LONDON BOROUGH OF ISLINGTON PENSION FUND

EQUITY PROTECTION QUARTERLY MONITORING REPORT AS AT 31 MARCH 2019

MAY 2019

Peter Tornkvist
Tony English

AGENDA

- Recap on equity options
  - What is the strategic rationale?
  - Governance considerations
- Quarterly monitoring

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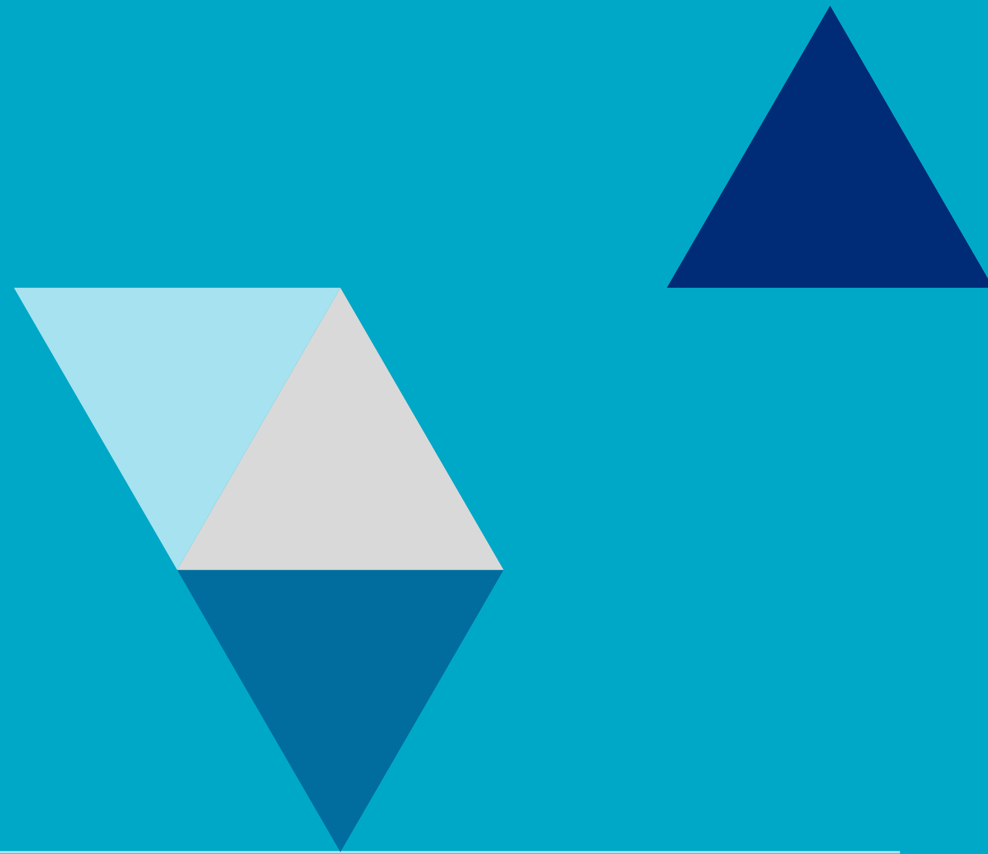
RECAP ON EQUITY OPTIONS



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RECAP ON EQUITY OPTIONS
RETURNS REQUIRE RISK – RISK NEEDS TO BE MANAGED

Stable and affordable contribution rate

versus

Achieve returns in excess of CPI required under funding arrangements

Objectives are two-fold but conflicting

- Risk needs to be taken in order to target returns but risk does not guarantee returns

Need to ensure a reasonable balance between the two objectives

- No need to take the same level of risk when 100% funded (say) than when 78% funded

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RECAP ON EQUITY OPTIONS
KEY OBJECTIVES

OBJECTIVE 1	OBJECTIVE 2	OBJECTIVE 3
Maintain sufficient equity market upside to (at least) close the current funding deficit	Seek downside protection to (at least) avoid falling behind the recovery plan at the next valuation	Align protection strategy with cash funding negotiations of the 2019 valuation

Original rationale for equity options (late 2017) described below:

Based on the position at 30 June 2017, if equity markets increased by c.14 % the deficit would be eliminated. Any further increase would lead to a surplus **(all else being equal)**

Based on the position at 30 June 2017 if equity markets fell by c.28% the Fund would fall behind the deficit recovery plan and more cash contributions would be required (again **all else being equal**)

The next actuarial valuation is as at 31 March 2019. In practice valuation negotiations take place over the year following this date. This implies looking for protection with a maturity of between 2 and 3 years.

