PIMCO

Board Conference 2018
September 2018

The Benefits of Active Matching Mandates

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(Presented in the Netherlands)

Biographical information

Soraya Kazziha

Ms. Kazziha is an executive vice president in the London office. She is head of client solutions and analytics for EMEA and global head of solutions for financial institutions. Prior to joining PIMCO in 2012, she was a managing director and head of EMEA rates structuring at Credit Suisse, where she was responsible for offering structured solutions to institutional investors and public sector clients across the region. She has 20 years of investment experience and holds a Ph.D. in mathematical finance from Imperial College, London, and an electrical engineering degree from Ecole Superieure d'Electricite (Supelec), Paris.

Patrick Dunnewolt

Mr. Dunnewolt is an executive vice president in the London office and head of the Benelux and Nordic regions. Prior to joining PIMCO in 2010, he was with MN, where he focused on fiduciary management. Mr. Dunnewolt was previously an executive director with Goldman Sachs Asset Management in London and was also a senior account manager with State Street Global Advisors in Brussels. He has 21 years of investment experience and holds a master's degree in business law from Erasmus University in Rotterdam.

Agenda

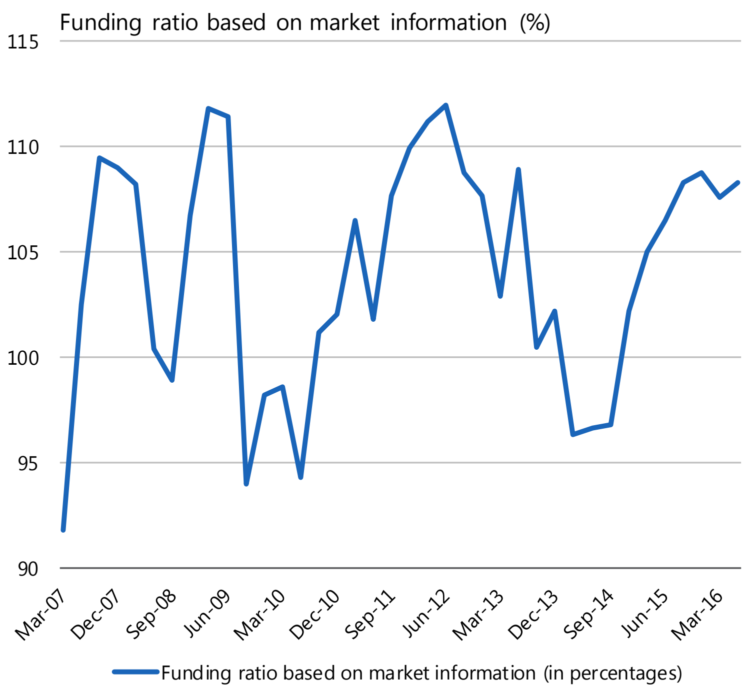
1/ The Matching Dilemma

2/ Analyzing risk profile of a typical Dutch pension fund

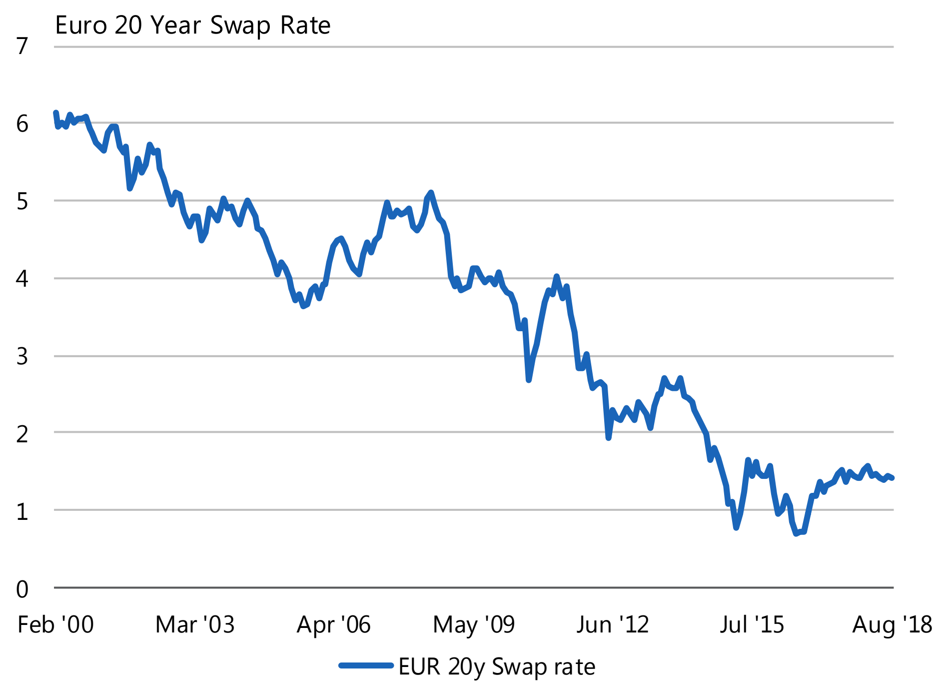
3/ Benefits of Active LDI

The Matching Dilemma

Interest rate risk has to be managed…



…but interest rates are historically low

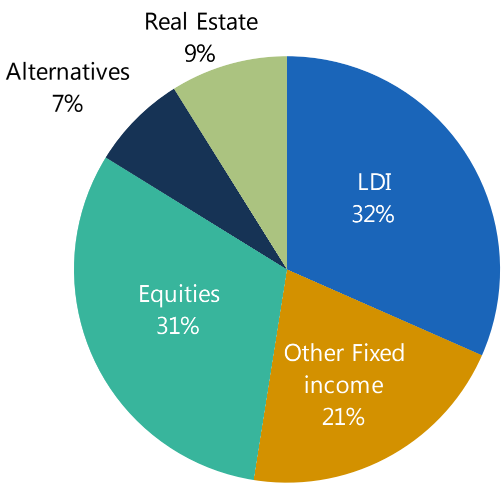


Average interest rate hedging ratio*: 50%

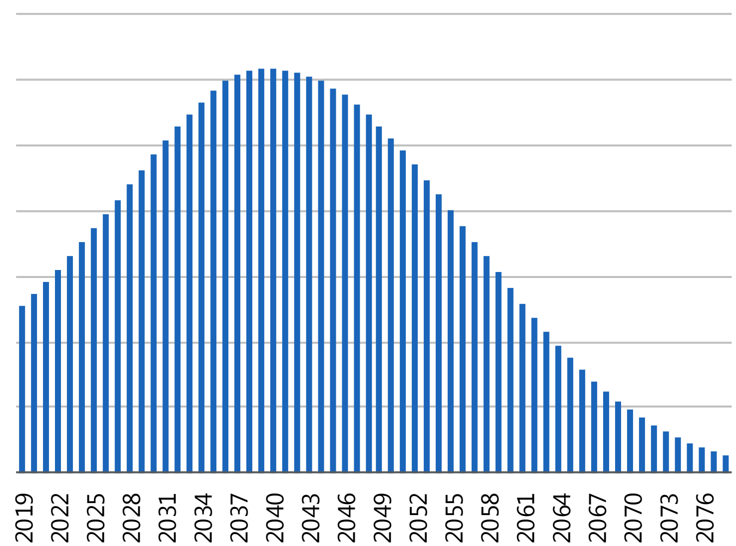
*Unweighted average hedging ratio, rounded
SOURCE: DNB, PIMCO, Bloomberg
Refer to appendix for further information on investment strategy, risk, correlation and volatility.

Example of a Dutch pension fund

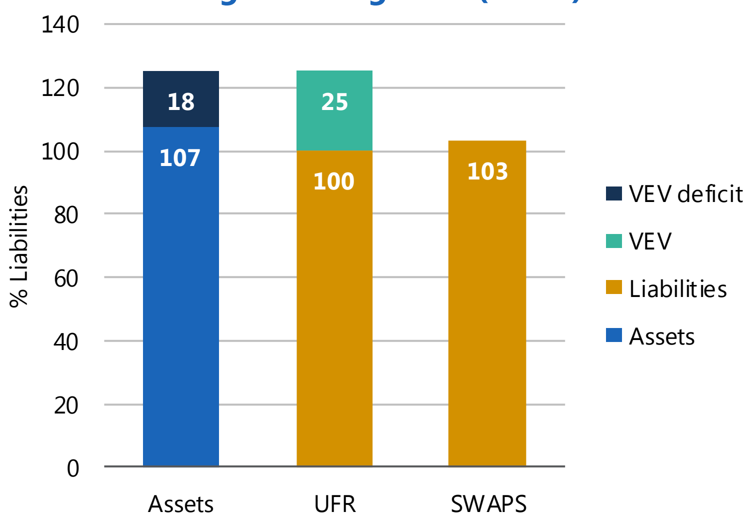
Average Asset Allocation



Sample Cash Flow profile



Average Funding ratio (107%)



Duration	SWAP	UFR
Liabilities	22.5	19.0
Assets	9	9
Coverage	39%	50%

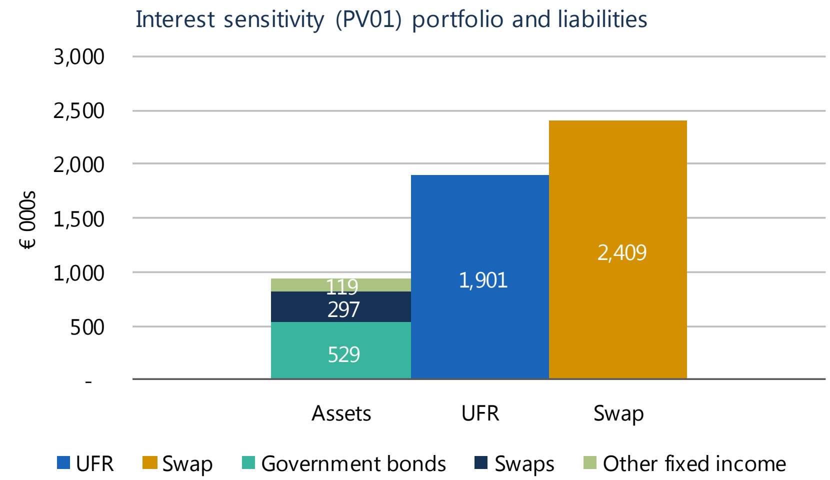
Example for illustrative purposes only
SOURCE: PIMCO, DNB

