Embracing Illiquidity

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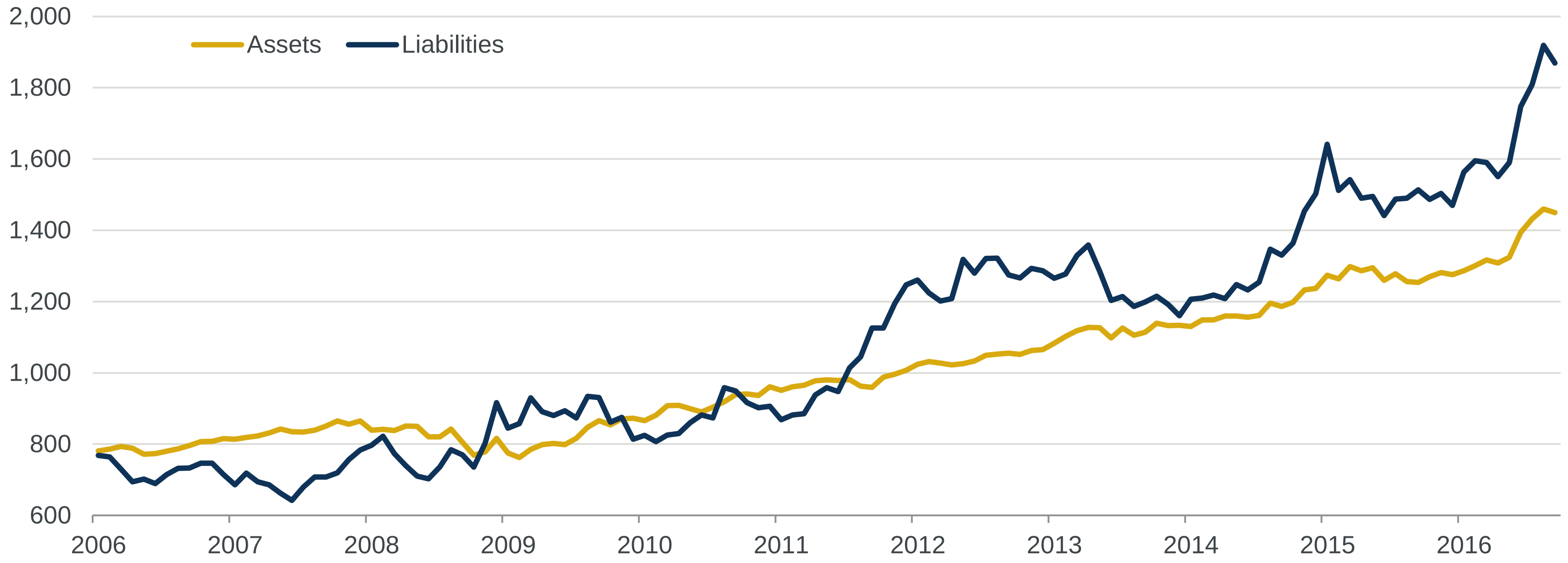
Despite strong asset performance…

Aggregate UK Pension Scheme Assets and Liabilities (£bn)



…funding has worsened by 15% over the last 7 years

Source: PPF 7800 Index, September 2016.

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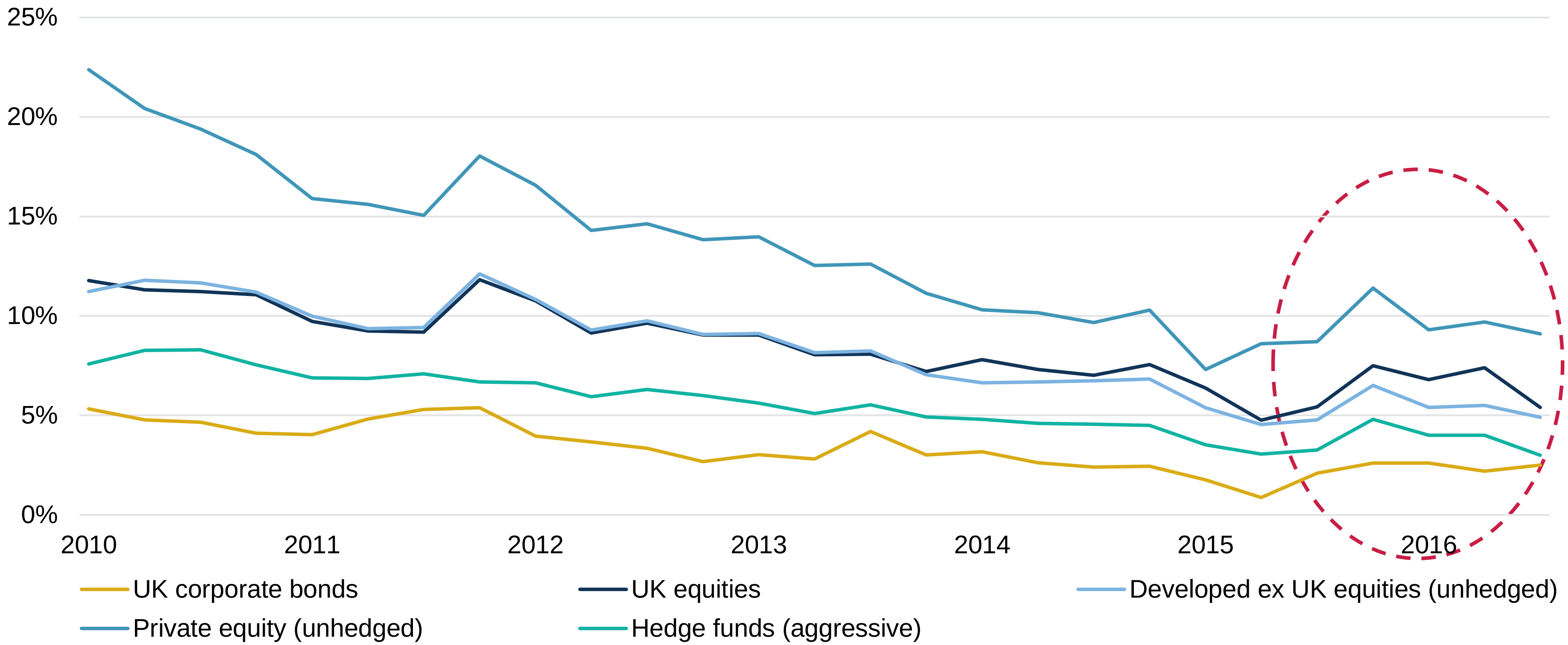
Return expectations have declined

