

PRMIA: Pension Fund Risk Management

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Key concepts

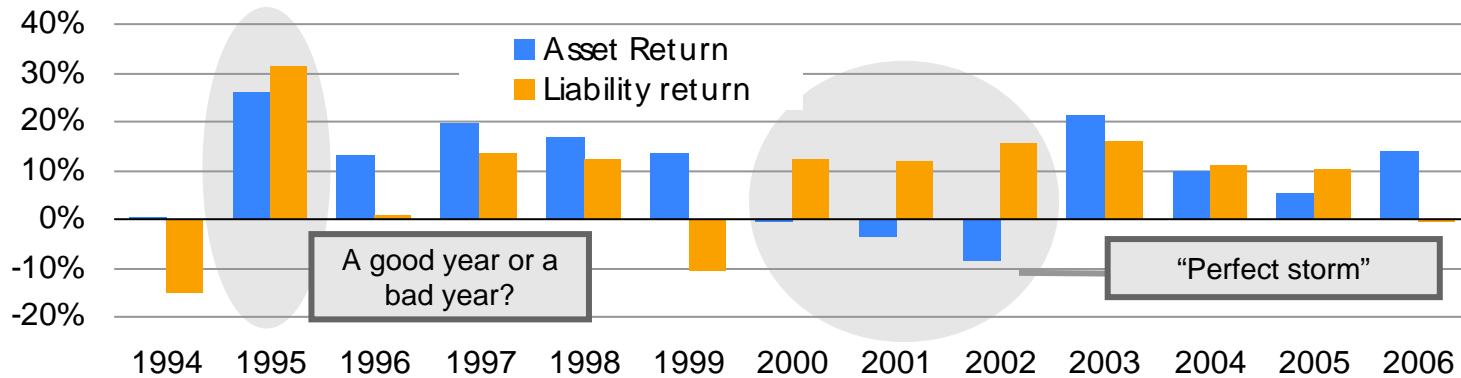
- ◆ The world has changed: plans must incorporate liabilities
- ◆ Focus on funding ratio risk and return: seeks lower risk, similar return
- ◆ The approach needs to be tailored to each client's situation: time horizon for risk is key

SECTION 1

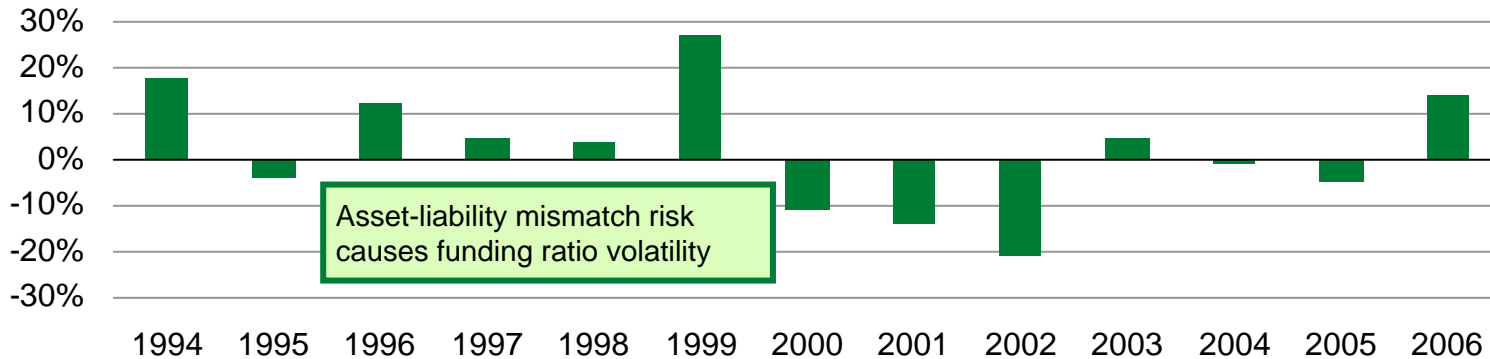
The world has changed:
Plans must incorporate liabilities

The asset-liability mismatch

Market-related Asset and Liability Returns 1994-2006



Funding ratio returns



Source: UBS Global Asset Management, Bloomberg

Note: Typical Asset Return represents 40% S&P 500 Index//10% Russell 2500 Index//10% MSCI EAFE Index//35% Lehman Brothers Aggregate Index//5% 3 Month T-Bills. Typical Liability Return represents the PBO of a typical pay-related defined benefit plan. Discount rate is the yield on the Moody's Aa Corporate Bond Index. Assumes no contributions. Benefit payments and service cost are excluded from each year's annual growth.

