategy decoupled from capital/liquidity capacity

REACTIVE

System Control
Integrated Approach

- Uses pricing as a lever to shape portfolio behavior
- Discourages structurally fragile production at origination
- Requires compensation for correlated concentration risk
- Aligns growth with capital and liquidity capacity
- Pricing is where coherence begins and strength is built

PROACTIVE

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Part 5: Governance & Implementation Steps

What Changes When Risk Is One System

Table 4: Governance Before vs. After Integration		
Governance Element	**Before Integration (Fragmented)**	**After Integration (Unified System)**
Reporting Structure	Separate ALM, CECL, Concentration, Pricing reports	Unified risk narrative tied to cash flows
Decision Rights	Siloed owners, local optimization	Shared decision framework & risk appetite
Cadence	Asynchronous cycles, periodic updates	Aligned cadence (assumptions, limits, pricing)
Stress Testing	Inconsistent scenarios & outputs	Common scenarios, reconciled results
Board Narrative	Reconciliation stories ("why are these different?")	Coherent story tracing risks, drivers, and actions
Audit & Defensibility	Limited coherence, manual bridges	Version control, assumption logs, traceability, approval trail

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Part 5: Governance & Implementation Steps

Maturity Roadmap: Four Stages to Integration

Stage 1

Coordinated Reporting

- ✓ Siloed assumptions
- ✓ Periodic reviews
- ✓ Limited integration

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Stage 2

Shared Scenarios

- ✓ Aligned stress scenarios
- ✓ Common economic view
- ✓ Improved consistency

CONSISTENT

Stage 3

Central Assumption Library

- ✓ Versioned Assumptions
- ✓ Prepay/Default/Severity
- ✓ Audit-ready governance

CONTROLLED

Stage 4

Integrated Decision Controls

- ✓ Risk-based pricing
- ✓ Limits & capital linked
- ✓ Liquidity-aware actions

INTEGRATED

3. Which is the best ***first*** step toward integration (without rebuilding everything)?

    a. Buy a new core system
    b. Stop using scenarios
    c. Align scenario definitions and assumptions across teams
    d. Increase pricing spreads across all products

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Part 5: Governance & Implementation Steps

Five Practical First Steps

1. **Define a Shared Cash Flow Spine**
   Establish a common representation of contractual cash flows by product and segment, and agree on the behavioral assumptions that modify them. This becomes the shared language across functions.

2. **Standardize Scenario Definitions**
   Align "baseline," "moderate stress," and "severe stress" across ALM and CECL at the assumption level so outputs can be interpreted together.

3. **Create an Assumption Governance Process**
   Implement a versioned assumption library with ownership, review cadence, and documentation standards. Start with a narrow set of high-impact assumptions (repayment, default, severity) and expand over time.

4. **Translate Outputs into Actionable Steps**
   Integration becomes real when it informs decisions: pricing floors and add-ons tied to expected loss and liquidity cost, concentration adjustments tied to adverse scenario results, and growth targets tied to capital and liquidity capacity under stress.

5. **Build a Unified Narrative**
   Replace multi-report reconciliation with one story that traces risk from origination through cash flow behavior to earnings, liquidity, and capital outcomes.

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Why Integrated Risk Modeling Matters

Synchronization Is a Competitive Advantage

Price More Intelligently

Avoid volume that destroys performance. Embed expected loss, funding cost, and concentration premium before decisions are locked in.

Allocate Capital Effectively

Recognize where risk is truly concentrated. Capital follows actual risk, not nominal exposure.

Anticipate Liquidity Pressure

Understand cash flow trajectories rather than relying on point-in-time ratios. See pressure before it arrives.

Communicate Risk with Clarity

Structurally aligned frameworks produce coherent narratives for boards, auditors, and regulators without reconciliation.

Adjust Strategy Faster

Integrated signals allow earlier intervention. Compounding effects are addressed before they harden into outcomes.

Absorb Shocks with Less Forced Reaction

Fragmented institutions pay for incoherence when conditions tighten – through margin compression, reserve volatility, and loss of strategic flexibility.

4. What is the main benefit of treating risk as one system?

    a. It eliminates the need for policies
    b. It guarantees higher earnings
    c. Clearer decisions and fewer surprises with aligned outputs
    d. It replaces ALM and CECL with one model

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Key Takeaways

Five Things to Take Back to Your Institution

1	**Fragmentation Is Architectural, Not Analytical**	The failure isn't in individual models – it's in disconnected systems that produce contradictory narratives and prevent integrated decision-making.
2	**Risk Is Path-Dependent**	Small early differences in structure, pricing, or correlation compound into materially different outcomes. Sequence matters as much as magnitude.
3	**DCF Is the Common Language**	Every framework resolves to cash flow timing, magnitude, and reliability. Structural consistency across models matters more than isolated model precision.
4	**Concentration Is Correlation**	The danger is not the size of the exposure – it's the synchronization. Concentration analysis should be framed as stress amplification, not policy compliance.
5	**Pricing Is Front-Line Risk Control**	Embed expected loss, funding cost, and concentration premium at origination – before risk becomes locked-in exposure manageable only through downstream buffers.

Thank You

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