Looking ahead:

Despite market volatility in 2019, equity market performance has been largely flat since the inception of the option strategy.

Equity options have provided protection in some markets but overall combined equity and options strategy is flat.

Expiry is March 2020 - this may remain appropriate – but longer term/rolling approach could be considered

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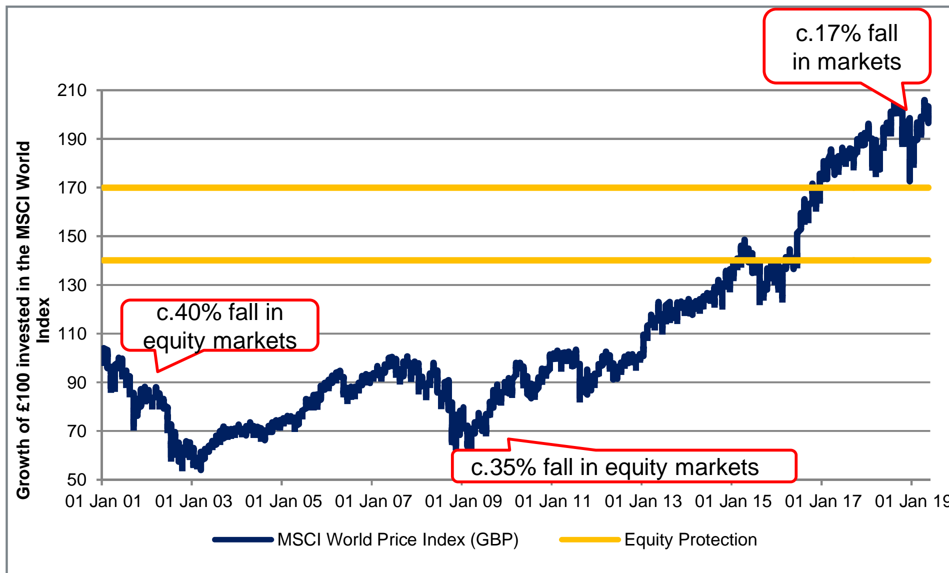
RECAP ON EQUITY OPTIONS
STRONGER THAN EXPECTED GROWTH

Performance of MSCI World (GBP) since 2000



Comments

- Global equity markets are at or close to all time highs – the MSCI World has returned 6.2% p.a since December 2000.
- We expect to be rewarded for investing in equities over the long term, and accept that this comes with capital risk. This risk is highlighted by material market falls observed over various periods since 31 December 2000.
- Since the 2016 valuation, the Fund has benefited significantly from strong positive equity market performance.