Impacts of pension reform

Pension reform has reduced smoothing of assets and liabilities

Funding reform	Change	Impact
<ul style="list-style-type: none"> ● Pension Protection Act August 17, 2006 	<ul style="list-style-type: none"> ◆ Reduce smoothing of assets liabilities 	<ul style="list-style-type: none"> ◆ More contribution volatility
	<ul style="list-style-type: none"> ◆ Severe penalties for falling below funding ratio thresholds (80% and 60%) 	<ul style="list-style-type: none"> ◆ More contribution volatility
Accounting reform		
<ul style="list-style-type: none"> ● Phase 1: FAS 158 December 31, 2006 	<ul style="list-style-type: none"> ◆ Recognize surplus/(deficit) on sponsor's balance sheet 	<ul style="list-style-type: none"> ◆ More balance sheet volatility
	<ul style="list-style-type: none"> ◆ Recognize changes in plan's funded status in the year in which they happen 	<ul style="list-style-type: none"> ◆ More volatility in comprehensive income
<ul style="list-style-type: none"> ● Phase 2: 2008-2009 	<ul style="list-style-type: none"> ◆ Immediate recognition of gains/losses in pension expense calculation 	<ul style="list-style-type: none"> ◆ More earnings volatility

SECTION 2

Focus on funding ratio risk and return

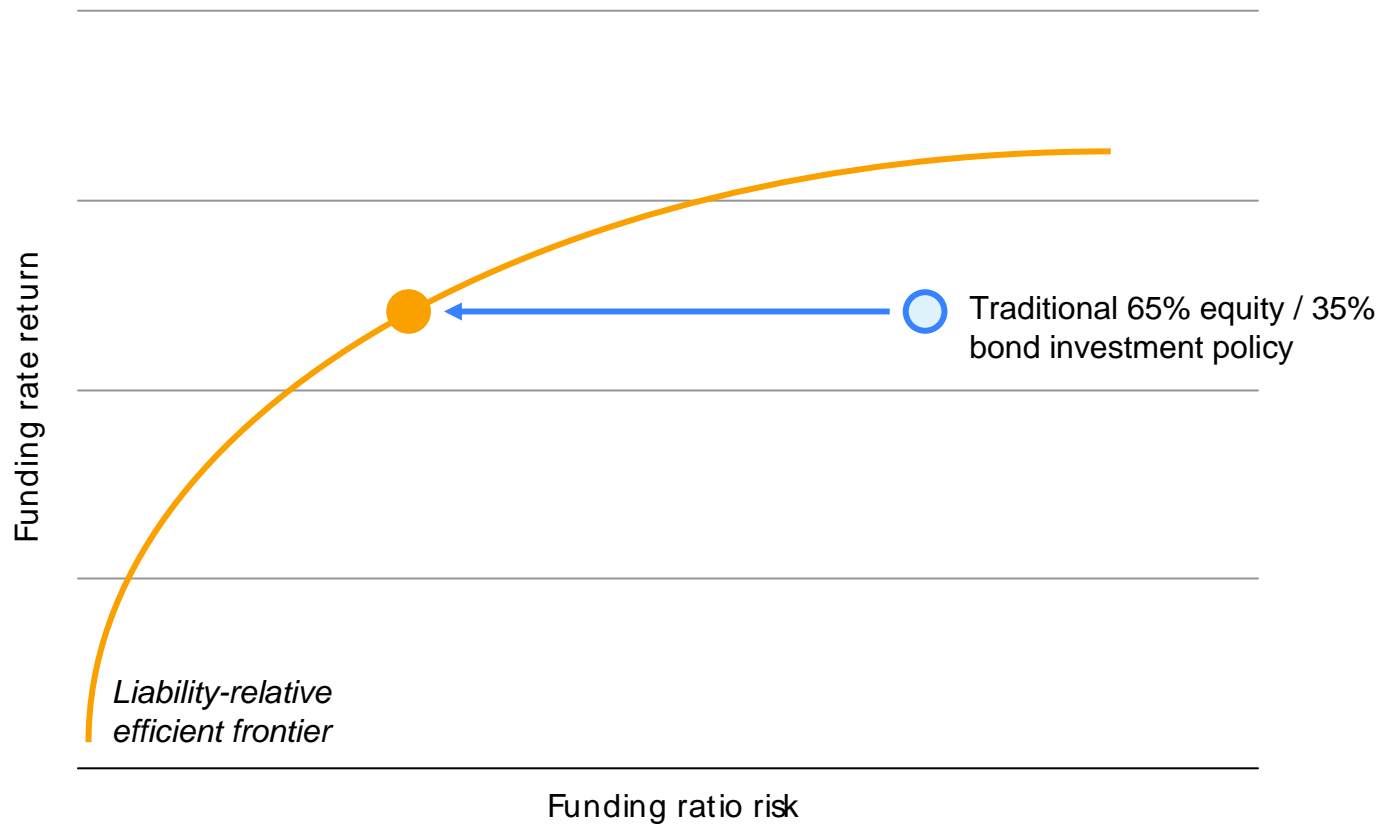
Funding ratio approach vs. traditional approach

	Traditional: Starts with assets	Our approach: Funding ratio (A/L) Starts with liabilities
Objective	Investment returns	Target funding ratio
Risk measure	Volatility of assets	Volatility of funding ratio returns (assets vs. liabilities)
Asset allocation	Long term static allocation	Dynamic allocation between hedging and return generation
Low risk investments	Aggregate bonds	Long duration bonds + derivatives
Monitoring	Quarterly investment reporting	Ongoing monitoring of funding ratio
Performance measurement	Outperformance of investment benchmarks	Liability + X%