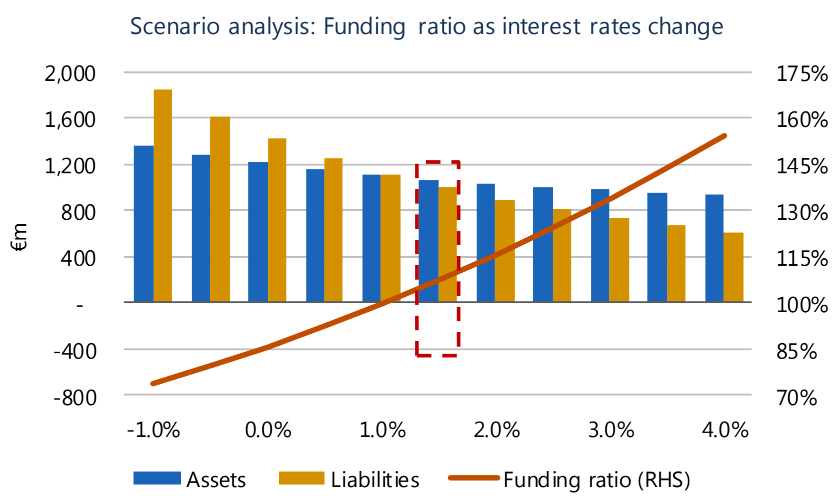
Interest rate risk assessment

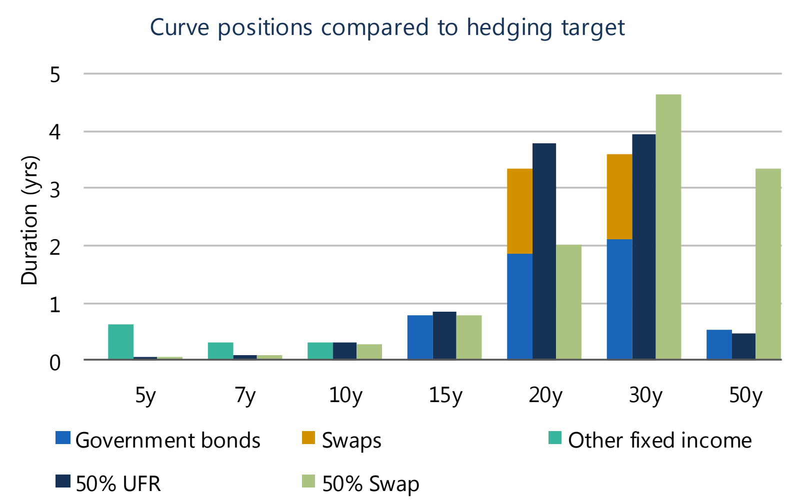
Hedge ratio, interest rate sensitivity, curve positioning

	Value (€m)	Duration (yr)	PV01 (€k)	Coverage
Liabilities				
UFR	1,000	19	1,901[a]	50% (c/a)
Swap	1073	22.5	2,409[b]	39% (c/b)
Assets				
Government Bonds	291	18.2	529	
Swaps	104*	28.6	297	
Other Fixed Income	234	5.1	119	
Total	**629**	**15.1**	**945[c]**	

*Notional



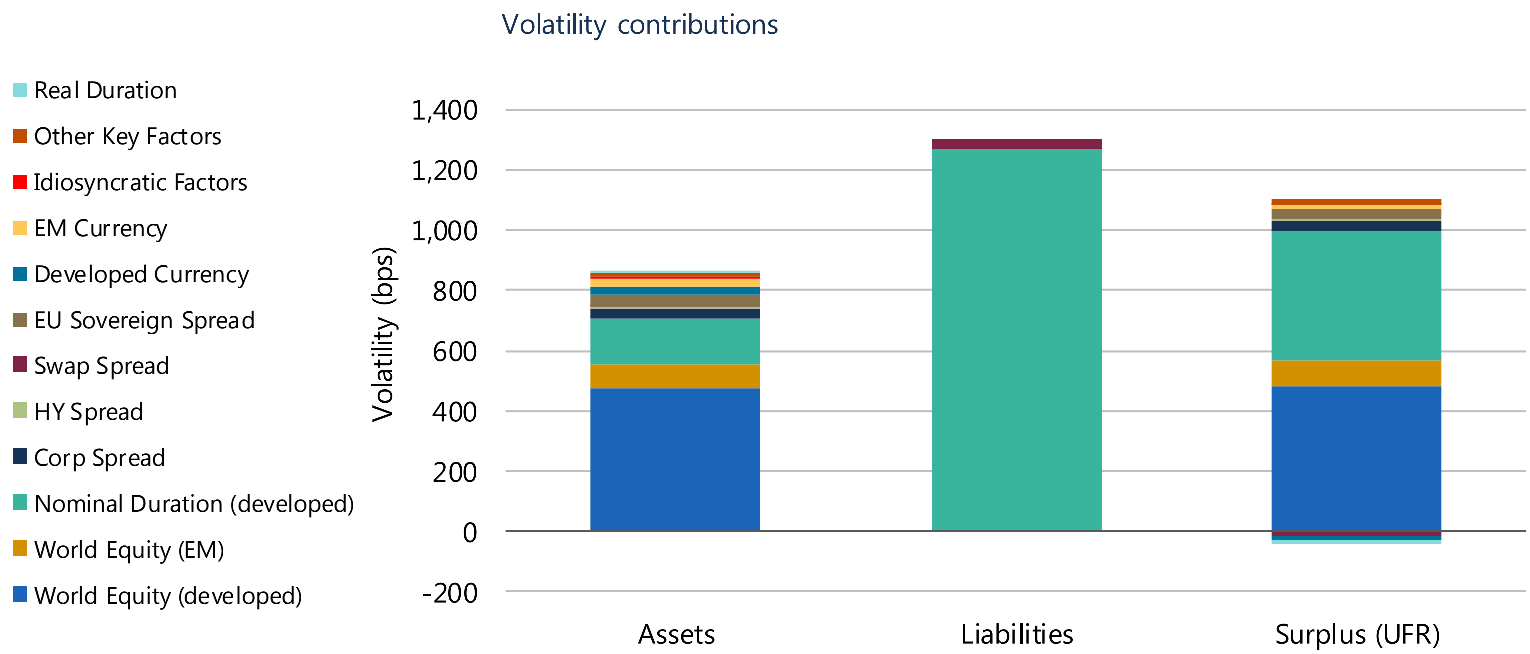




SOURCE: PIMCO. As of 31 August 2018
Refer to appendix for further information on investment strategy, risk, correlation and volatility.