Expected 5-year returns from growth assets and corporate bonds at a given time



Note: BlackRock Solutions 5 year expected return assumptions.
Hedge fund assumptions represent a generic aggressive strategy.

Source: BlackRock Solutions as at 30 June 2016.

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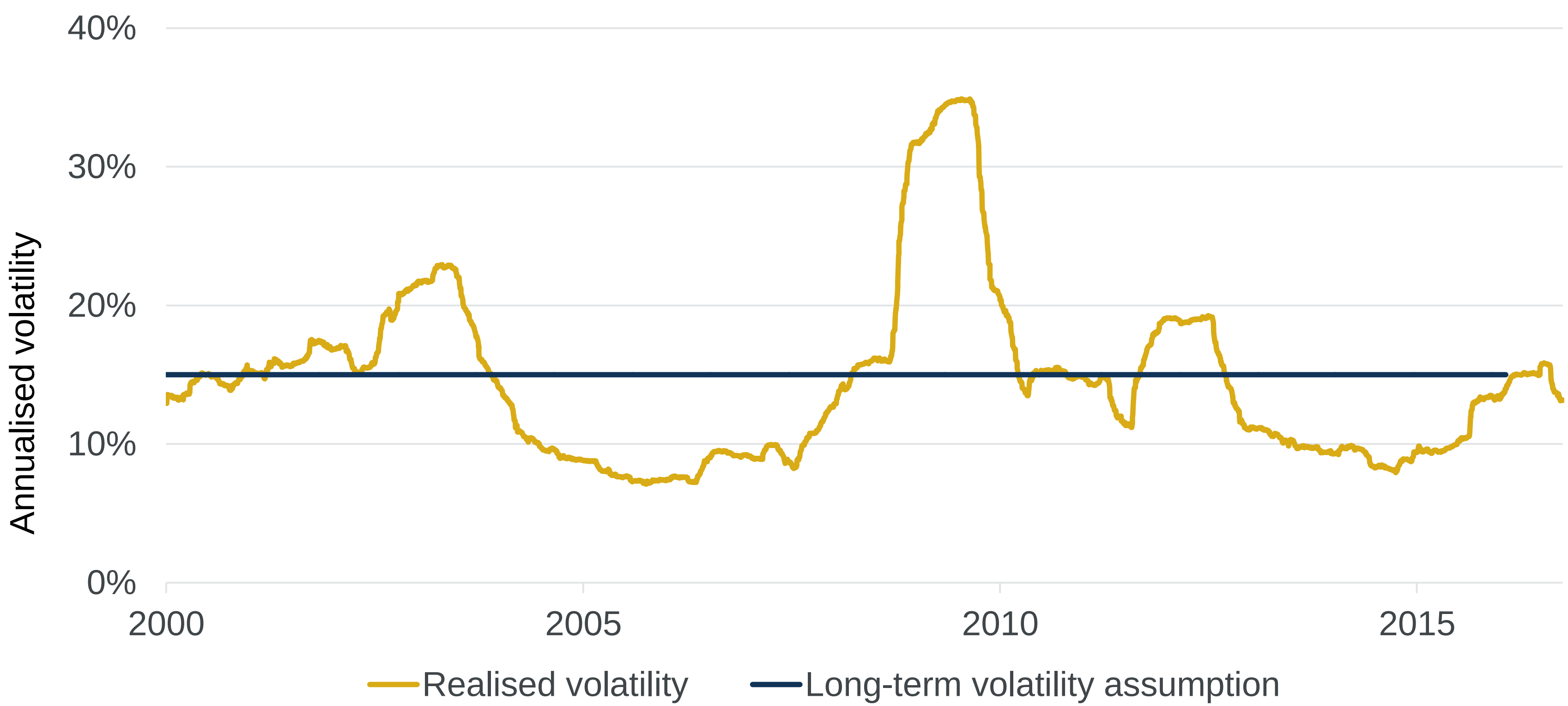
Higher volatility ahead

Last few years' volatility was unusually low



Source: BlackRock Client Solutions. Realised volatility is derived from the annualised one-year rolling standard deviation of daily returns in the MSCI world index (local currency terms). Long-term volatility assumption from the BlackRock Investment Institute. As of September 2016.