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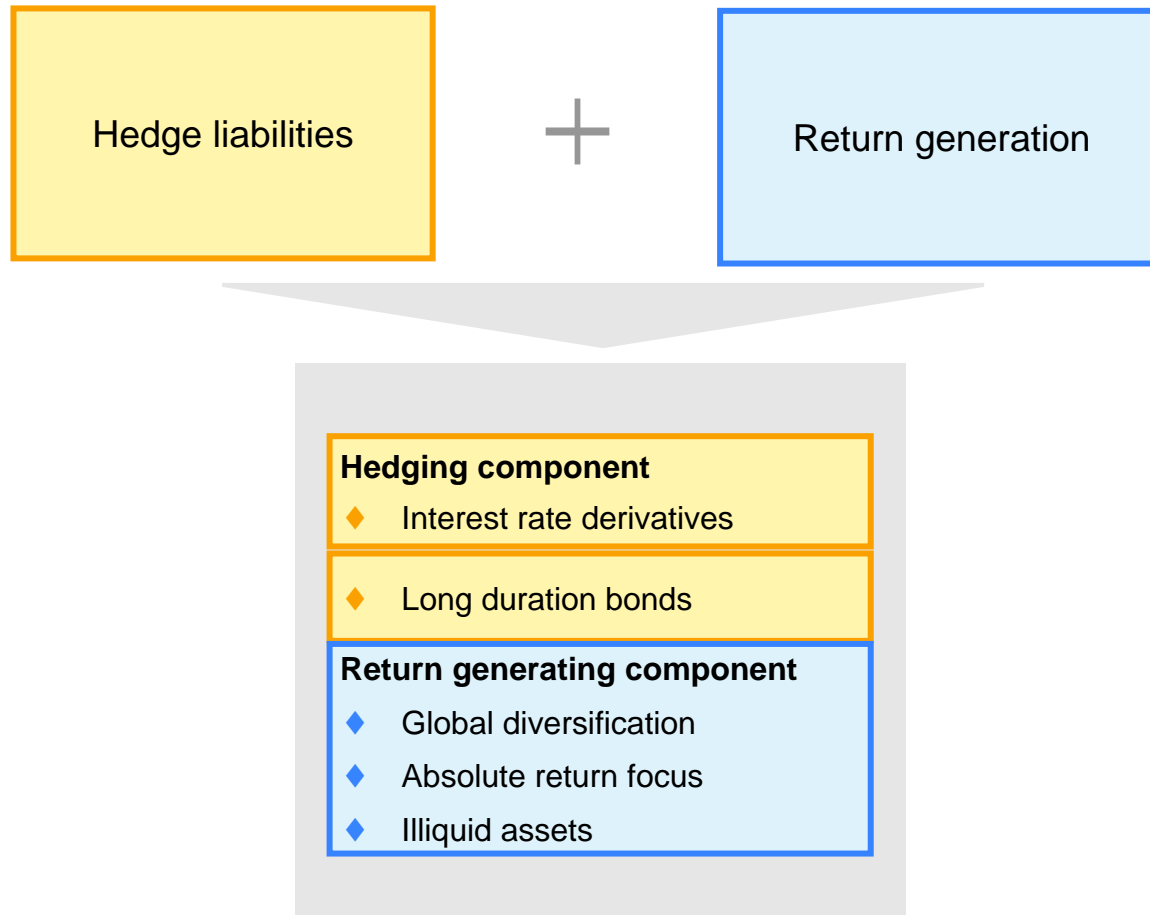
Value proposition

Lower expected asset-liability mismatch risk at similar levels of return



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Constructing efficient options



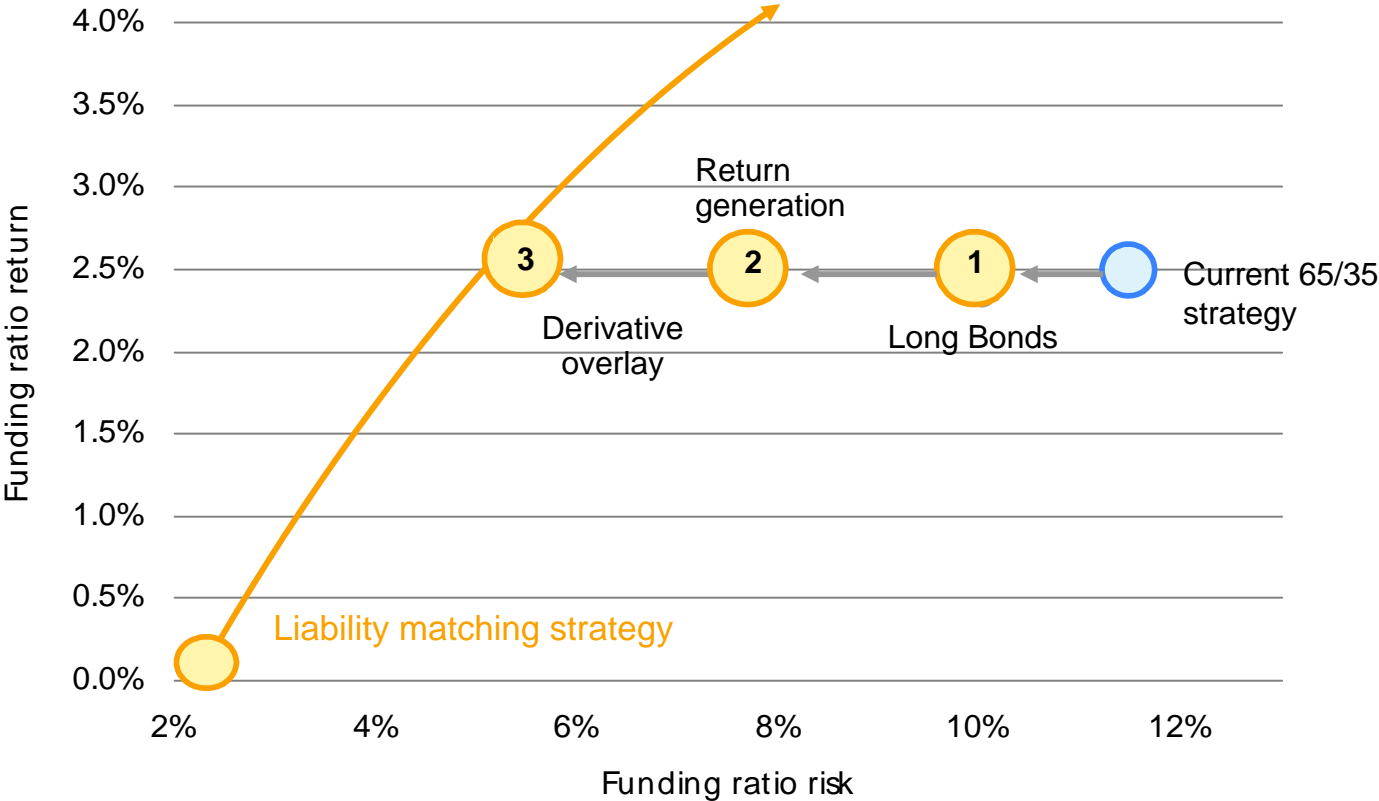
Source: UBS Global Asset Management
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Example: Alternative investment strategies

