

IHS Markit Benchmark Administration Limited Consultation on LGIM Matching Plus and Core Indices Hedging Calculation – Results

LONDON, DECEMBER 19, 2022: IHS Markit Benchmark Administration Limited (IMBA) has conducted a [consultation](#) with market participants on potential changes to the LGIM Matching Plus and Core indices.

BACKGROUND

The LGIM Matching Core Index family is designed for pension schemes seeking simple access to a Liability-Driven Investment strategy (“LDI”) solution in order to reduce funding level volatility caused by changes in sterling interest rates and inflation rates. Each Matching Core index is constructed to hedge a Liability Cashflow profile. LDI is an investment strategy for a company or individual based on the cashflows needed to fund future liabilities and is designed for situations where future liabilities can be predicted with some degree of accuracy.

IMBA is updating the methodology of the LGIM Matching Plus and Core indices with regards to the leverage check method; Upper/Lower/Optimal hedging multiple are all functions of relevant interest rate. The changes are described in the tables on the following pages.

Methodology	LGIM Matching Plus Hedging Calculation
LGIM Matching Plus: Previous	<p>Calculation of Optimal Hedging Multiple:</p> <ul style="list-style-type: none"> The optimal Hedging Multiples are calculated using the formulas below, where: $MD = \text{Modified Duration}$ $YrTM = \text{Number of years to maturity, assuming 365.25 days a year.}$ Leveraged Gilt: $\text{Optimal HM} = \text{Max}\{1.5, \text{Min}[4.5 - (MD - 10) * 0.05, 3.5 - (MD - 20) * 0.1]\}$ $\text{Upper} = 1.4 * \text{Optimal HM}$ $\text{Lower} = 0.75 * \text{Optimal HM}$ Leveraged Linker: $\text{Optimal HM} = \text{Max}\{1.5, \text{Min}[4.5 - (MD - 10) * 0.05, 3.5 - (MD - 20) * 0.1]\}$ $\text{Upper} = \begin{cases} 1.30 * \text{Optimal HM}, & YrTM \geq 30 \\ 1.40 * \text{Optimal HM}, & YrTM < 30 \end{cases}$ $\text{Lower} = \begin{cases} 0.86 * \text{Optimal HM}, & YrTM \geq 40 \\ 0.80 * \text{Optimal HM}, & 30 \leq YrTM < 40 \\ 0.75 * \text{Optimal HM}, & YrTM < 30 \end{cases}$ Leveraged Gilt+ and Leveraged Linker+: $\text{Optimal HM} = 2 + 1.25 * \text{Max}\{1.5, \text{Min}[4.5 - (MD - 10) * 0.05, 3.5 - (MD - 20) * 0.1]\}$ $\text{Upper} = 1.38 * \text{Optimal HM}$ $\text{Lower} = 0.83 * \text{Optimal HM}$ Fixed Swap, Inflation Swap and Real Swap: $\text{Optimal HM} = \text{Max}\{7 - YrTM * 0.2, 5.5 - YrTM * 0.1, 4.75 - YrTM * 0.075, 2.75 - YrTM * 0.025, 1\}$ $\text{Upper} = \text{Max}\{10 - YrTM * 0.3, 7.75 - YrTM * 0.15, 6.625 - YrTM * 0.1125, 3.625 - YrTM * 0.0375, 1\}$ $\text{Lower} = \text{Max}\{5 - YrTM * 0.13333, 4 - YrTM * 0.06667, 3.5 - YrTM * 0.05, 2.16667 - YrTM * 0.01667, 1\}$

Methodology	LGIM Matching Plus Hedging Calculation		
LGIM Matching Plus: Updated	Hedging Multiples		
	Index Family categorisation used in calculating Hedging Multiples		
		Formula	Effective Interest Rate Curve
	Index Family	Categorisation	
	Leveraged Gilt, Leveraged Gilt+, Fixed Swap	Type A	OIS Curve, snapped at 0415 PMLDN
	Leveraged Linker, Leveraged Linker+, Real Swap	Type A	OIS Curve MINUS Inflation Swap Curve (real swap curve)
	Inflation Swap	Type B	Inflation Swap Curve, snapped at 0415 PMLDN
	Parameters used in calculating Hedging Multiples		
	Parameter	Value	
	d	Modified Duration of the underlying asset at Index Business day t	
r	Interest rate from Effective Interest Rate Curve calculated at Index Business day t, effective at d at Index Business day t		
ohr	Optimal headroom rate; 3.00%		
llr	Lower limit rate; 0.50%		
Parameter	Value		
ulr	Upper limit rate; 0.50%		
ca	Collateral adjustment: <ul style="list-style-type: none"> • 1.00% for the Fixed swap and Real swap funds • 0.50% for Inflation Swap funds • 0.00% for Leveraged Gilt and Leveraged Linker funds 		
Hedging Multiple Upper Bound			
The Hedging Multiple Upper Bounds are defined as below for various index families			
Categorisation	Upper Bound		
Type A	$MAX(1.2, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca-ulr}\right)^d, 7.7\right))$		
Type B	$MAX(1.2, MIN\left(1 - \left(\frac{1+r-ohr-ca+ulr}{1+r}\right)^d, 7.7\right))$		
Hedging Multiple Lower Bound			
The Hedging Multiple Lower Bounds are defined as below for various index families			
Categorisation	Lower Bound		
Type A	$MAX(1.0, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca+llr}\right)^d, 5.6\right))$		
Type B	$MAX(1.0, MIN\left(1 - \left(\frac{1+r-ohr-ca-llr}{1+r}\right)^d, 5.6\right))$		
Optimal Hedging Multiple			
The Optimal Hedging Multiple are defined as below for various index families			
Categorisation	Optimal Hedging Multiple		
Type A	$MAX(1.1, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca}\right)^d, 6.5\right))$		
Type B	$MAX(1.1, MIN\left(1 - \left(\frac{1+r-ohr-ca}{1+r}\right)^d, 6.5\right))$		

