



PACIFIC PENSION INSTITUTE

Re-tooling A Fund's Risk Management

2009 Asian Pension Fund Roundtable

Mitigating Uncertainty: Risk Management in Pension Fund Strategy

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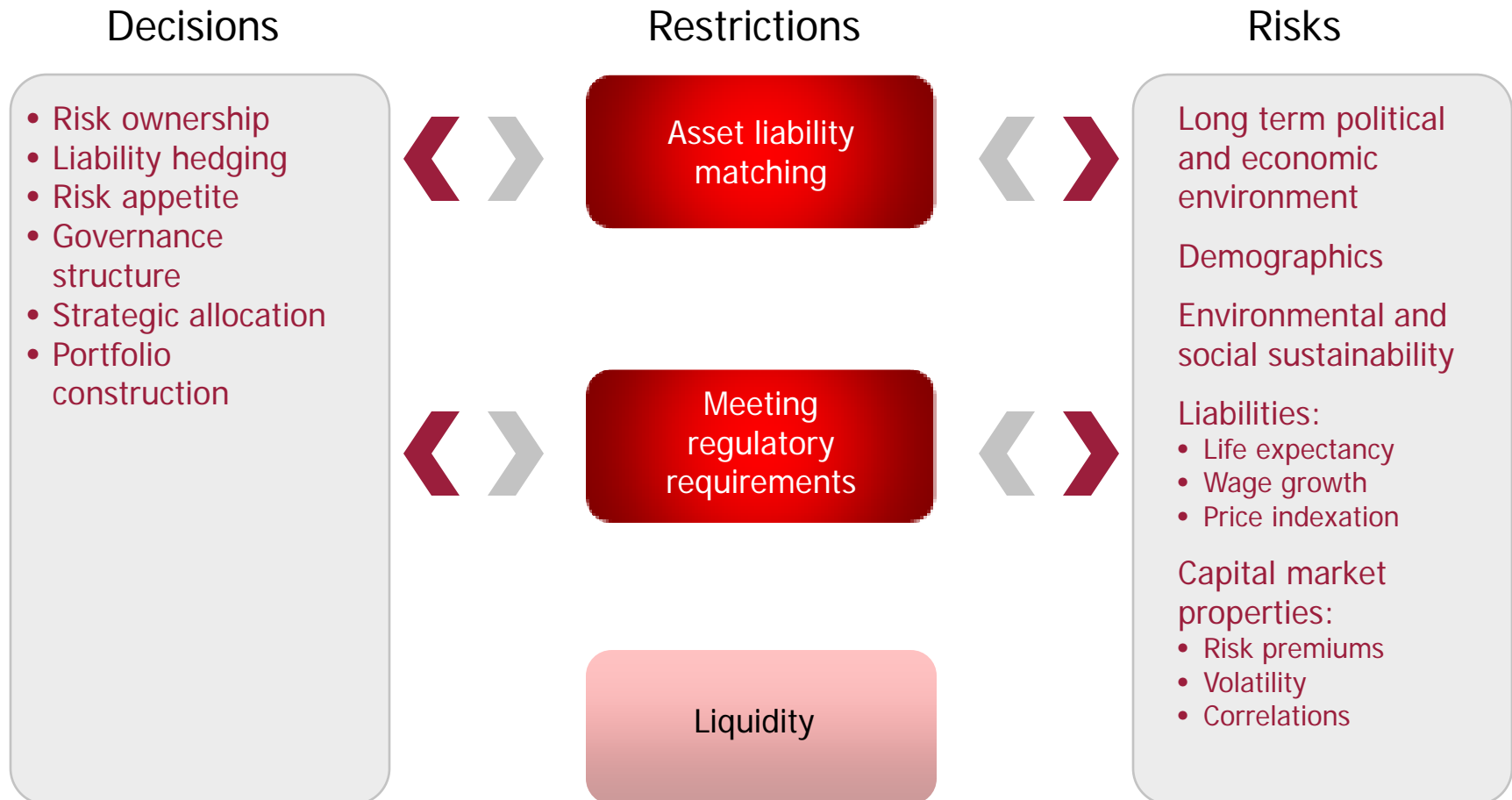
Focus in this Discussion