Portfolio name	Philosophy behind construction
1) Step 1 - Long Bonds <ul style="list-style-type: none">• 65% Equities• 35% Long Bonds	◆ Reallocate current fixed income assets to long duration bonds to reduce the duration mismatch between assets and liabilities
2) Step 2 – Return Generation <ul style="list-style-type: none">• 65% Efficient Return Generation• 35% Long Bonds	◆ In addition to reallocating to long duration bonds, allocate 50% from pure equities to absolute return strategy, and allocate 15% from equities into alternatives
3) Step 3 – Derivative Overlay <ul style="list-style-type: none">• 65% Efficient Return Generation• 35% Long Bonds• 100% Hedged	◆ In addition to efficient return generation, add interest rate derivatives to eliminate the duration mismatch.

Example: Moving towards the frontier

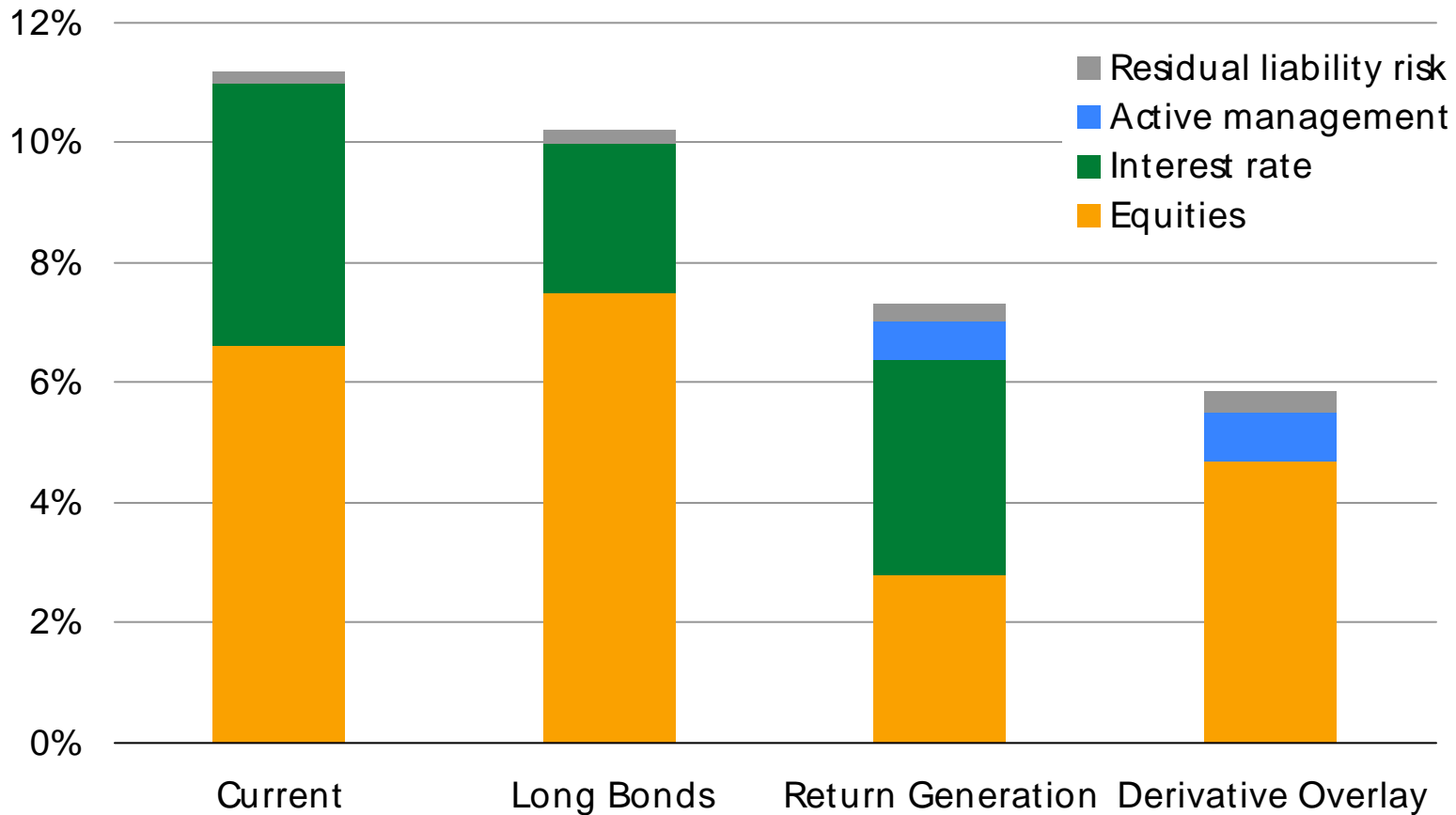
Funding ratio risk return characteristics