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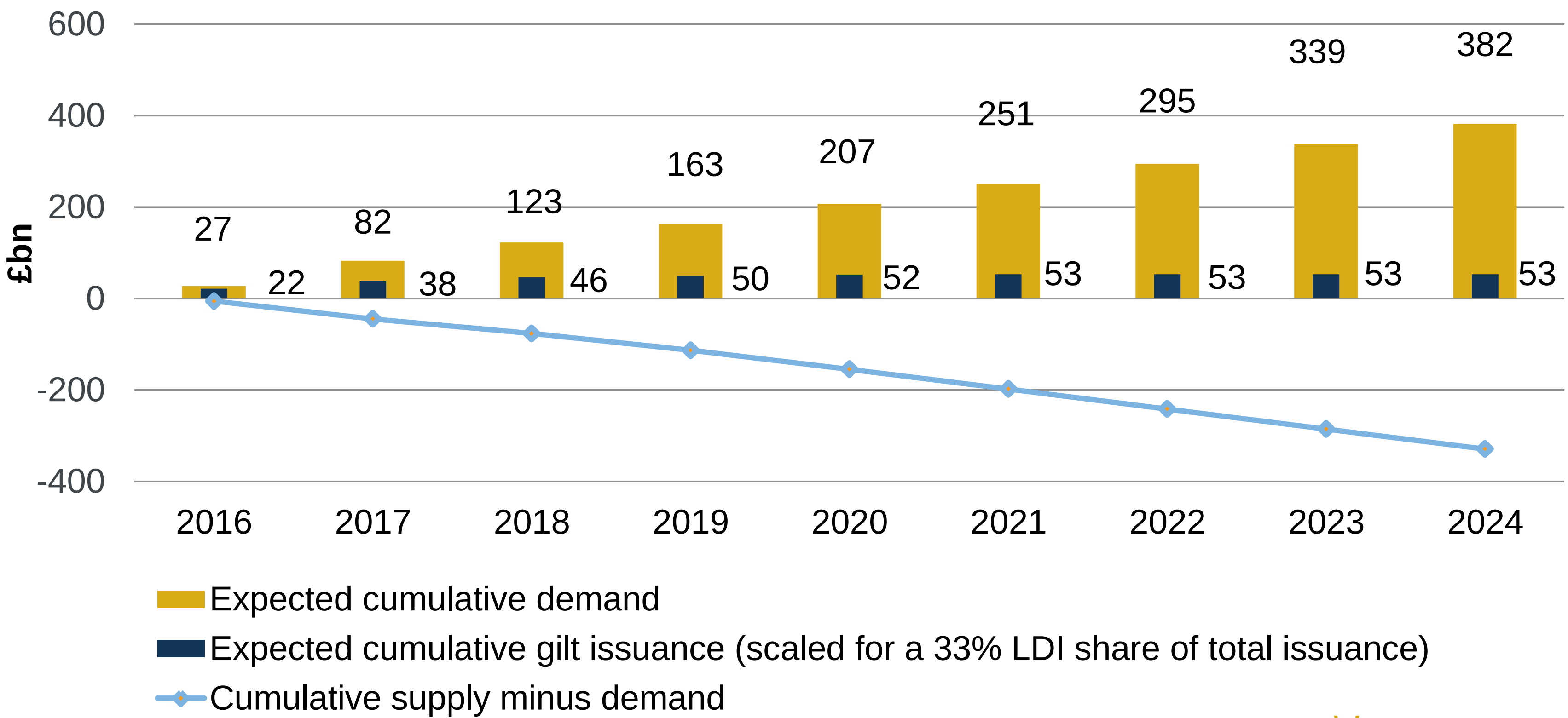
The need for different beta

Expect bond yield increases to be limited



Source: Demand estimates from BlackRock Client Solutions, Morgan Stanley. Expected gilt issuance from the Debt Management Office, as of February 2016.

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Challenges for DB pension schemes

- Strong returns have not improved funding levels
- Expected returns from public markets are not compelling
- Gilt yields are expected to stay low
- Recovery plans generally in excess of 10 years
- Schemes are becoming cash flow negative

How will they tackle these problems?

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What are the options?

- Do nothing
- Different beta
- Go active
- Access illiquidity premia from private markets

Income from public markets alone will not meet pension objectives

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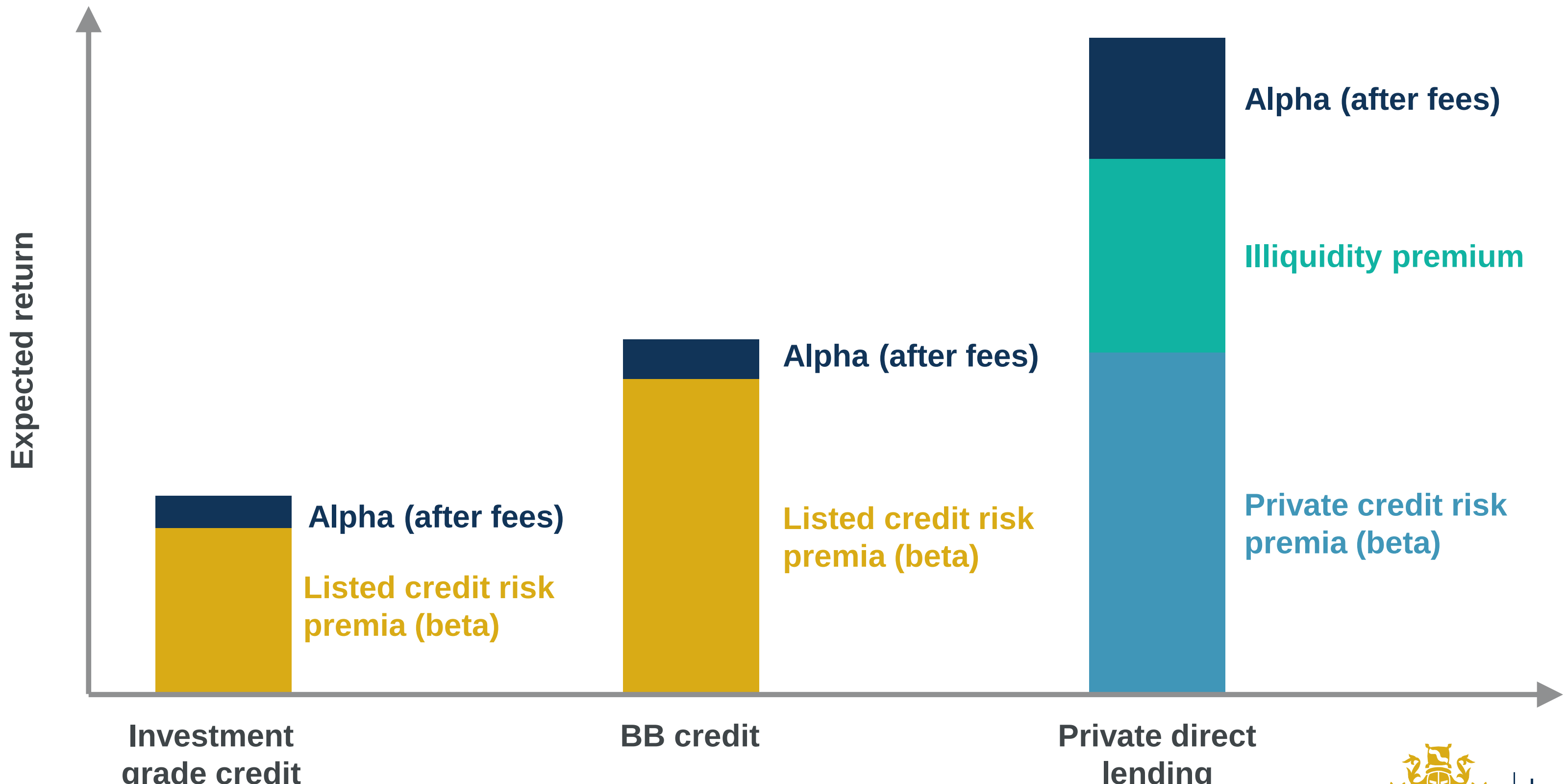
Private asset returns