- Why does risk management tend to lead to procyclical investment behavior? How to avoid this?
- Even long-term investors get caught up by short term restrictions on risk taking. What are the links between strategic and tactical decisions – and between short- and long-term risk factors?
- How can we cope with systemic risk? Can we improve the risk management capabilities by “early warning” indicators?
- Examples on risk mitigation
- Establishing more robust and efficient strategic portfolios – risk factor based asset allocation
- Lessons learned: Towards a new concept of Integrated Risk Management

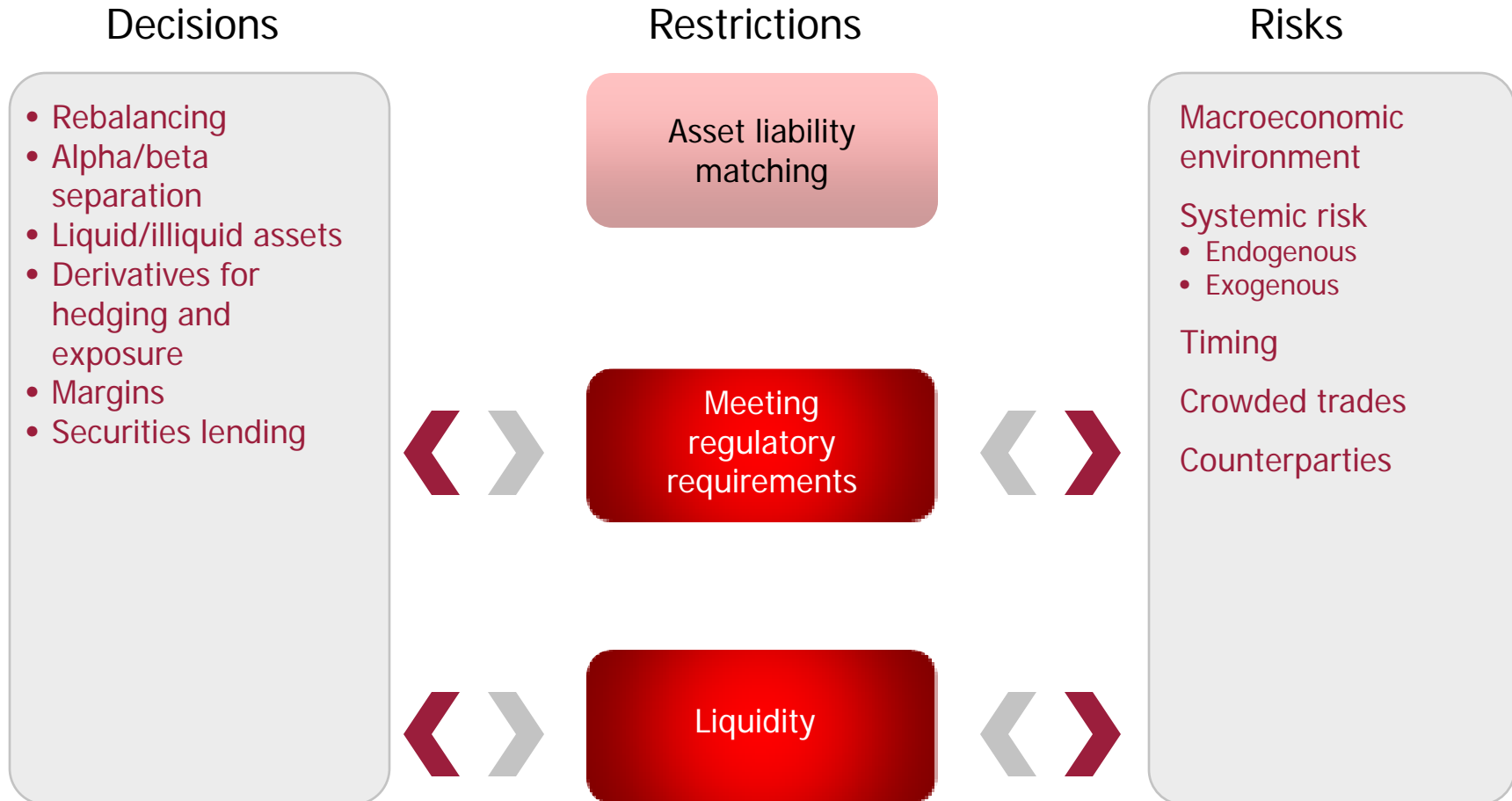
Dilemmas Exposed During this Crisis

- Pension fund asset liability strategies that can be optimal for the long-term liability matching, can force dysfunctional actions in the short term. The portfolio can become too complex
- The role of liquidity management was underestimated. Cash needs for capital calls, hedging programs etc. enforced costly restrictions on the execution of investment strategy. And securities lending imploded
- The advantage with alternative investments was probably less than expected (diversification didn't work) and the shadow price on illiquidity higher
- Why did so many funds build up risk during the "good times" and de-risked when they should have done the opposite...