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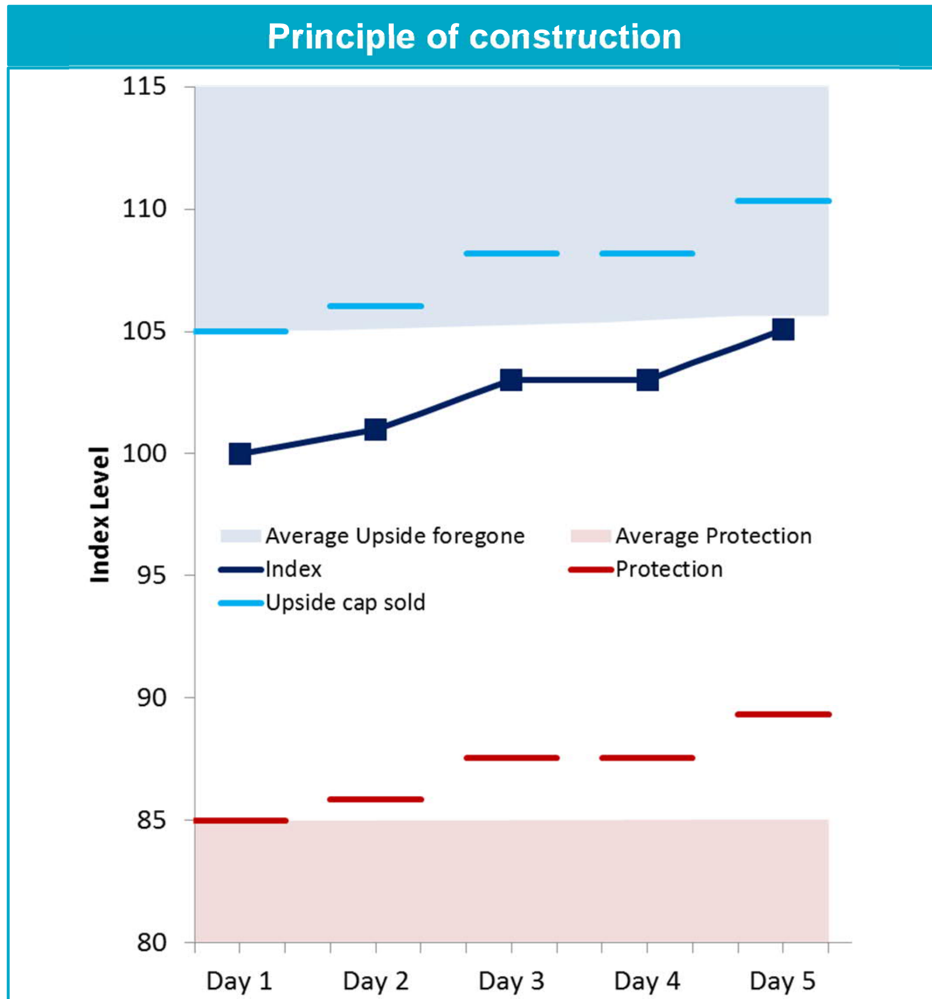
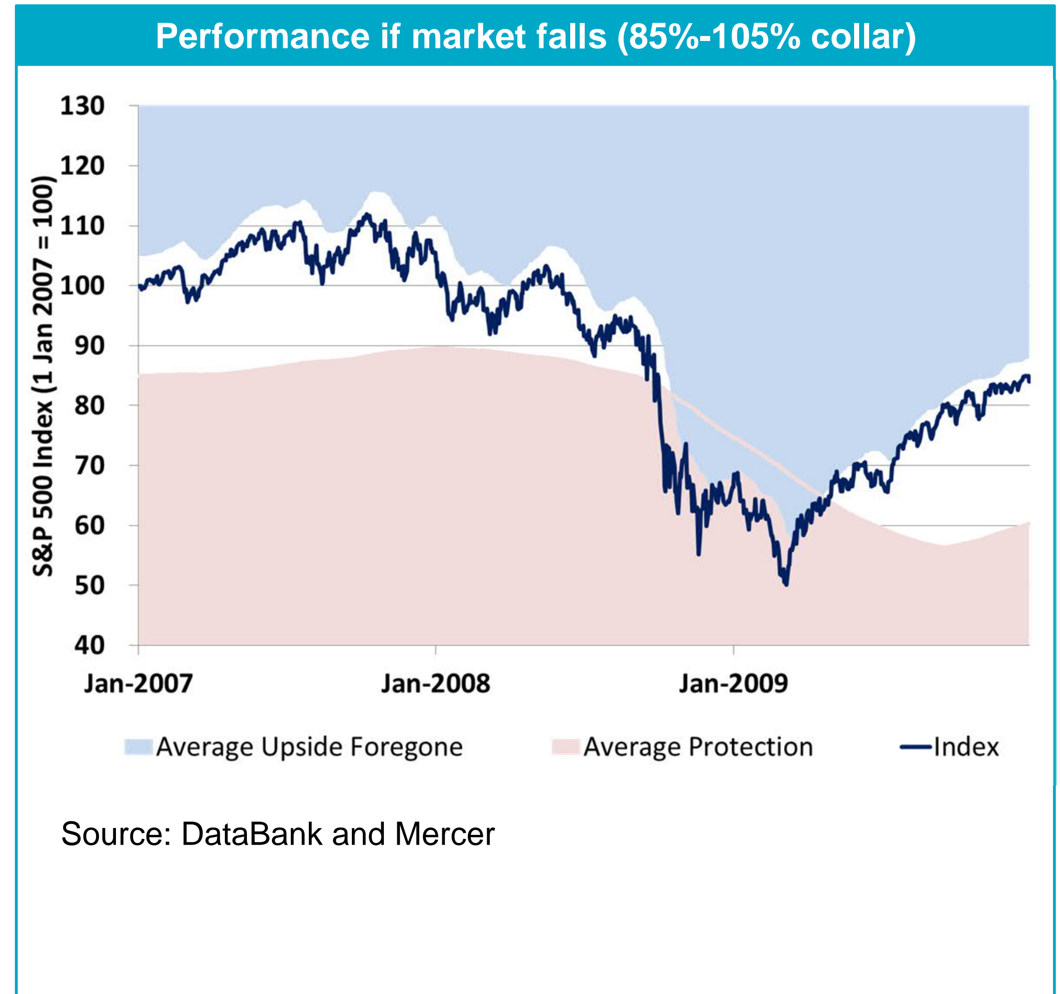
ALTERNATIVE APPROACH
DYNAMIC HEDGING – RISING MARKETS