Risk factor volatility breakdown

Interest rate, equity, credit, currency etc

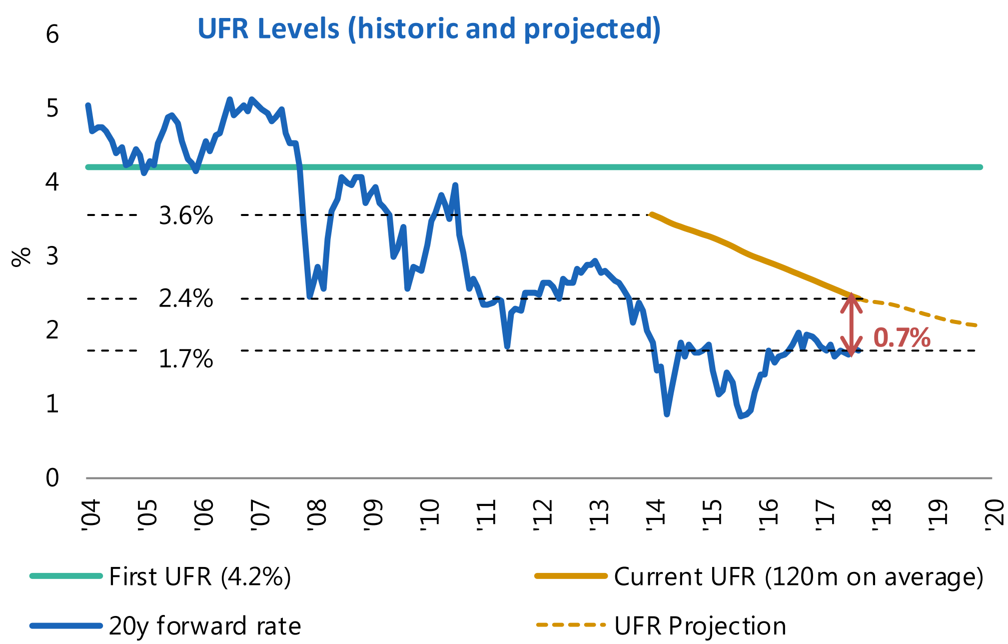


Example for illustrative purposes only
SOURCE: PIMCO
Refer to appendix for further information on investment strategy, risk, correlation and volatility.

UFR Dynamics

UFR decreases liabilities and reduces long-term interest sensitivity, **BUT**

- UFR curve converges to swap curve ⇒ UFR discounted liabilities rise faster than swap rate liabilities (assuming a constant interest rate)
- UFR liabilities will exceed swap liabilities **if long-term interest rates increase by 0.7%**



Understanding of complex UFR dynamics is essential for a successful LDI strategy

As of 31 August 2018. SOURCE: PIMCO
Sample for illustrative purposes only.
Refer to Appendix for additional risk information

Dynamic interest rate policy

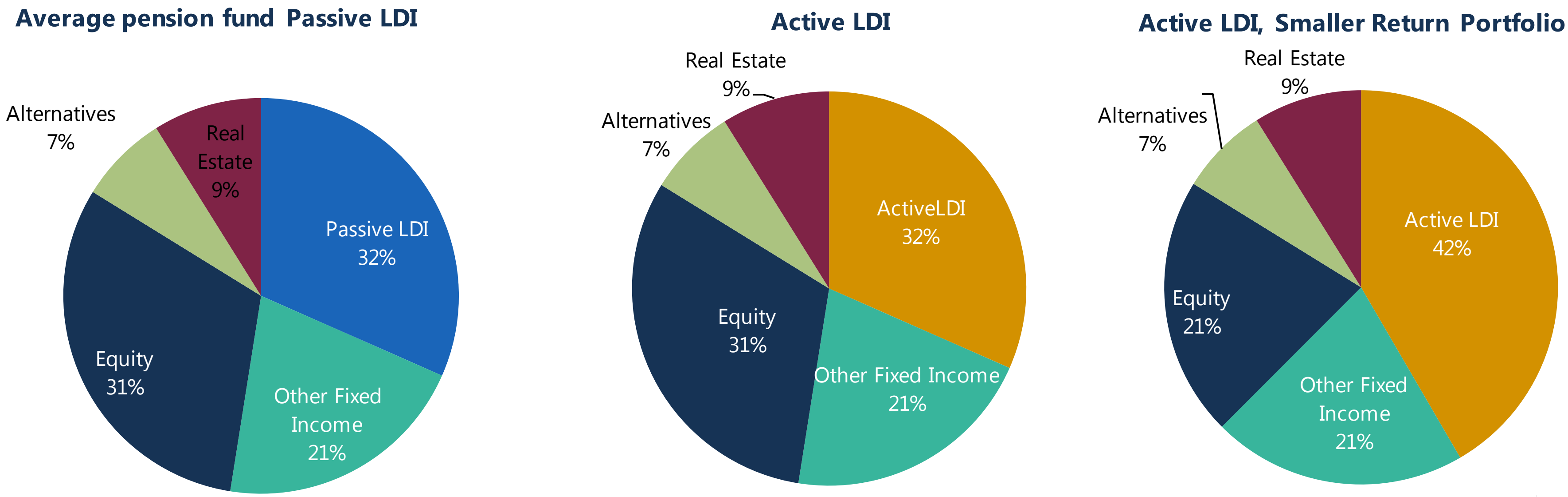
		Funding ratio						
		<105%	105-110%	110-115%	115-120%	120-130%	130-140%	>140%
SWAP rate	<1%	60%	50%	40%	50%	60%	70%	80%
	1-1.25%	60%	50%	45%	50%	60%	70%	80%
	1.25-1.5%	60%	55%	50%	55%	65%	75%	85%
	1.5-2%	65%	60%	55%	60%	70%	80%	90%
	2-2.5%	70%	65%	60%	65%	75%	85%	90%
	2.5-3%	75%	70%	70%	75%	80%	85%	95%
	3-4%	80%	80%	80%	85%	85%	90%	95%
	>4%	90%	90%	90%	95%	95%	95%	100%