Strategic Risk Management



Tactical Risk Management



Liquidity restrictions became a prominent restriction for pension funds during this crisis

Liquidity Needs: Payout to current liabilities
 Hedging activities, exposures to futures, options
 Portfolio rebalancing
 Capital calls from private equity

Strategic and Tactical Dimensions Melting Together

- Not meeting regulatory requirements
- Liquidity management: Many pensions funds encountered difficulties with running hedging programs and rebalancing of portfolios

Risks:

- We have learned (again) that financial markets are fragile adaptive systems
 - Small external impacts (esp. foreign capital flows) can lead to change in equilibrium
 - Network effects cause chain-reactions and linking of events across countries markets and sectors
 - Once tipping point is reached (e.g., bank run), pro-cyclical amplification loops (esp. Leverage & Asset Prices) lead to great increase in momentum where mean reversion strategies fail
- Liquidity is the main link across asset classes, fat tails are often an effect of leverage and liquidity factors
- Risk factors are also linked along the time dimension

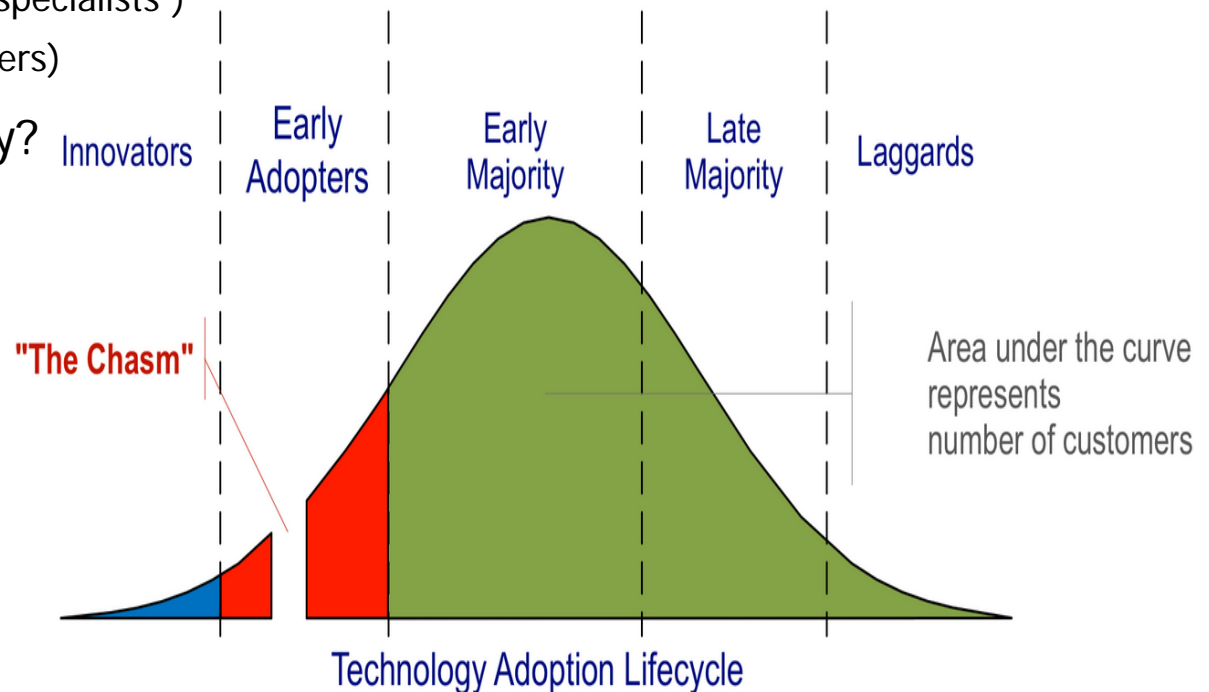
Tipping points, social epidemics & market cycles

- Diffusion of ideas and innovation follow a predictable course
- Malcolm Gladwell's "Tipping Point" describes process of social epidemics