Principle of construction



Performance if market falls (85%-105% collar)



Source: DataBank and Mercer

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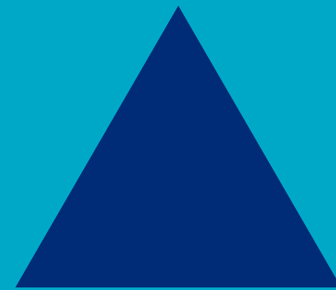
MONITORING

QUARTER TO 31 MARCH 2019



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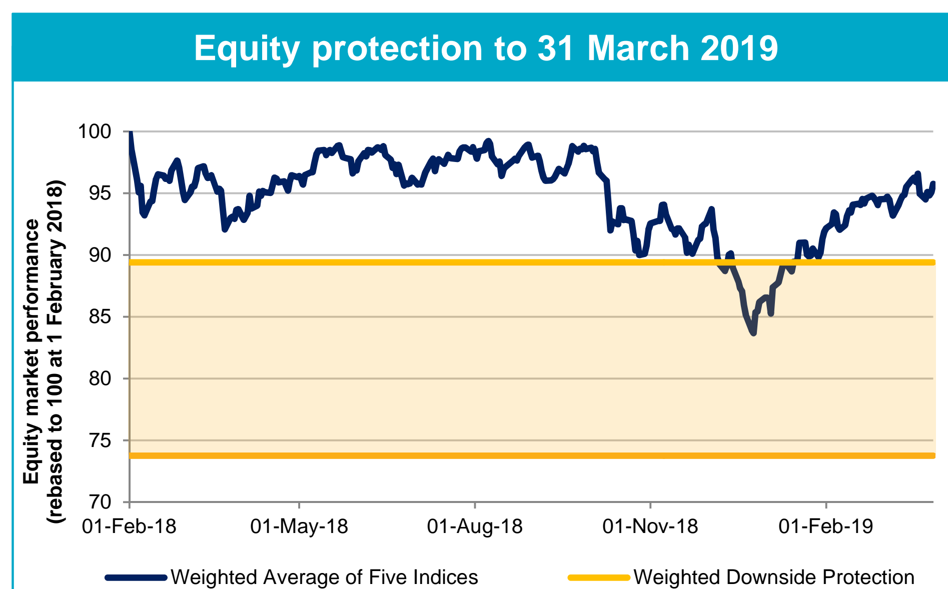
EQUITY PROTECTION MONITORING (I)

Equity protection to 31 March 2019



Comments

An equity option strategy has been implemented to protect the Fund against falls in equity market values over a c. two year period.

The chart opposite shows the equity market performance from inception to 31 March 2019 (the **blue line**) and the **orange shaded region** shows the range in which the Fund is protected against equity market falls. As market levels get nearer to the shaded region, the value of the option strategy increases as it is more likely that the options will expire “in-the-money” and the Fund will receive a payoff at maturity.