Example: risk premia across listed and public fixed income assets



Source: BlackRock. Illustrative purposes only.

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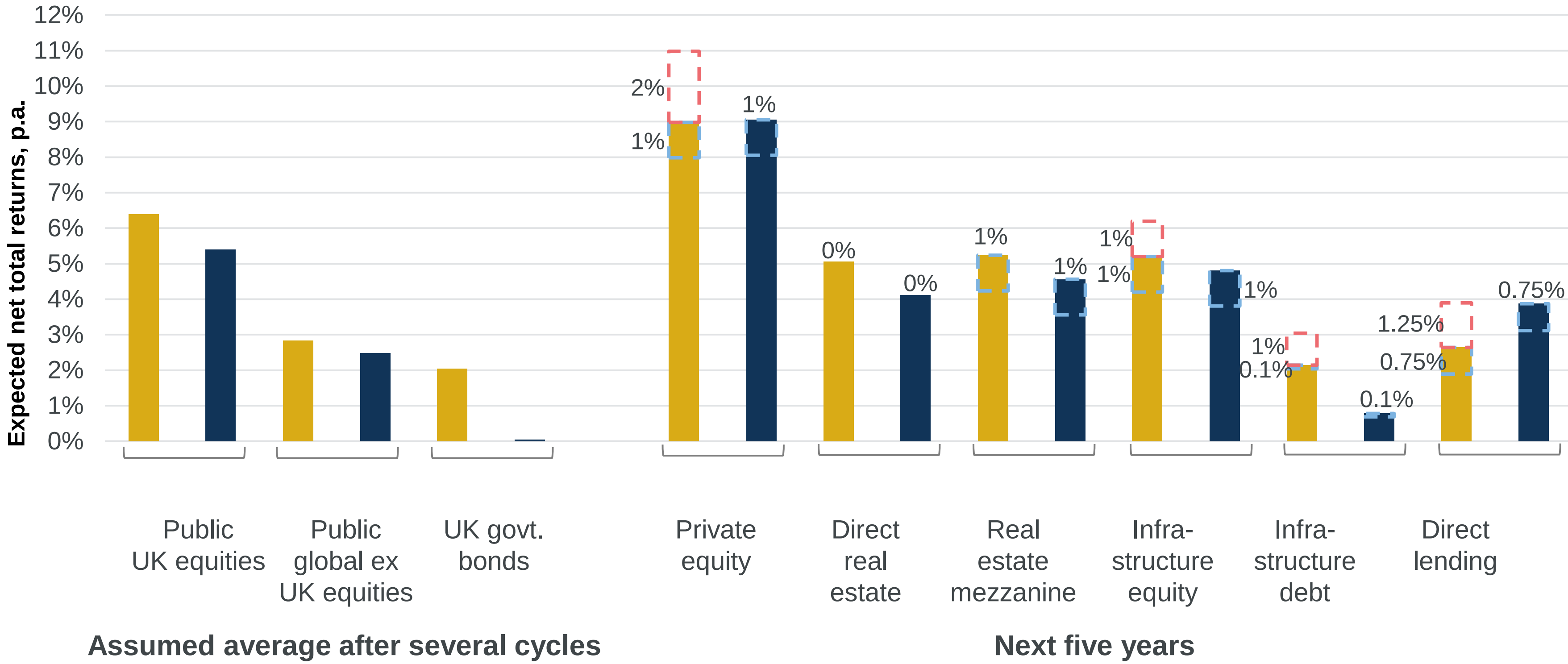
Private assets return forecast

Expected net total returns, p.a.



Total return (beta return plus illiquidity premium)

Potential additional long-term illiquidity premia

Total return (beta return plus illiquidity premium)

Illiquidity premia estimate

Source: BlackRock Investment Institute, capital market assumptions, GBP perspective, as of August 2016.

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What do UK DB schemes need?

Income with the following characteristics

- Higher yield
- Long-dated
- Contractual (low risk)
- Inflation protection

We call these "secure income" assets

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Where can secure income be found?