Source: UBS Global Asset Management
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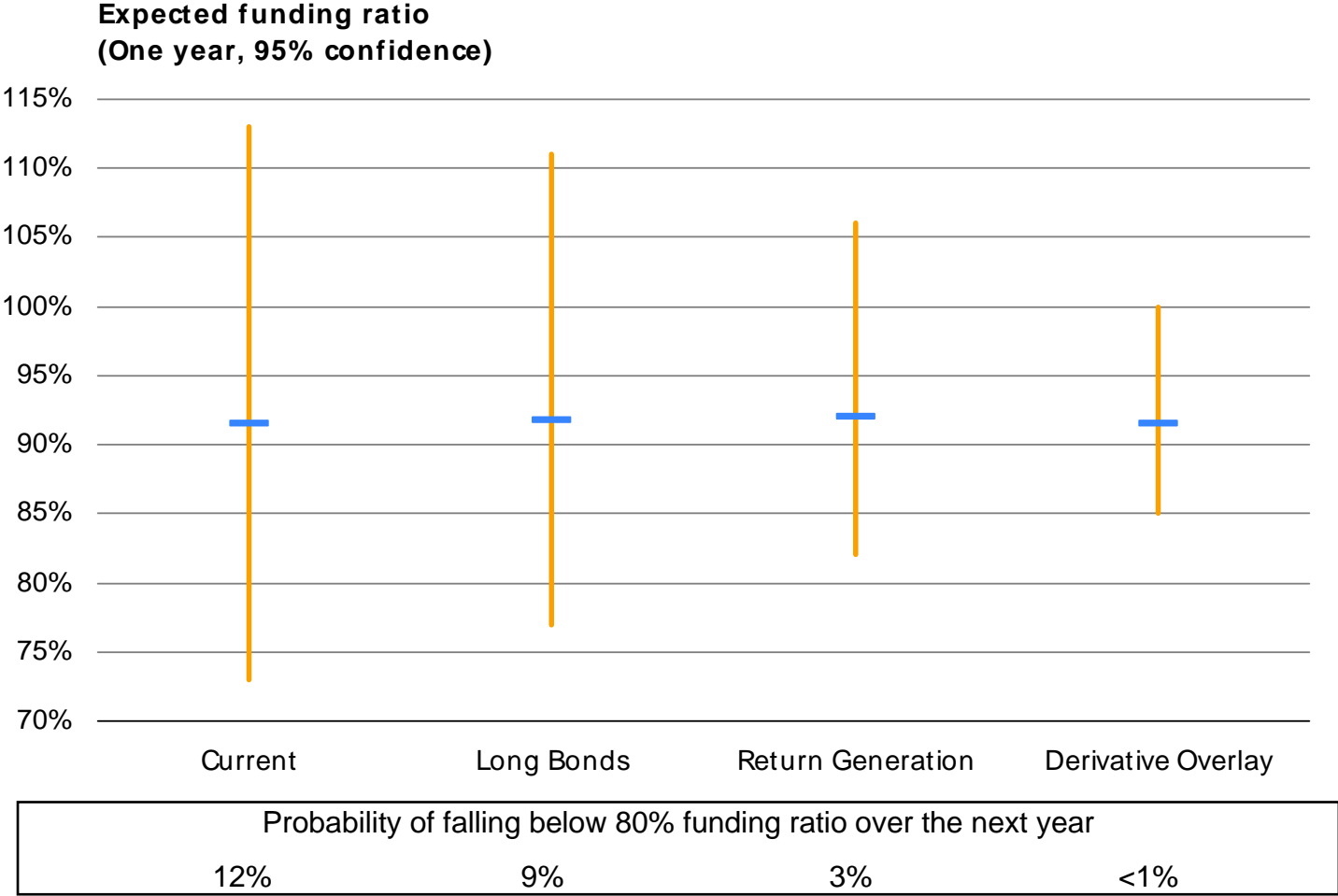
Example: Sources of risk

Funding ratio risk decomposition



Source: UBS Global Asset Management
Please see additional disclosures at the end of the presentation