Over the period since inception to 31 March 2019, the Fund’s equity exposure increased by c. £3.2m and the mark-to-market value of the equity options decreased by c. £2.4m. We will continue to monitor this position.

Note that the equity market performance and strikes shown in the chart above are based on price indices (as the options were traded on these indices) and hence the initial protection level shown differs from that shown in the Appendix on a total return basis.

Market index	Market exposure		Value of options	
	31-Mar-19	Change since inception of option strategy	31-Mar-19	Change since inception of option strategy
S&P 500	£322.1m	£28.5m	£7.2m	(£3.2m)
FTSE 100	£212.6m	(£7.6m)	£4.7m	(£2.5m)
Euro Stoxx 50	£73.8m	(£7.0m)	£2.1m	(£0.5m)
Topix	£40.7m	(£3.3m)	£2.3m	£0.9m
Emerging Markets	£88.0m	(£7.4m)	£5.9m	£2.7m
Total	**£737.2m**	**£3.2m**	**£22.4m**	**(£2.4m)**

Source: LGIM. Figures may not sum due to rounding. Does not include transaction costs or manager fees.

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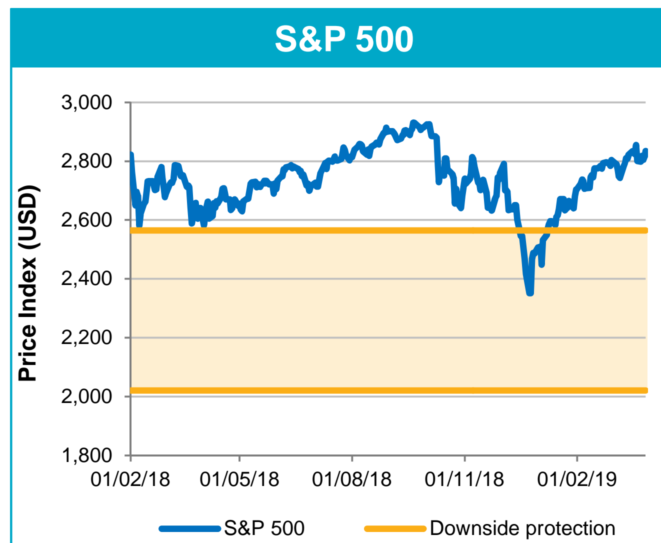
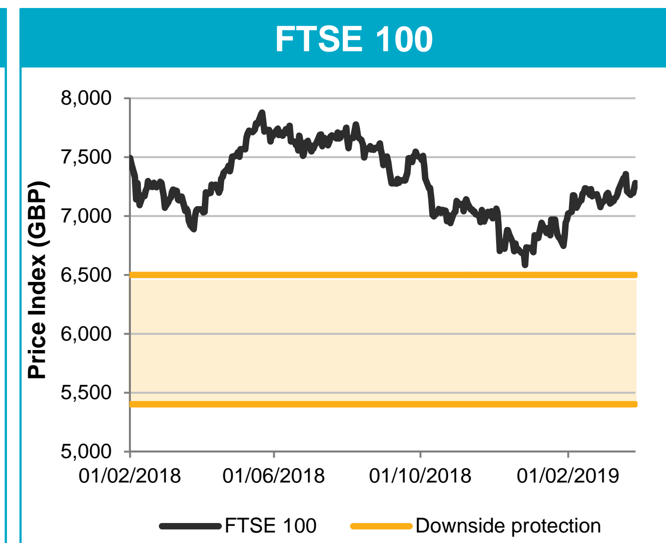
EQUITY PROTECTION MONITORING (II)

- The charts show the current market level as at 31 March 2019 and the market level when the options were implemented on 1st/2nd February 2018. The closer the market is to the option strike, the more valuable the protection.
- The Topix and MSCI Emerging Markets **long** put options were both “in the money” as at 31 March 2019, i.e. the Fund will receive a total payoff of c.£8.3m at maturity if the respective indices remain at their current levels. The Fund will not need to make any payouts if the respective indices remain at their current levels.