	Infrastructure Debt	Renewable Income	Real Estate Debt	Long Lease Property	Strategic Income
Description	Predictable cash flows from long-term contracts	Portfolio of operating power projects	Senior real estate debt across various sectors	Portfolio of commercial real estate	Other investments that meet fund criteria
Target Cash Yield	3 – 5%	6 – 8%	4 – 6%	4 – 6%	5 – 7%
Weighted Average Cash Flow Tenor	8 – 12 years	20 – 25 years	4 – 8 years	25+ years	4 – 8 years
Inflation Linkage	Implicit; floating rates	Explicit; PPA tariffs	Implicit; floating rates	Explicit; lease payment resets	Implicit; floating rates

Note: Target cash yield is based on target and historical performance for relevant products screened by BlackRock's Alternative Solutions group. This model is not intended to provide, and should not be relied upon for investment, accounting, legal or tax advice, nor used with any third-parties.

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But private assets are not easy to exploit

Governance	• They are more complex and require greater due diligence
Diversification	• Illiquidity premia depend on the economic cycle • Agnostic approach to portfolio construction required
Access	• Requires large scale investments, and • Ability to manage to drawdown cycle
Cash flow and Liquidity Management	• Needs careful risk management to meet long term objectives

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Governance for managing private assets

Implementing private assets is different

Set asset allocation

Traditional process

Asset classes → Single strategy managers → Implement if conditions are suitable

Private assets process

Outcomes & constraints → Establish parameters → Delegate management

Implementing a secure income portfolio

Options for achieving a well-diversified secure income portfolio

	Direct investments	Fund investments	Hybrid
Benefits	• Enables customised solutions	• Established underlying funds give diversification	• Access to **diversified portfolios** • Access to **individual opportunities** • **Tailored** deployment of capital • **Re-investment** of cash flows
Drawbacks	• **Need significant resources / size** • **Most schemes lack required governance capability**	• **Double layer of fees / costs** • **Subject to capital raising / commitment process of underlying funds**	• Requires **access** and **expertise**

A hybrid approach optimises flexibility

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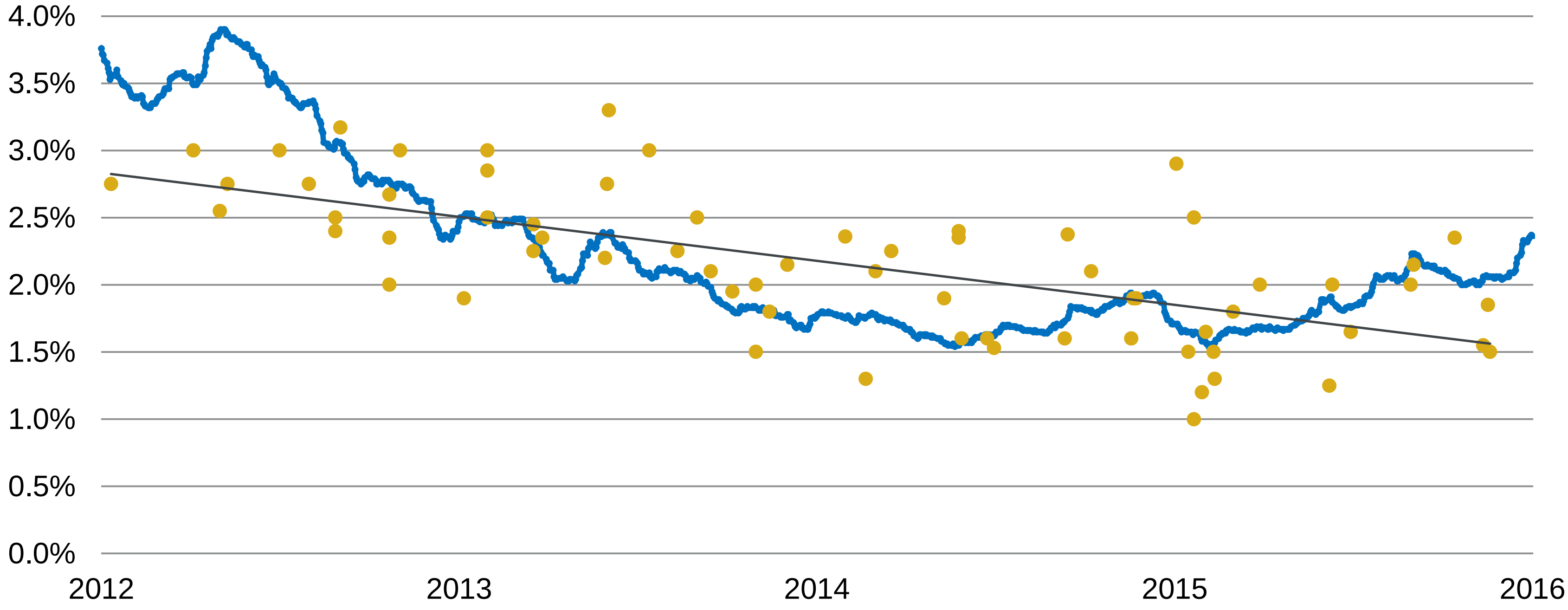
Infrastructure debt

Implementation: key to overcome spread compression, profit from dispersion

GBP – private infra debt deal spread (dots) vs. public market spread (blue line) – BBB



Source: BlackRock proprietary pricing database of private infrastructure debt deals and Datastream, as of December 2015. Note that private debt spreads (dots) are relative to swap or government bond yield of comparable maturity. Black line represents the best of fit line on private debt spreads. Public market spread (blue line) is derived from the Datastream BBB corporate bond spread indices.