Methodology		LGIM Matching Core Hedging Calculation																															
LGIM Matching Core: Previous	$Current\ HM = \frac{\sum_{i=1}^n BEV_i \times Position_i}{Index\ NAV_i}$ $Optimal\ HM = Max(1.5, Min(4.5 - \left(\frac{PV01}{10K} - 10\right) \times 0.05, 3.5 - \left(\frac{PV01}{10K} - 20\right) \times 0.1))$ $Upper\ HM = Optimal\ HM \times 1.40$ $Lower\ HM = Optimal\ HM \times 0.75$																																
LGIM Matching Core: Updated	<p>Index Leverage Rebalance Process</p> <p>Index Family effective interest rate curves used in calculating Hedging Multiples</p> <table border="1"> <thead> <tr> <th>Index Family</th> <th>Effective Interest Rate Curve</th> </tr> </thead> <tbody> <tr> <td>Short Fixed</td> <td rowspan="2">OIS Curve, snapped at 0415 LDN</td> </tr> <tr> <td>Long Fixed</td> </tr> <tr> <td>Short Real</td> <td rowspan="2">OIS Curve - Inflation Swap Curve (snapped at 0415 LDN)</td> </tr> <tr> <td>Long Real</td> </tr> </tbody> </table> <p>Parameters used in calculating Hedging Multiples</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>d</td> <td>Modified Duration of the underlying instruments at Index Business day t</td> </tr> <tr> <td>r</td> <td>Interest rate from Effective Interest Rate Curve calculated at Index Business day t, effective at d at Index Business day t</td> </tr> <tr> <td>ca</td> <td>Collateral adjustment; 0.00%</td> </tr> <tr> <td>ohr</td> <td>Optimal headroom rate; 3.00%</td> </tr> <tr> <td>llr</td> <td>Lower limit rate; 0.50%</td> </tr> <tr> <td>ulr</td> <td>Upper limit rate; 0.50%</td> </tr> </tbody> </table> <p>Hedging Multiples</p> <table border="1"> <thead> <tr> <th>Term</th> <th>Formula</th> </tr> </thead> <tbody> <tr> <td>Optimal HM</td> <td>$MAX(1.1, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca}\right)^d, 6.5\right))$</td> </tr> <tr> <td>Upper HM</td> <td>$MAX(1.2, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca-ulr}\right)^d, 7.7\right))$</td> </tr> <tr> <td>Lower HM</td> <td>$MAX(1.0, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca+llr}\right)^d, 5.6\right))$</td> </tr> </tbody> </table>			Index Family	Effective Interest Rate Curve	Short Fixed	OIS Curve, snapped at 0415 LDN	Long Fixed	Short Real	OIS Curve - Inflation Swap Curve (snapped at 0415 LDN)	Long Real	Parameter	Value	d	Modified Duration of the underlying instruments at Index Business day t	r	Interest rate from Effective Interest Rate Curve calculated at Index Business day t, effective at d at Index Business day t	ca	Collateral adjustment; 0.00%	ohr	Optimal headroom rate; 3.00%	llr	Lower limit rate; 0.50%	ulr	Upper limit rate; 0.50%	Term	Formula	Optimal HM	$MAX(1.1, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca}\right)^d, 6.5\right))$	Upper HM	$MAX(1.2, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca-ulr}\right)^d, 7.7\right))$	Lower HM	$MAX(1.0, MIN\left(1 - \left(\frac{1+r}{1+r+ohr+ca+llr}\right)^d, 5.6\right))$
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IMPLEMENTATION TIMING

IMBA will implement the previously described methodology changes on **Monday, December 19, 2022**.

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S&P Dow Jones Indices is the largest global resource for essential index-based concepts, data and research, and home to iconic financial market indicators, such as the S&P 500® and the Dow Jones

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FOR MORE INFORMATION: indices@ihsmarkit.com