- Periodical evaluation, for example on a monthly basis
- Implementation “scenario”

As of 31 October 2017. SOURCE: PIMCO
Refer to Appendix for additional risk information

Active LDI can increase return with limited additional risk

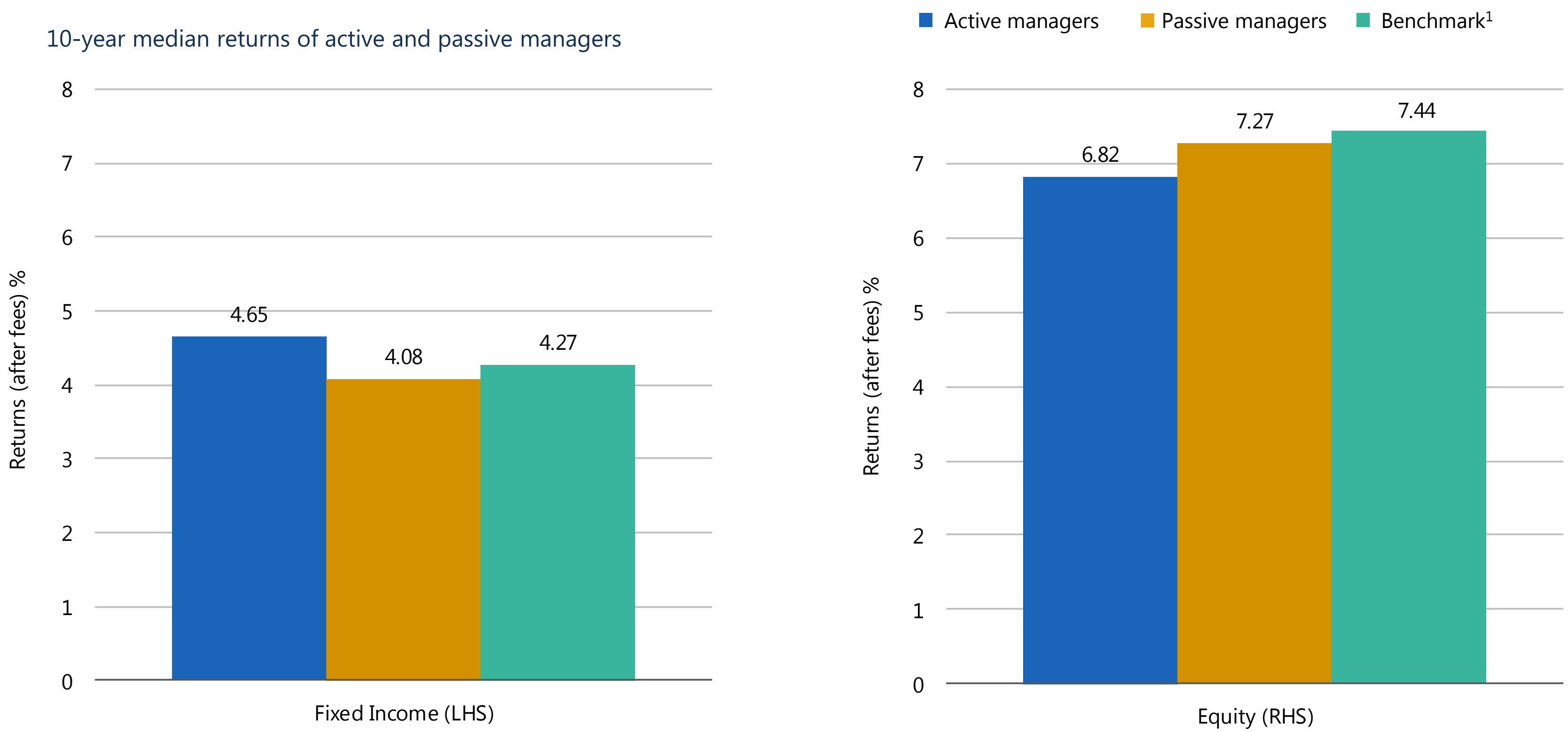
Reduces necessity to allocate towards high-risk investment categories



	Expected return	Average pension funds Passive LDI	Active LDI	Active LDI, Smaller Return Portfolio
Passive LDI	1.0%	32%		
Active LDI	2.0%		32%	42%
Other Fixed Income	1.5%	21%	21%	21%
Equity	5.0%	31%	31%	21%
Alternatives	5.0%	7%	7%	7%
Real Estate	2.5%	9%	9%	9%
Total		**100%**	**100%**	**100%**
Expected return		2.8%	3.1%	2.8%
Mismatch risk		10.6%	10.6%	7.5%