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How to fund a secure income allocation

Example - Trustee view	Add Secure Income by selling equities?	Add Secure Income by selling bonds?
"We want to increase the match to liabilities but rates are too low"	✓	
"We want to increase the level of hedging when our funding level improves"	✓	
"We have a relatively traditional asset portfolio"	✓	
"We are happy with our level of liability matching, but want to reduce our deficit"		✓
"We are worried about how far corporate bond spreads have contracted"		✓
"We are concerned about the extremely low returns in our matching portfolio"		✓

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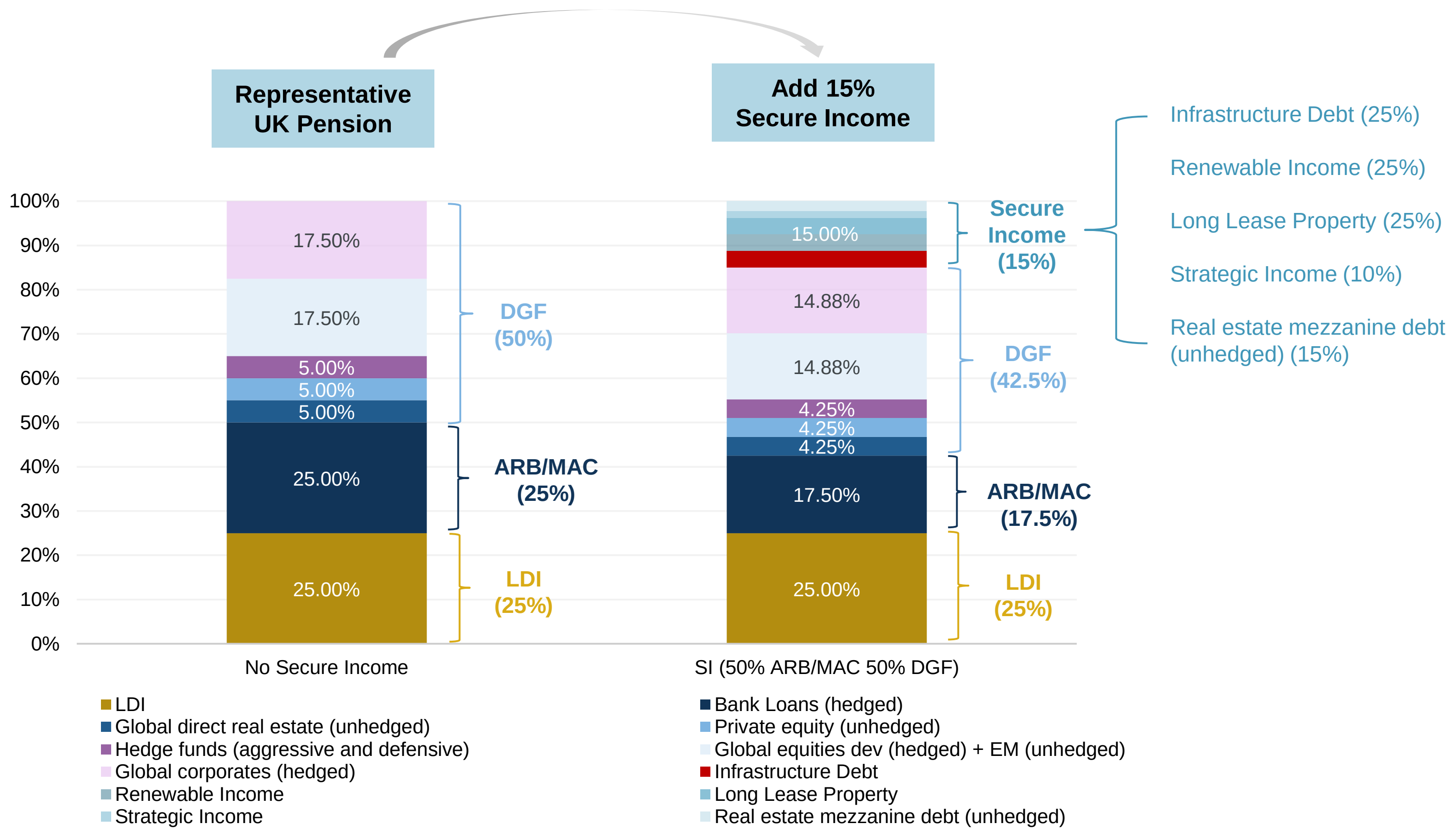
Adding secure income to a portfolio



Source: BlackRock | Portfolio data and analysis as of 31/12/2015 | Subject to change. Pension fund liabilities are assumed to be 20 year duration, and 70% linked to inflation. Government bonds (conventional and index-linked) exposure assumed to be 2.5x leveraged.