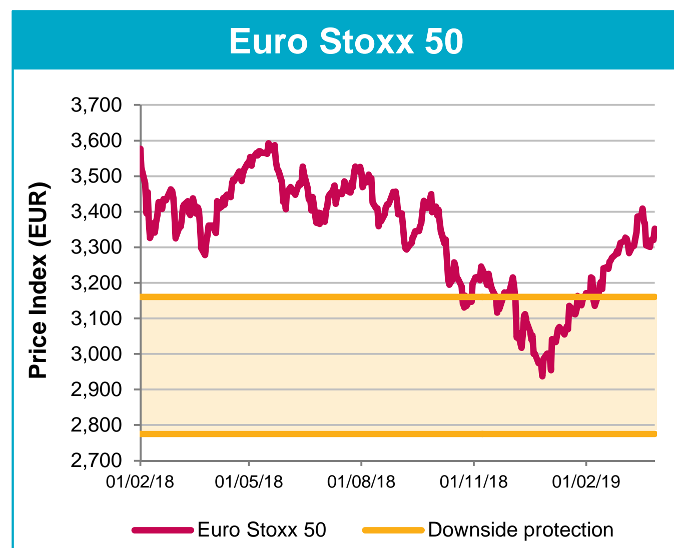
S&P 500



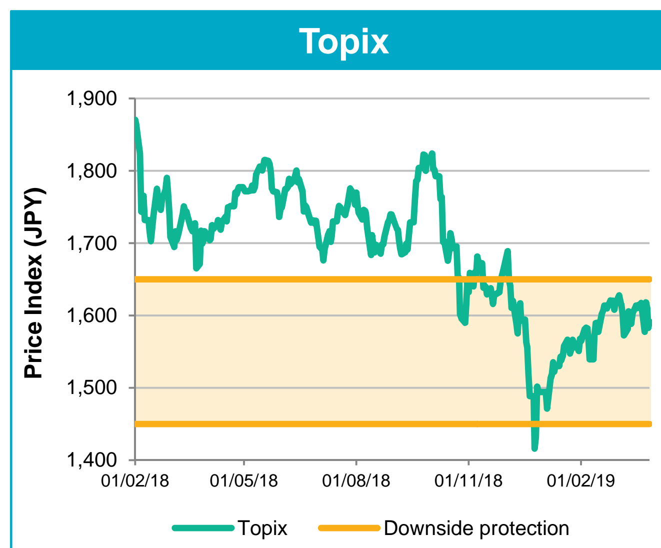
FTSE 100



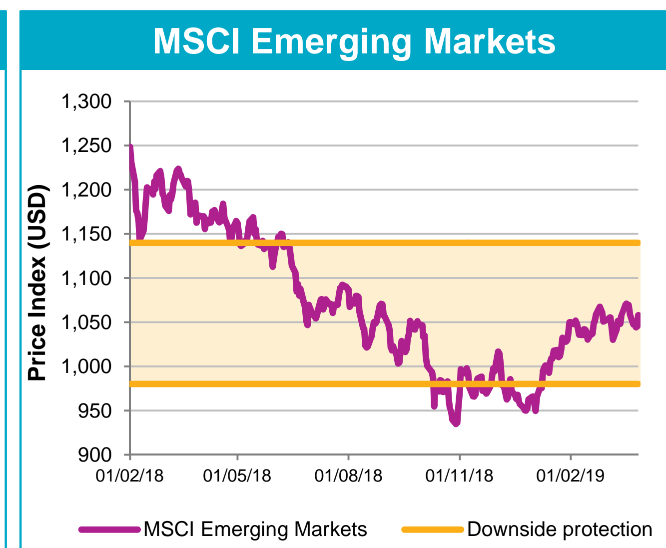
Euro Stoxx 50



Topix



MSCI Emerging Markets



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EQUITY PROTECTION
SUMMARY

- The Fund's equity protection strategy was implemented on 1st/2nd February 2018 before the equity market sell off in February. All five of the indices on which the options are bought and sold have recovered from their falls in the fourth quarter of 2018. However the S&P 500 index was the only index to end the first quarter of 2019 above its level at inception of the strategy.
- Over Q1 2019, the worst performing index was the Topix, which returned c. 6.5% in Japanese Yen terms, while the index with the strongest returns was the S&P 500 Index, which returned c. 13.1% in US Dollar terms. The FTSE 100 index, which the strategy has the second greatest notional exposure to after the S&P 500 index, returned c. 8.1% in Sterling terms. The Euro Stoxx 50 index and MSCI Emerging Markets index returned 11.7% in Euro terms and 9.6% in US Dollar terms respectively.