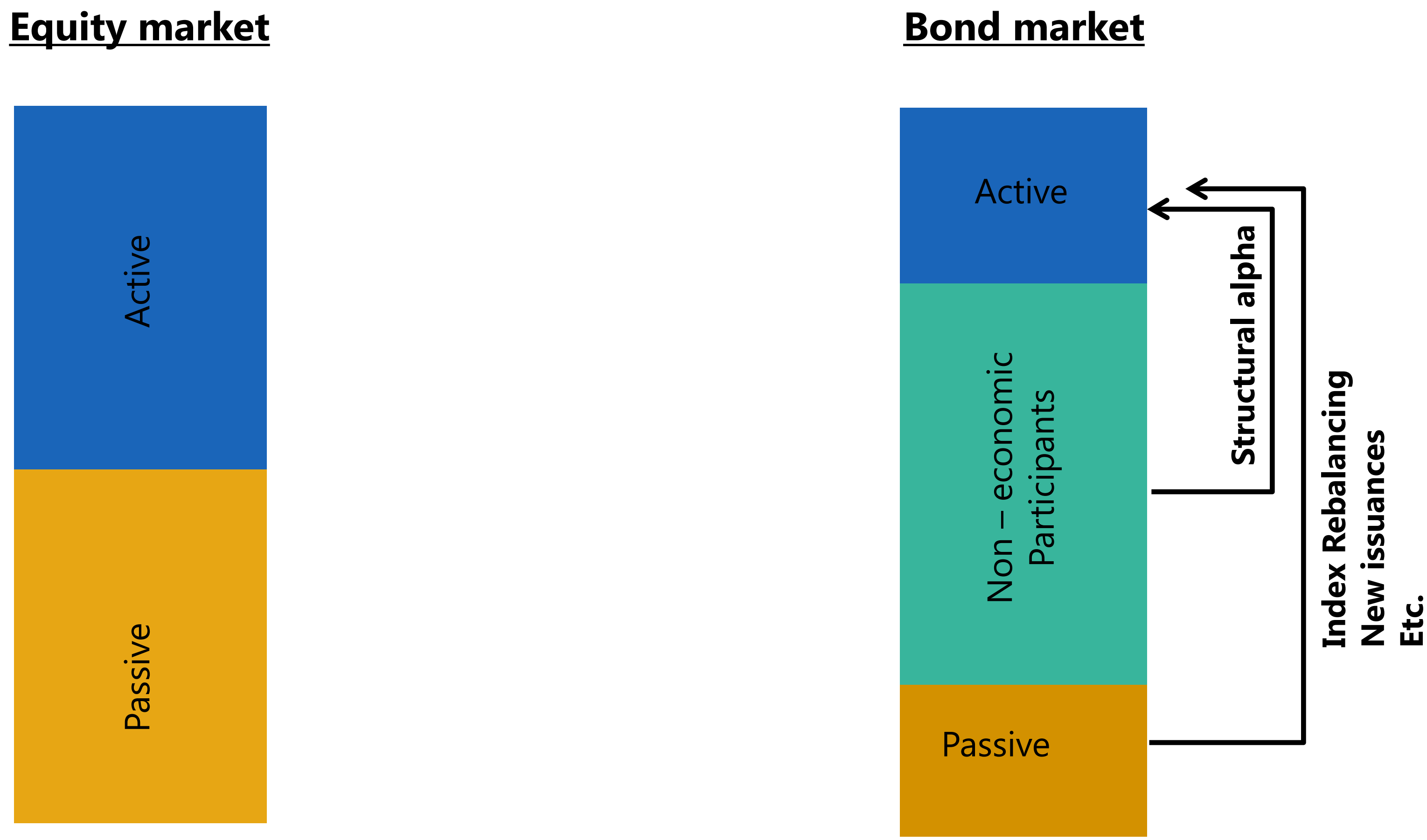
SOURCE: PIMCO
Sample for illustrative purposes only.

Active fixed income managers have added value over time



As of 30 September 2017
SOURCE: Morningstar
Past performance is not a guarantee or a reliable indicator of future results. Charts are provided for illustrative purposes and are not indicative of the past or future performance of any PIMCO product.
Based on Morningstar U.S. Intermediate-Term Bond Category for fixed income and Morningstar U.S. Large Cap Blend Category for equities. Institutional share class.
[1]Core Fixed Income: Bloomberg Barclays U.S. Aggregate Index; Core Equity: S&P 500 Index
Refer to the Appendix for additional investment strategy and risk information.

Almost half of the $100+ trn worldwide obligation market is owned by non-economic investors