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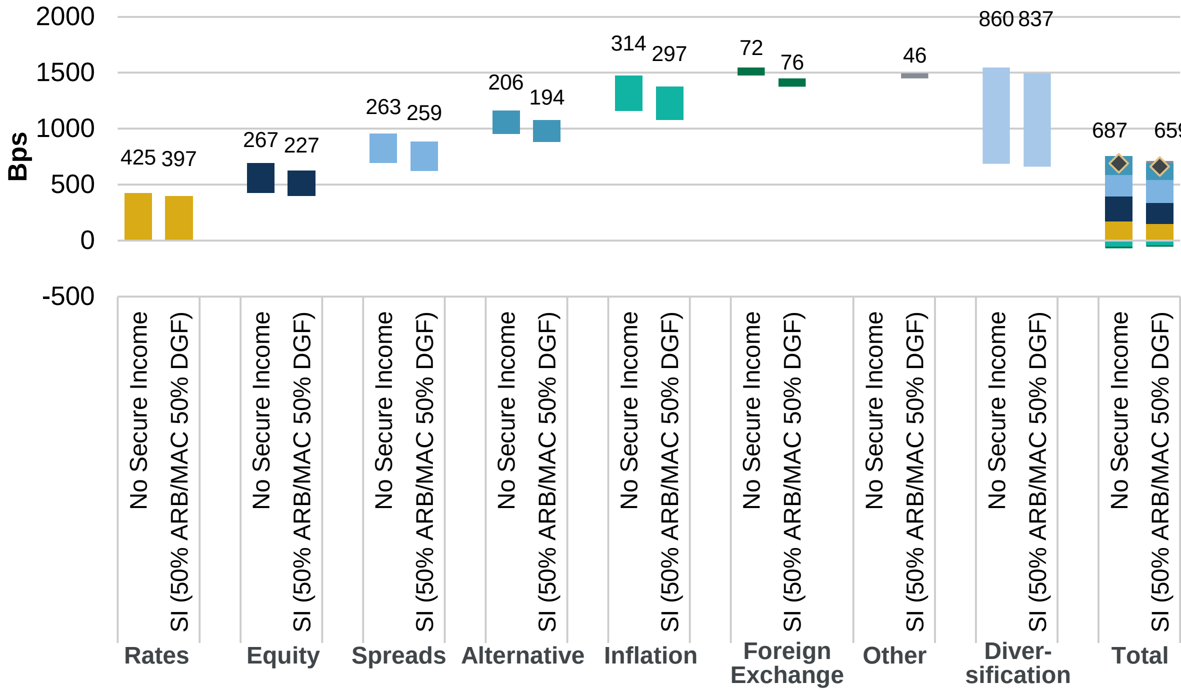
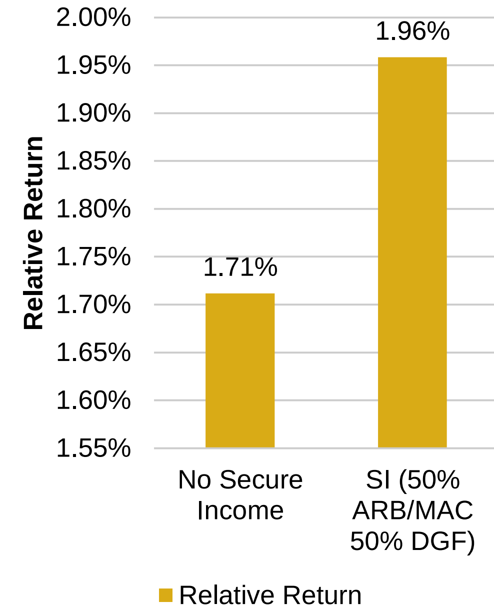
Risk and return decomposition

Risk falls marginally when using global secure income assets…



…and return rises, even assuming nothing for alpha



Adding secure income may increase return and lower risk

Risk decomposition based on MTC 184. Portfolio data as at 31/12/2015. Return data has been approximated using proxies from the BlackRock Investment Institute Capital Market Assumptions. Return proxies selected by similarity of risk between an alternative asset class forecast in the CMAs with the risk of the Secure Income asset in question. Bps: Basis points (0.01%)

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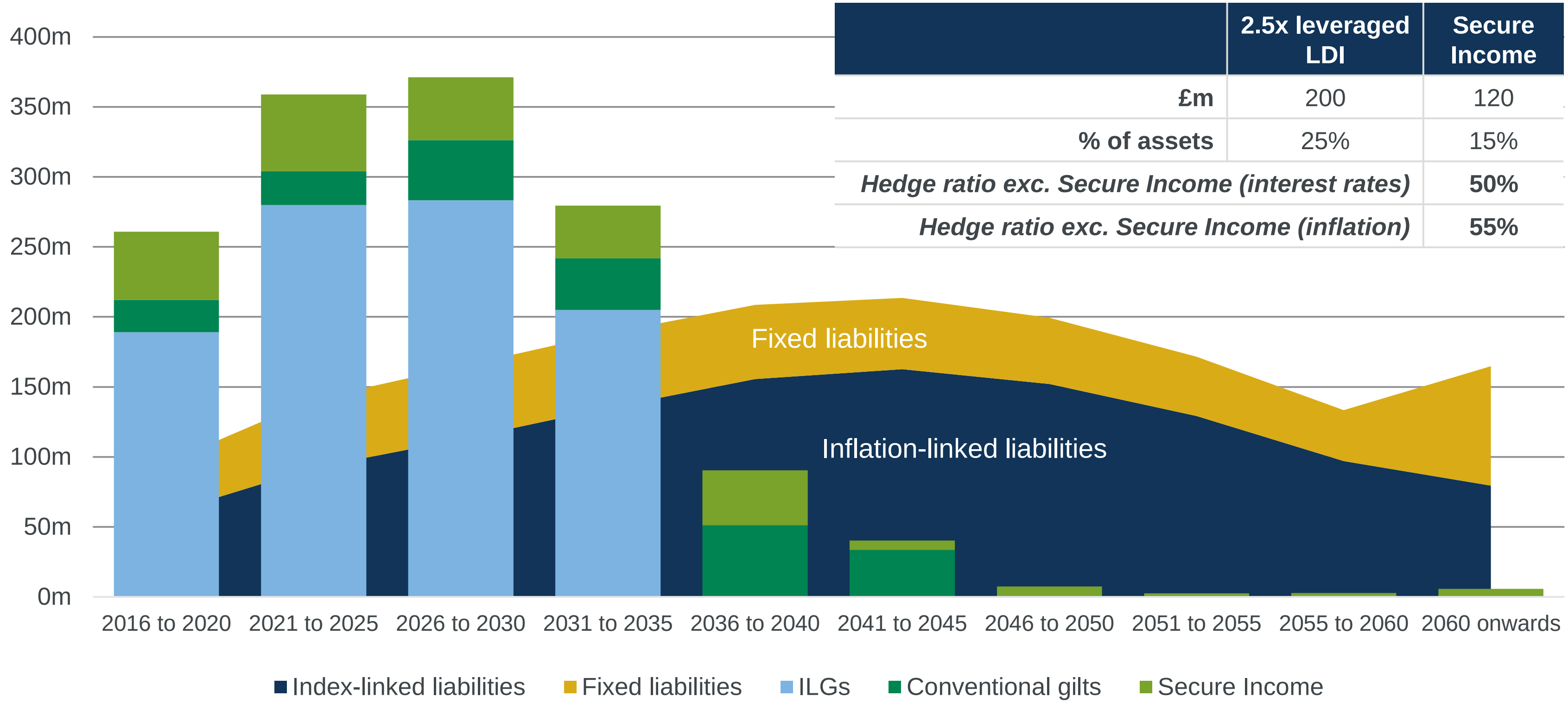
Secure income effect on income?