- The value of an option is impacted by many factors including the volatility of the market, the current market level against the strike level of the option and the time remaining until the option expires.
- At implementation, the Fund paid £24.7m to purchase the protection (excluding fees). By 31 December 2018 the value of the protection had increased to £46.0m due to negative returns over Q4 2018. However, this value has fallen to £22.4m as at 31 March 2019, largely due to all five indices producing positive returns over Q1 2019.

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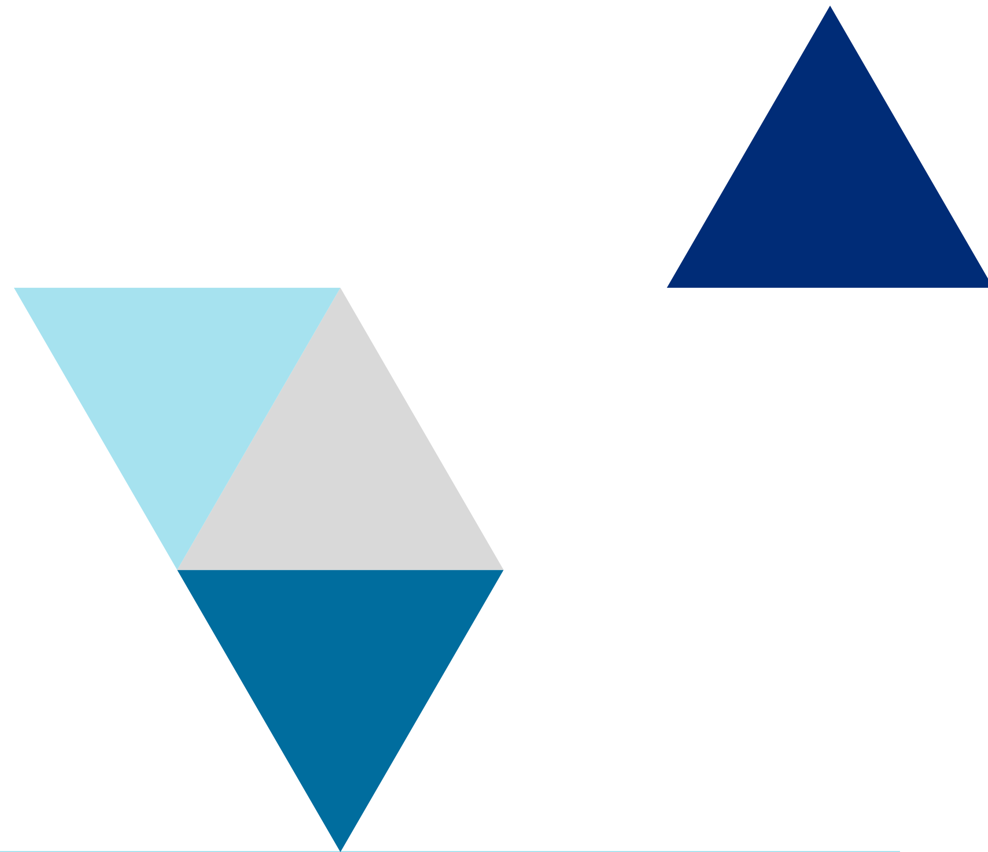
APPENDIX



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EQUITY PROTECTION
KEY DETAILS OF THE STRATEGY

Investment manager

After a competitive tender exercise, the Officers selected **Legal & General Investment Management (“LGIM”)** to manage the equity protection strategy for the Fund.

Investment strategy

Agreed to “pay a premium” of £25m to achieve the following protection:

- Purchasing financial contracts to protect c. 95% of the value of the equity portfolio to March 2020;
- Selling financial contracts to cheapen the above premium by exposing the equity portfolio to falls in markets should they fall by more than c. 19%.