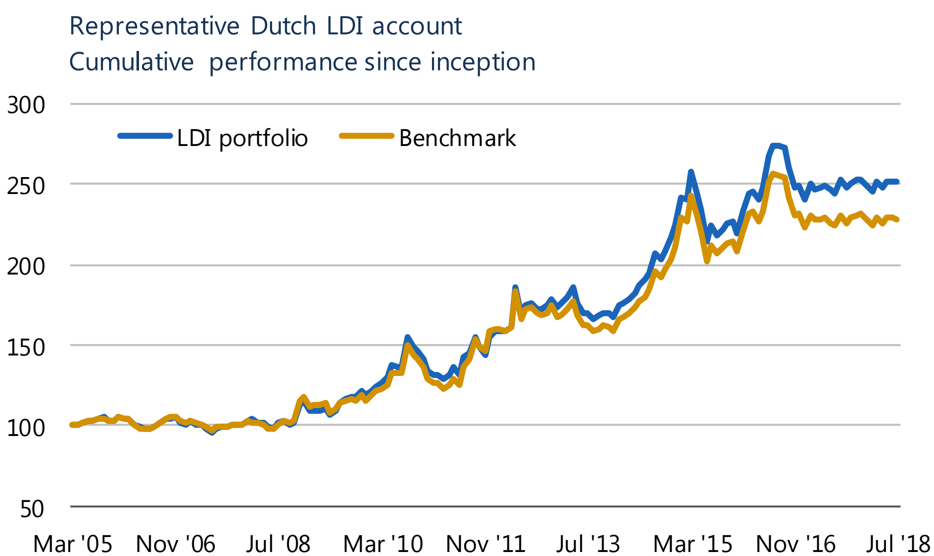


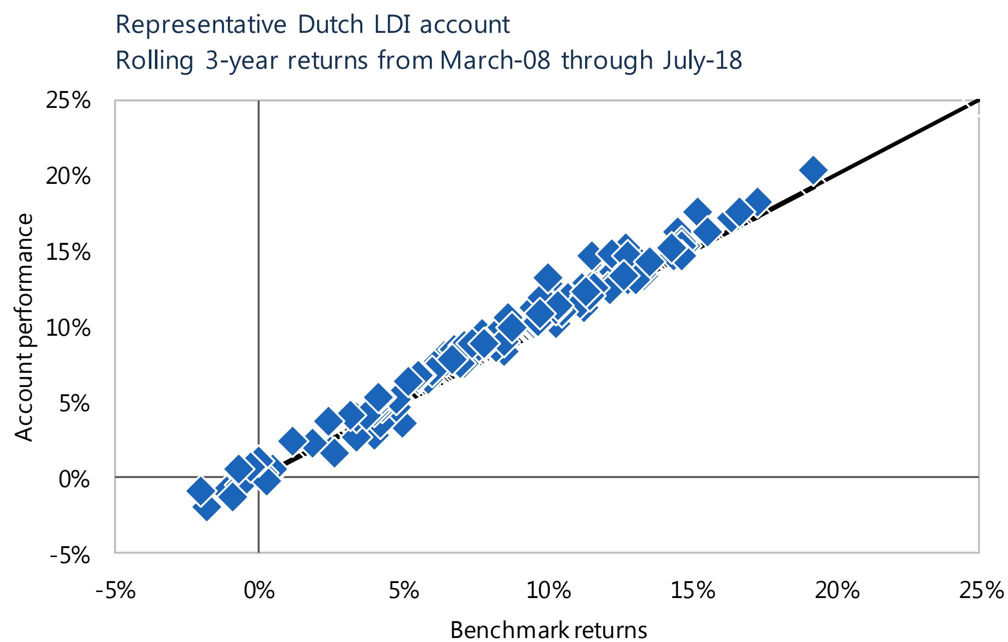
As of 31 December 2013. SOURCE: PIMCO, SNL Financial, Deutsche Bank, BIS
Refer to the Appendix for additional outlook and risk information. **For illustrative purposes only**

PIMCO representative Dutch LDI account

Outperforming by over 20% since inception, and in 110 of 125 three-year rolling periods

- The LDI portfolio returned over 20% more than cumulative benchmark return, achieved within tracking error budget
- The Fund outperformed benchmark in almost 88% (110 out of 125) of three-year rolling performance measurement periods

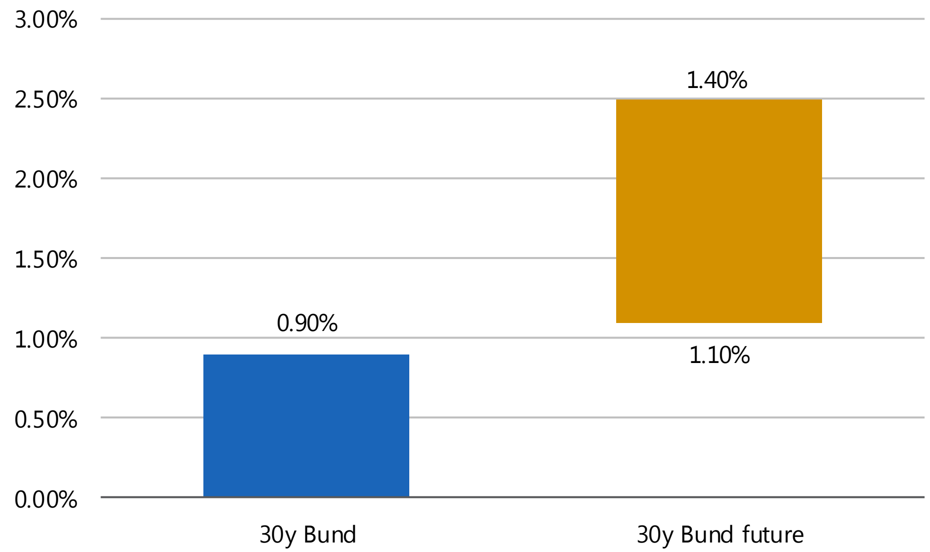




As of 31 July 2018
SOURCE: PIMCO
Refer to Appendix for investment strategy and risk information.

Investment theme: Bund futures are cheap

Quantitative Easing has led to Bund shortages with downward pressure on Bund yields



	Yield
30y Bund	0.9%
30y Bund future	1.1% to 1.4%[1]

As of 31 August 2018. SOURCE: PIMCO
[1] Assumptions: -0.8% implied financing costs, and yield on cash between -0.6% (French T-bills) and -0.3% (Enhanced cash)
Refer to the Appendix for additional outlook and risk information**. For illustrative purposes only**

To summarise…

Make your matching assets work harder!
Fixed income market inefficiencies provide opportunities for active LDI managers to earn structural extra return on matching portfolios with limited additional risk

Opportunity to reduce ALM risk and VEV without loss of returns
With an expected alpha of 50-100bps per annum, Active LDI can reduce your reliance on high-risk investment assets and in turn increase your allocation to matching assets (and hence reduce ALM risks)

Refer to the Appendix for additional investment strategy and risk information.

Appendix

Appendix: Risk factor definitions

PIMCO employs highly granular holdings-based models to generate risk factor exposures. In our analysis, we may display aggregated risk factor data for ease of interpretation, but the granularity of the underlying models is maintained. For Alternatives/Illiquids and in selected cases where holdings information is unavailable or unreliable, PIMCO may use returns-based regression models to generate risk factor exposures.

EQUITY

- Equity risk factors are based on the MSCI Barra Global Equity Model (GEM3). The exposure to each equity country or industry factor is the market value weight of stocks categorized in that country or industry. Style factors (such as size, value, and momentum) are standardized to have a mean of 0 and a standard deviation of 1. Please refer to Barra GEM3 documentation for more details.
- PIMCO disaggregates the Barra world equity factor into additive country exposures. Thus, the risk contribution from a certain country's equity exposure includes contributions from both the world equity factor and the country equity factor in the original Barra model.