Example: Funding ratio distribution



Source: UBS Global Asset Management
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Example: Scenario analysis – funding ratio

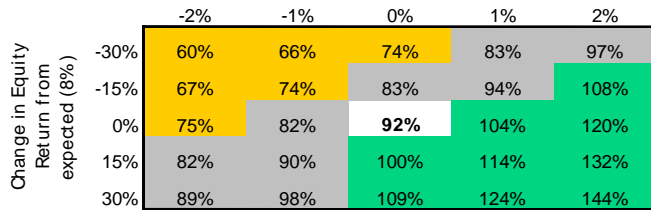
Low funding ratio (<80% funded)

Stable funding ratio (80%-100% funded)

High funding ratio (>100% funded)

Current

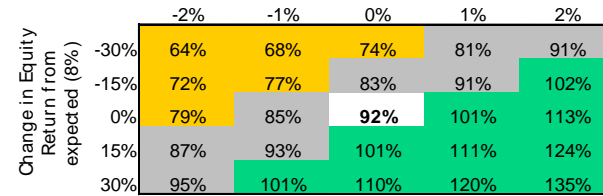
Change in Discount Rate from current (5.75%)



- ◆ Low volatility when stocks and liability move together
- ◆ Wide range of outcomes when they don't

Long Bonds

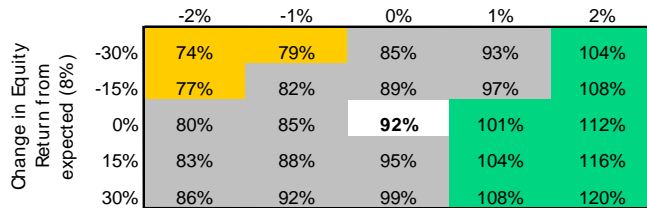
Change in Discount Rate from current (5.75%)



- ◆ Low volatility when stocks and liability move together
- ◆ Less volatility when they don't

Return Generation

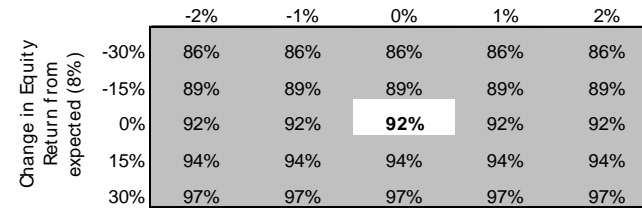
Change in Discount Rate from current (5.75%)



- ◆ Low volatility when stocks and liability move together
- ◆ Even less volatility when they don't

Derivative Overlay

Change in Discount Rate from current (5.75%)



- ◆ Outcome independent of stock/liability correlation
- ◆ Worst case scenario: rates rise, equities fall

Source: UBS Global Asset Management
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SECTION 3