- **Law of the few (Power Law)**

1. Connectors (who bring people together)
2. Mavens (information specialists)
3. Salespeople (persuaders)

- **Financial fashion today?**

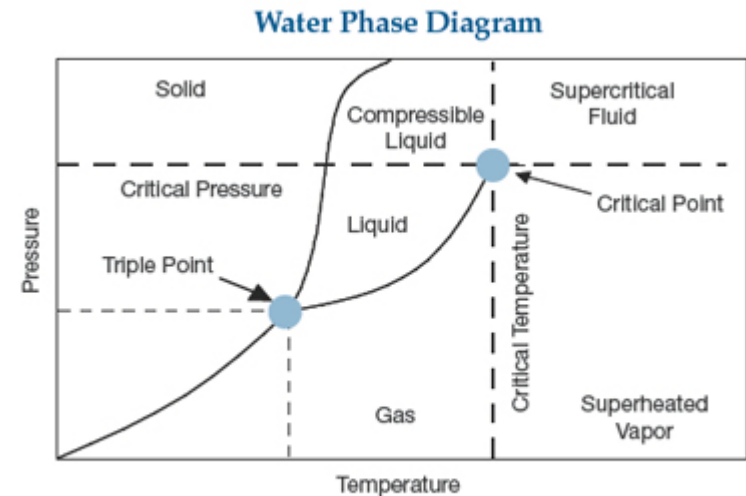


Source: Wikipedia; see Geoffrey Moore's "Crossing the Chasm" (1999)

Momentum strategies prevail once phase transition tipping point reached, mean reversion fails

- Tipping points mark dramatic phase transitions, abrupt S-shaped transitions between states with radically different properties.

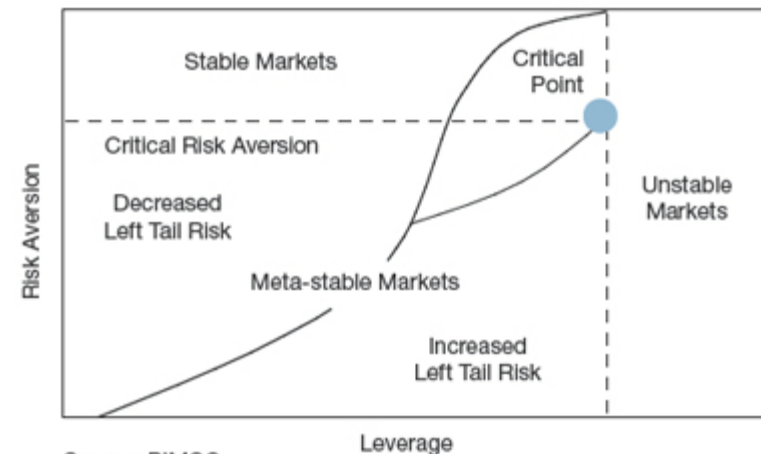
Climate scientists are obsessed with finding tipping points, the levels at which the momentum for change becomes unstoppable. - Time, "A Green Tipping Point" (2007)