An overview of what was achieved is shown below (source: LGIM). Note that the strikes shown are on a total return basis, i.e. allowing for dividends.

Equity region	Index	Weighting	Notional	Upper strike	Lower strike
North America	S&P 500	40%	£294m	94.8%	74.7%
UK	FTSE 100	30%	£220m	95.2%	79.1%
Europe	Euro Stoxx 50	11%	£81m	95.1%	83.6%
Japan	Topix	6%	£44m	93.6%	82.2%
Emerging Markets	MSCI Emerging Markets	13%	£95m	94.9%	81.6%
	Total	**100%**	**£734m**	**94.9%**	**78.3%**

Costs

Cost of protection	=	£24.7m (vs. £25.0m expected)
Transaction costs	=	£0.15m (vs. £0.73m expected)
Manager fees	=	£0.44m (vs. £0.73m undiscounted fees)
Total	**=**	**£25.29m (saving of c. £1.17m before advisory fees)**

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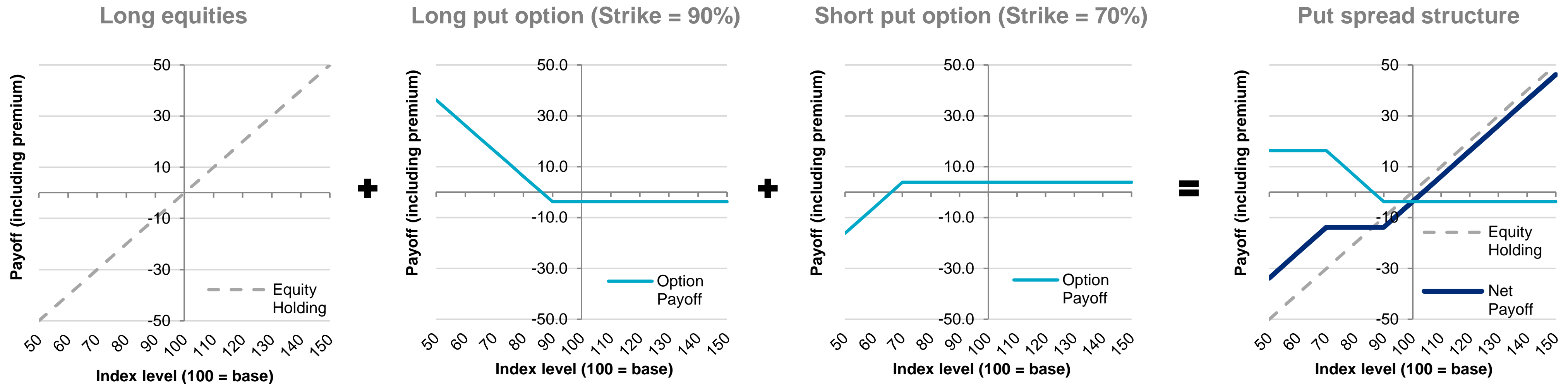
EQUITY PROTECTION
WHAT IS A PUT SPREAD?



- A put spread is an equity protection strategy where a put option on a given equity index is bought to protect downside losses, and another put option is written at the same time (i.e. sold) in order to forgo a portion of that downside protection in return for a premium.
- This is typically done to reduce the cost of the overall structure, as put options tend to be expensive to purchase, and the premium received from selling the put offsets that cost to an extent (but not fully).
- The difference between the strikes of the put options being bought and sold dictates the level of protection. In the example above, a put option is bought with a strike of 90% relative to market levels at inception of the option, while a put option with a strike of 70% is sold.
- In the event that the equity index were to fall 10% from its levels at inception of the strategy (i.e. to 90%), the structure would not provide any protection. If the index fell a further 20%, from 90% of levels at inception to 70% of levels at inception, the long put option would be “in the money” and the option buyer could exercise the option at the agreed 90% strike rate to protect themselves from any losses incurred.
- However, if the index were to fall even further (i.e. more than 30% of levels from inception), the buyer of the short put option would choose to exercise their option for the same reasons outlined above and the structure would no longer provide downside protection. This resulting net payoff of the put spread structure can be shown by the dark blue line on the chart.

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