Tailoring the approach to each client's situation

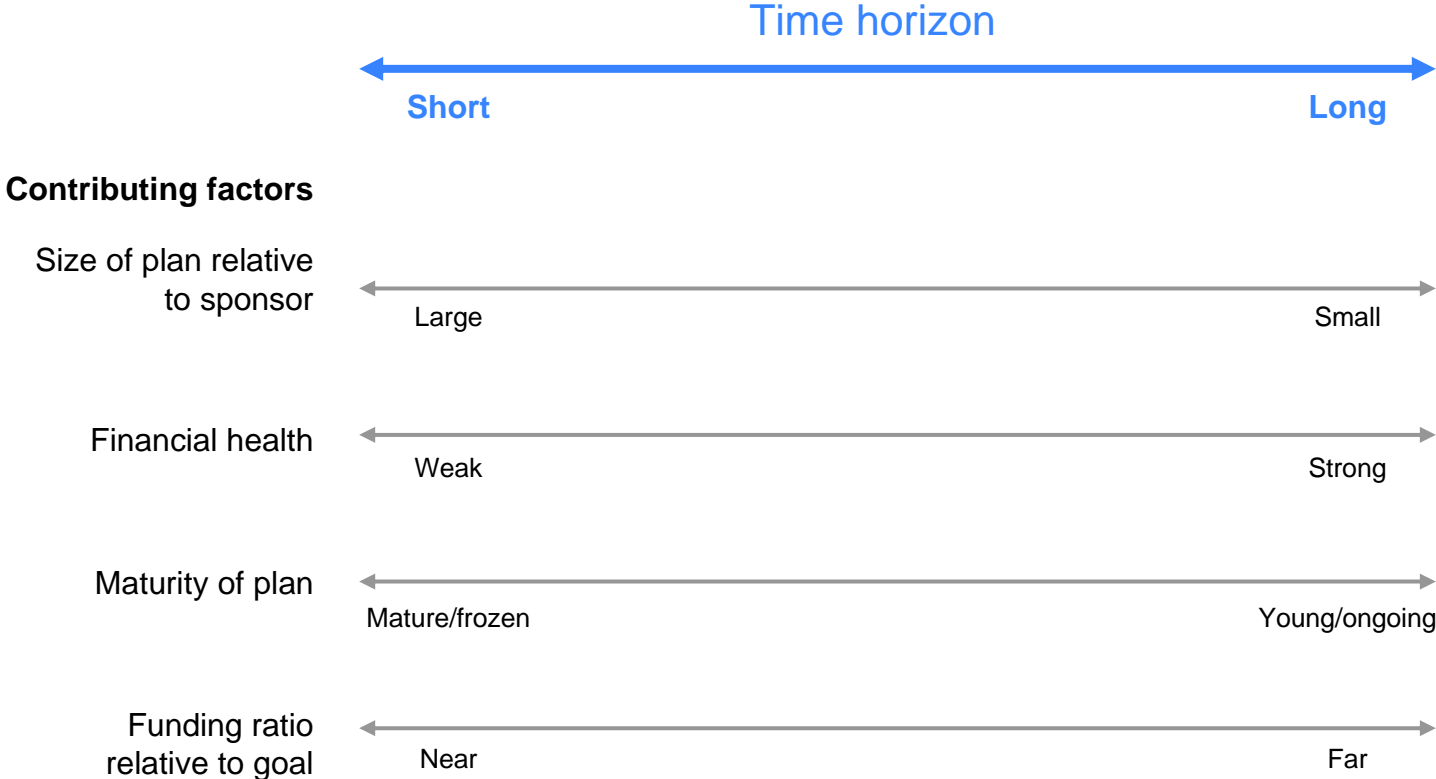
Tailoring our approach

Key decisions must be made in order to tailor the solution

- ◆ **Return generation:** how much do you want to rely on equity markets versus active management?
- ◆ **Hedging:** how much interest rate risk do you want to hedge – strategically and tactically?
- ◆ **Selecting and managing the risk budget:** what is the right split between return generation and hedging – do you want to dynamically manage it?

Time horizon

Many key decisions are driven by a plan's time horizon for risk



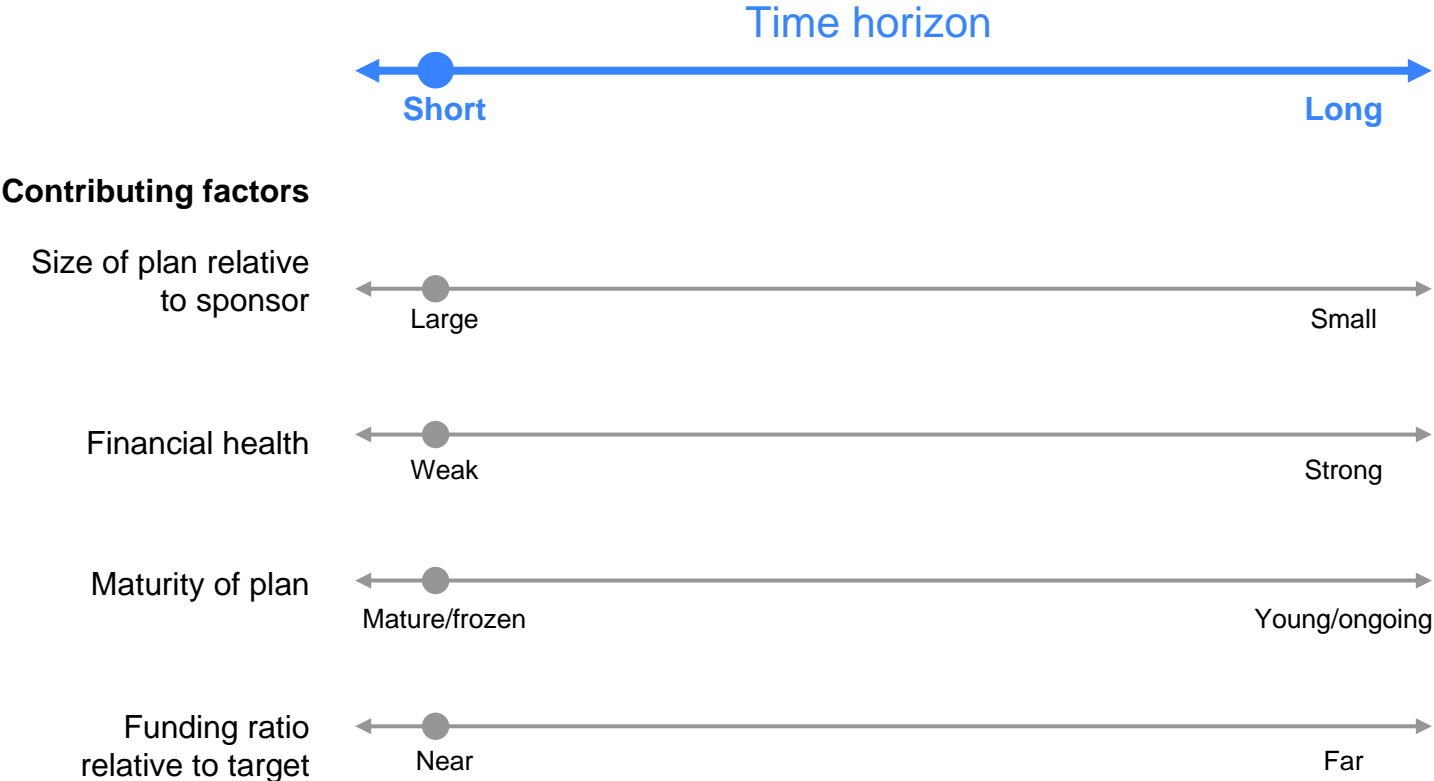
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SECTION 4