Source: PIMCO

Figure 1

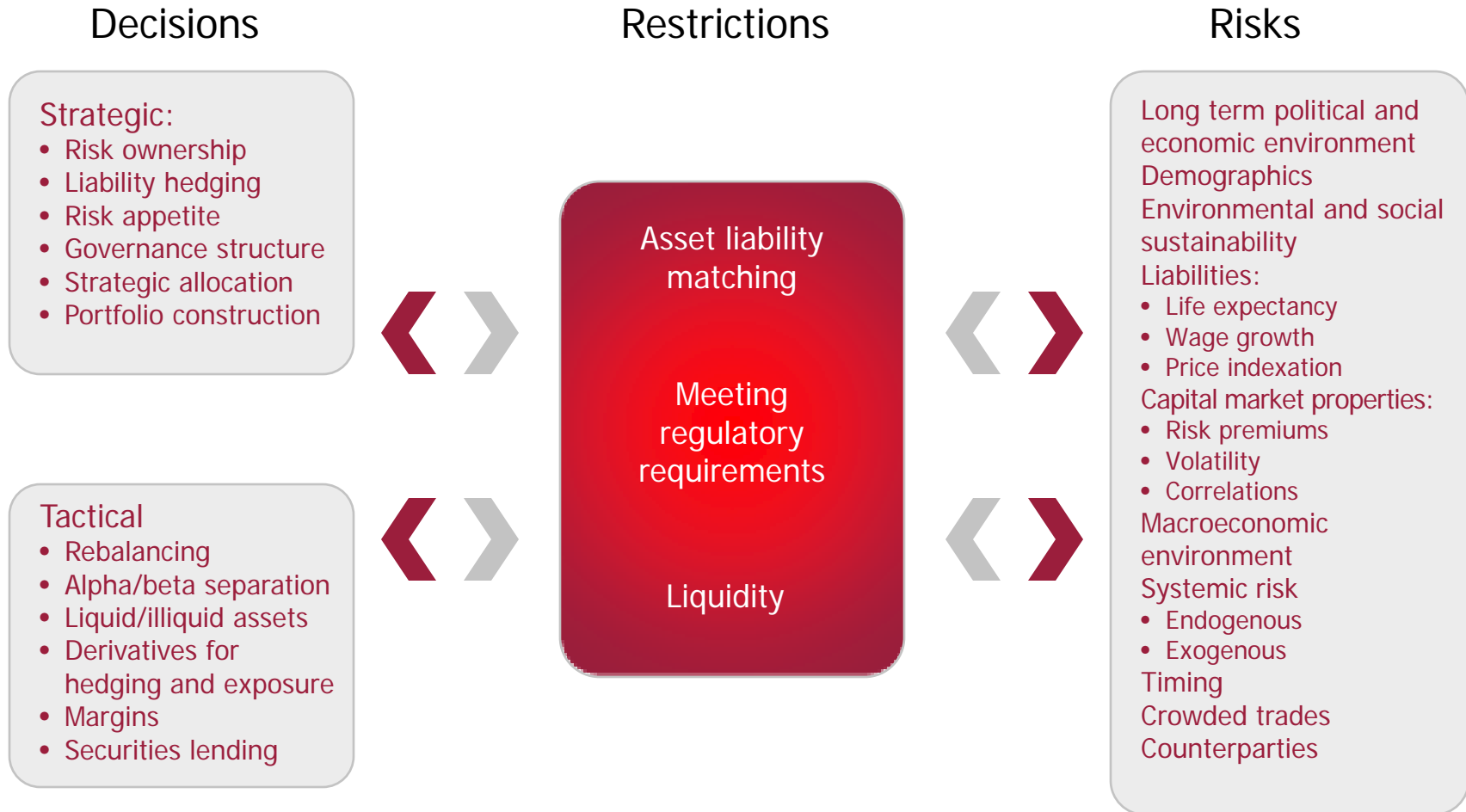
Financial Market Phase Diagram



Source: PIMCO

Figure 2

The Integrated Decision Framework



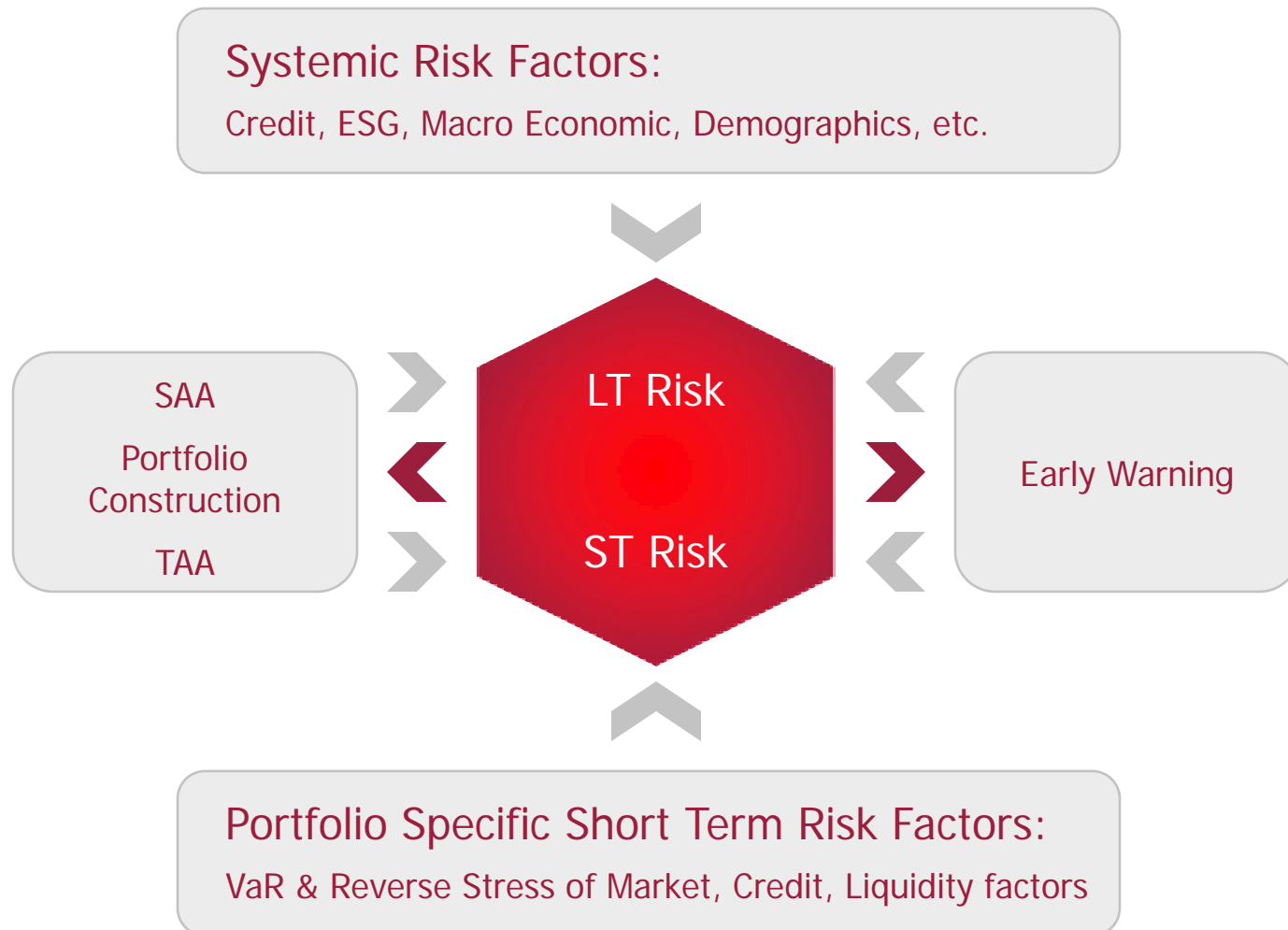
Integrated risk management uses both top down and bottom up analysis

- Top down approach: long term and systemic perspective
 1. Identify systemic risks (e.g., bubbles, ESG risks)
 2. Design scenarios and assess potential portfolio impact
 3. Set risk strategy (i.e., insure, hedge, do nothing)

- Bottom up approach: current view of portfolio specific factors
 1. Reverse stress test and VaR to assess specific portfolio vulnerabilities
 2. Interpret bottom up scenarios to create fundamental scenarios
 3. Set risk strategy

- Early warning system: active monitoring of key variables (“the stakeout”)
 1. Systemic risk factors
 2. Portfolio specific factors
 3. Dash boards with trend and volatility analysis, focus on outliers

Integrating top down & bottom up risk management



Integrated Risk Management – Overview

1. Consistent and optimal risk taking and behavior

Avoiding procyclicality: Risk ownership and governance

Optimal beta portfolio

Ongoing training by the decision makers

2. Increase portfolio robustness and efficiency

Building more robust portfolios

Building more efficient portfolios

Model simulations the reveal portfolio characteristics

3. Mitigate and manage risk in the portfolio versus liabilities

Long term: ESG / UN PRI compatibility

Hedging opportunities

Short term: Liquidity management

4. Monitor and manage portfolio risk

Early warning system

Regime shifts

5. The Essence of Integrated Risk Management

Conclusions

- The framework around the ongoing asset-liability decision making process in many pension fund is extremely complex
- Too often the decisions are irrational. Is the risk ownership and governance structure well defined?
- Do we understand the complexity and underlying risk characteristics of the portfolio?
- If not – can we model the process better and learn from simulations and fire drills?
- If this is still not enough – can we reduce the complexity, mitigate risk better and build more robust portfolios?
- Risk management is a common good, we reduce systemic risk by sharing and implementing best practices

Integrated Risk Management



Integrated Risk Management links short and long time horizon models, scenario building, early warning systems, with the identifying of risk ownership, appropriate governance structure, investment strategy and ongoing training and simulations by the risk owners