INTEREST RATE DURATION

- Measured in years, interest rate duration is the price sensitivity to a change in interest rates (e.g. the price of a bond with a duration of 5 years will fall by approximately 5% if interest rates instantaneously rise by 1%).
- PIMCO calculates both real and nominal durations – sensitivities to real and nominal interest rates, respectively – as well as duration exposures to interest rates in different currencies.
- The duration risk factor exposure measures a security's price sensitivity to a parallel shock of the par yield curve. PIMCO's systems use a scenario-based duration calculation by re-pricing securities under different rate shock scenarios. For securities with embedded options, effective duration is estimated by taking into account the potential impact of yield changes on future cash flows.

SLOPE DURATION

- Interest rate duration reflects sensitivity to a parallel shift of the yield curve. However, parallel shifts rarely occur; the yield curve typically steepens or flattens as interest rates move.
- Measured in years, slope duration is the price sensitivity to steepening or flattening of the yield curve. PIMCO employs a 2-10 slope factor, which reflects sensitivity to the slope of the front end of the par yield curve, and a 10-30 slope factor, which reflects sensitivity to the slope of the long end of the par yield curve.
- The 2-10 slope risk factor exposure measures the sensitivity to a steepening or flattening of the 2-year yield relative to the 10-year yield (e.g. the price of a bond with a 2-10 slope duration of 3 years will increase by approximately 3% if the difference between 10-year and 2-year yields widens by 1% while the 10-year yield remains constant).

Appendix: Risk factor definitions (cont'd)

- The 10-30 slope risk factor exposure measures the sensitivity to a steepening or flattening of the 30-year yield relative to the 10-year yield (e.g. the price of a bond with a 10-30 slope duration of 6 years will increase by approximately 6% if the difference between 30-year and 10-year yields narrows by 1% while the 10-year yield remains constant)

SPREAD DURATION

- Measured in years, spread duration is the price sensitivity to a change in spread.
- For investment grade corporate spreads, PIMCO measures credit spread duration relative to a common reference set of securities, in order to normalize spread duration exposures across securities with different risk levels. Credit spread duration is estimated in two steps:
    1. Calculate the sensitivity of the security's price to its own spread. This process occurs overnight and leverages PIMCO's proprietary pricing models.
    2. Translate this sensitivity into spread duration relative to a reference spread using a proprietary model. This process utilizes the security's OAS and the OAS of the reference set of securities as well as the term structure of spreads.
- For spreads other than investment grade corporates, PIMCO calculates spread duration for a security based on the price sensitivity to a change in its own spread. These spread duration measures include, for example, high yield corporate, mortgage, and emerging markets.

CURRENCY

- Currency risk factors capture a portfolio's percent exposure to any currency other than the base currency.

COMMODITY

- Commodity risk factor exposures are measured in percentage weights.
- PIMCO decomposes commodity exposure to specific commodity sub-baskets such as energy, precious metal, and livestock.

ALTERNATIVES/ILLIQUIDS

- Risk factor exposures in this category are regression-based measures of the sensitivity of a portfolio to changes in risk factors that are relevant to alternative strategies or illiquid assets, such as volatility, liquidity, and trend-following.

IDIOSYNCRATIC

- Idiosyncratic risk is generally asset-specific and accounts for volatility that is not attributable to broad market factors.
- In analyses involving PIMCO strategies, idiosyncratic risk describes non-factor risk and may account for the potential overlap of idiosyncratic risk across PIMCO strategies. In these instances, idiosyncratic risk will account for 1) common sources of non-factor risks between PIMCO strategies and 2) residual idiosyncratic risk (which may account for residual correlation between PIMCO strategies).

Appendix

Past performance is not a guarantee or a reliable indicator of future results.

HYPOTHETICAL EXAMPLE

No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown. Hypothetical or simulated performance results have several inherent limitations. Unlike an actual performance record, simulated results do not represent actual performance and are generally prepared with the benefit of hindsight. There are frequently sharp differences between simulated performance results and the actual results subsequently achieved by any particular account, product, or strategy. In addition, since trades have not actually been executed, simulated results cannot account for the impact of certain market risks such as lack of liquidity. There are numerous other factors related to the markets in general or the implementation of any specific investment strategy, which cannot be fully accounted for in the preparation of simulated results and all of which can adversely affect actual results.

INVESTMENT STRATEGY

There is no guarantee that these investment strategies will work under all market conditions or are suitable for all investors and each investor should evaluate their ability to invest long-term, especially during periods of downturn in the market. No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown.

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Investing in the **bond market** is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk. Investing in **foreign denominated and/or domiciled securities** may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in emerging markets. **Sovereign securities** are generally backed by the issuing government, obligations of U.S. Government agencies and authorities are supported by varying degrees but are generally not backed by the full faith of the U.S. Government; portfolios that invest in such securities are not guaranteed and will fluctuate in value. **Inflation-linked bonds (ILBs)** issued by a government are fixed-income securities whose principal value is periodically adjusted according to the rate of inflation; ILBs decline in value when real interest rates rise. **Municipals** may realize gains may be subject to state and local taxes and may at times be subject to the alternative minimum tax. **High-yield, lower-rated, securities** involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. **Mortgage and asset-backed securities** may be sensitive to changes in interest rates, subject to early repayment risk, and while generally backed by a government, government-agency or private guarantor there is no assurance that the guarantor will meet its obligations. **Derivatives and commodity-linked derivatives** may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Commodity-linked derivative instruments may involve additional costs and risks such as changes in commodity index volatility or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Investing in **derivatives** could lose more than the amount invested. **Swaps** are a type of privately negotiated derivative; there is no central exchange or market for swap transactions and therefore they are less liquid than exchange-traded instruments. **Cashless collar** is an option strategy in which the proceeds of the sale of a short call option fund the purchase of a long put option. Prices and valuations are subject to change, and thus, should not be assumed that they will remain current. The commodity real return strategy will seek exposure to commodities through commodity-linked derivatives. Investors should consult their investment professional prior to making an investment decision.

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