Case Study: Integrated Solution

Case study: Integrated Solution

Understanding the situation: Time horizon for risk



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Case study: Integrated Solution

Development: Investment strategy/policy checklist

Hedging

- ◆ What is the desired policy hedged position?
 - 100% hedged on a dollar duration basis
- ◆ How quickly is it implemented?
 - 90% of it was implemented immediately

Return generation

- ◆ What balance does the client want between alpha and beta?
 - absolute return strategy with market exposure (Dynamic Alpha Strategy)

Dynamic funding ratio risk management

- ◆ What is the right split between return generation and hedging, and does the client want to dynamically manage that split?
 - 60% return generation / 40% liability hedging provides enough return to close gap in 2-3 years
 - dynamic – risk budget shrinks as the plan gets closer to fully funded

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Case study: Integrated Solution

Implementation: Summary

Allocation

Return Generation:	60%
Absolute Return Strategy	60%
Liability Hedging:	40%
Long Duration Bonds	24%
Collateral for Derivative Overlay (5-yr T-note):	16%
Total:	100%

Collateral allocation is higher than normal due to the client's higher than normal aversion to risk

Duration and Risk Summary

Duration:	
Bonds:	4yrs
Derivative overlay:	5yrs
Liability:	10yrs
Assets-Liabilities:	-1yrs

We did not fully hedge the liability at the outset due to our view that the liability was overvalued (rates were low)

Expected Risk and Return:

Funding Ratio Risk:	5%
Funding Ratio Return:	1.5%

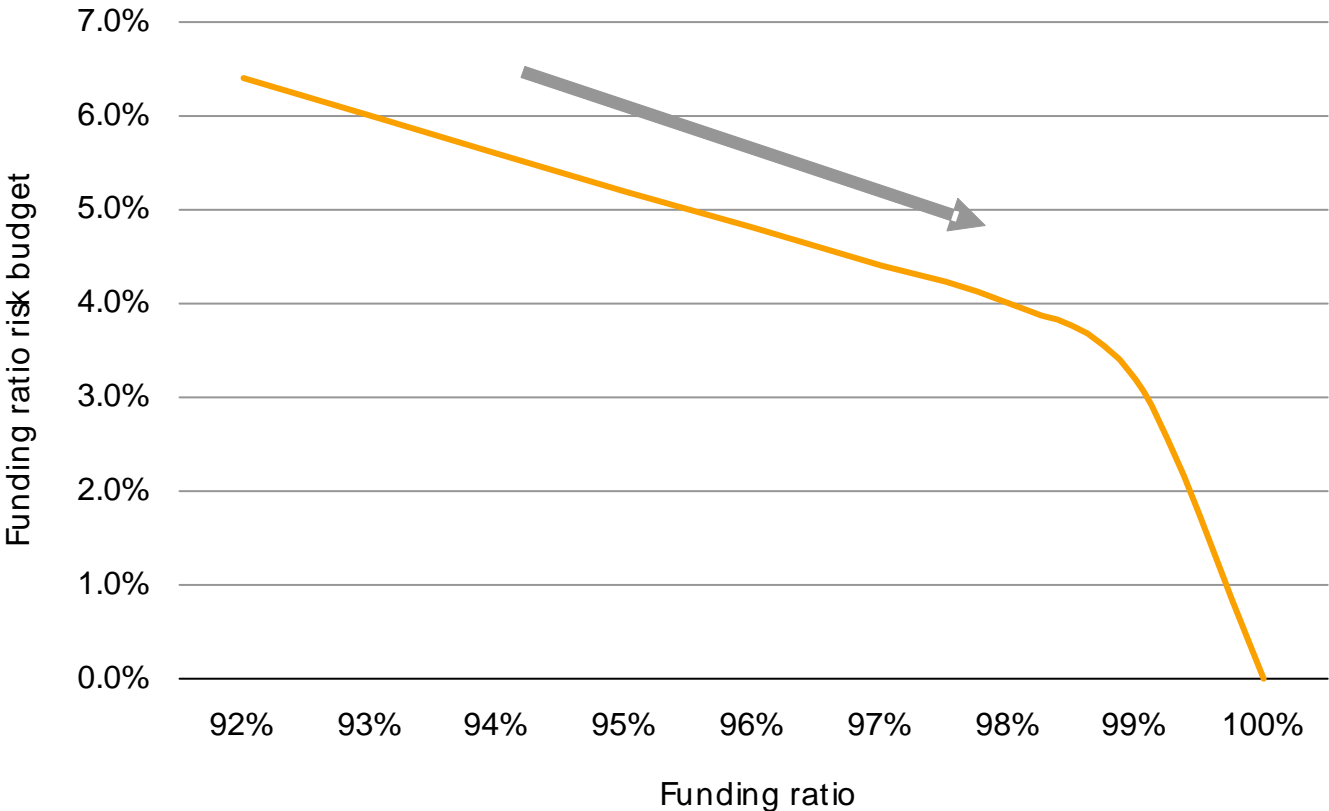
Impact

*Duration mismatch: 1 (from 9)
Expected risk: 5% (from 12%)
Expected return: maintained at 8%*

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Case study: Integrated Solution

Ongoing management: Managing the risk budget



Investment Committee meets on a weekly basis to discuss and, if necessary, adjust each client's strategy

Source: UBS Global Asset Management
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