Naïve allocation to Secure Income & LDI

	2.5x leveraged LDI	Secure Income
£m	200	120
% of assets	25%	15%
Hedge ratio exc. Secure Income (interest rates)		**50%**
Hedge ratio exc. Secure Income (inflation)		**55%**



Source: BlackRock as of 31 December 2015. Assumes an 80% funded pension scheme with an LDI portfolio targeting liability duration (20 years). 70% of the liability is inflation-linked. The Secure Income portfolio shown is based on representative cashflows and assumes the same asset class split as shown in the risk modelling analysis previously.

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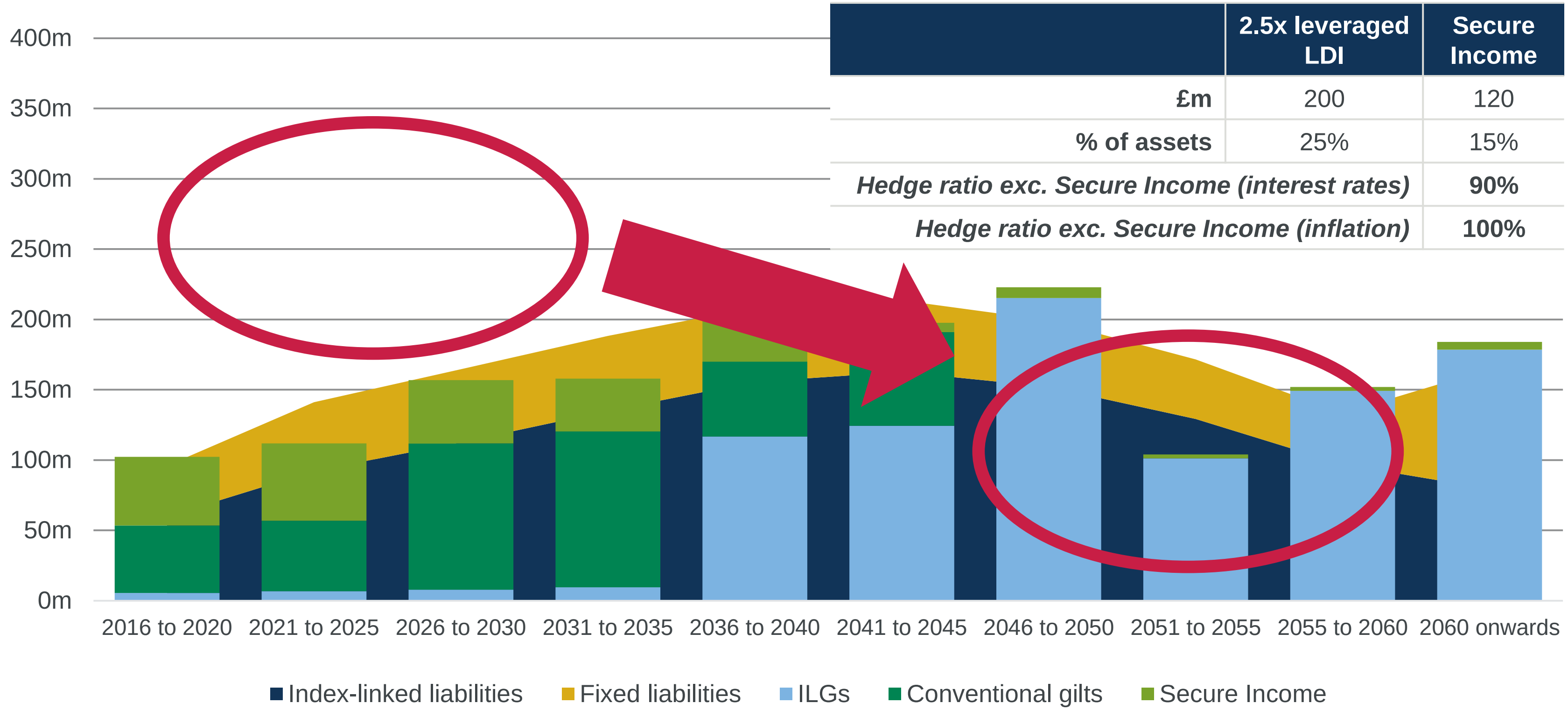
Efficient use of matching assets

Reshaped allocation to Secure Income & LDI

	2.5x leveraged LDI	Secure Income
£m	200	120
% of assets	25%	15%
Hedge ratio exc. Secure Income (interest rates)		**90%**
Hedge ratio exc. Secure Income (inflation)		**100%**



Source: BlackRock as of 31 December 2015. Assumes an 80% funded pension scheme. 70% of the liability is inflation-linked. The Secure Income portfolio shown is based on representative cashflows and assumes the same asset class split as shown in the risk modelling analysis previously.

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Benefits of private secure income assets

When added to a portfolio of traditional public assets, may…

- Increase return & reduce risk given forward expectations
- Enhance income generation
- Facilitate better matching cash flows to liability payments

Secure income is a new strategic asset

Key considerations

Investment expertise	• A credible manager must have a track record of managing private markets investments
Scale and access	• Extensive relationships with third parties gives access to deal flow
Risk management	• Fully integrated risk management system enables complete transparency
Hybrid approach	• A portfolio comprising funds, segregated portfolios and direct investments facilitates diversification and deployment

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