LOMBARD ODIER
INVESTMENT MANAGERS

All Roads' adaptability to different interest rate scenarios

Solutions insights

For professional investor use only • Multi-Asset **March 2018**

A NEXT GENERATION MULTI-ASSET FUND

All Roads is a multi-asset/diversified growth strategy that aims to build on the best of the array of existing multi-asset approaches to provide a highly effective tool for institutional investors. Lombard Odier's own Swiss employee pension fund (LOPF) entrusts a substantial part of its assets to the All Roads strategy. For LOPF, All Roads is a core, liquid, return-generating engine that targets a stable return path within a maximum level of acceptable loss.[1, 2]

WHAT IS COVERED IN THIS PAPER?

All Roads invests in a diversified portfolio of equities and bonds. Investors are understandably asking about the impact on the performance of All Roads if interest rates start rising. In this paper we examine the behaviour of All Roads under three different scenarios, each relating to material increases in market interest rates.

We use changes in US rates to represent interest rate changes in general. We acknowledge that European (and other) rates are not perfectly correlated to US rates. However, the adaptability process within All Roads would continue to apply for the other rates. In addition, US rates exposure tends to be a material component of many multi-asset funds, bringing some comparability across many such funds.

We have applied the systematic principles underlying the All Roads strategy to perform the analysis.

Scenario 1: Actual changes in All Roads during 2016 when interest rates fell and then rose materially

Scenario 2: Estimated performance of All Roads in a scenario where rates rose materially against a backdrop of high asset valuations – we back-tested performance over 2005, which reflected the end of the bull market

Scenario 3: Estimated performance of All Roads in a scenario where rates rose materially against a backdrop of low asset valuations – we back-tested performance over 2009, which reflected the end of the bear market

The case studies provided in this document are for illustrative purposes only and do not purport to be recommendation of an investment in, or a comprehensive statement of all of the factors or considerations which may be relevant to an investment in, the referenced securities. The case studies have been selected to illustrate the investment process undertaken by the Manager in respect of a certain type of investment, but may not be representative of the Fund's past or future portfolio of investments as a whole and it should be understood that the case studies of themselves will not be sufficient to give a clear and balanced view of the investment process undertaken by the Manager or of the composition of the investment portfolio of the Fund now or in the future.

THE DETAILS

- **Inception year:** 2012
- **Target return:** cash + 3 to 5%[2]
- **Risk target:** maximum drawdown of 10% over 12 months[2]
- **Allocates dynamically across traditional asset classes:** equities, bonds and commodities
- **Liquid and transparent implementation**
- **Assets under management:** segregated and pooled mandates run by the multi-asset team exceed USD 6 billion as at December 2017
- Two further variations of drawdown budget available

THE RELEVANCE FOR INVESTORS

- Downside protection[1,2] through our proprietary drawdown protection technology
- Low running costs and competitive fees
- Daily liquidity
- Full asset transparency can be offered
- Helps reduce "regret risk" – risk of missing out on a continuing upward trending market – with the comfort of an enhanced process that aims to bank gains in the event of a market reversal
- Good fit for under-hedged liability-aware schemes: dynamic duration risk management would increase (reduce) duration when rates are falling (rising) at a time when the solvency position of an under-hedged client is deteriorating (improving)

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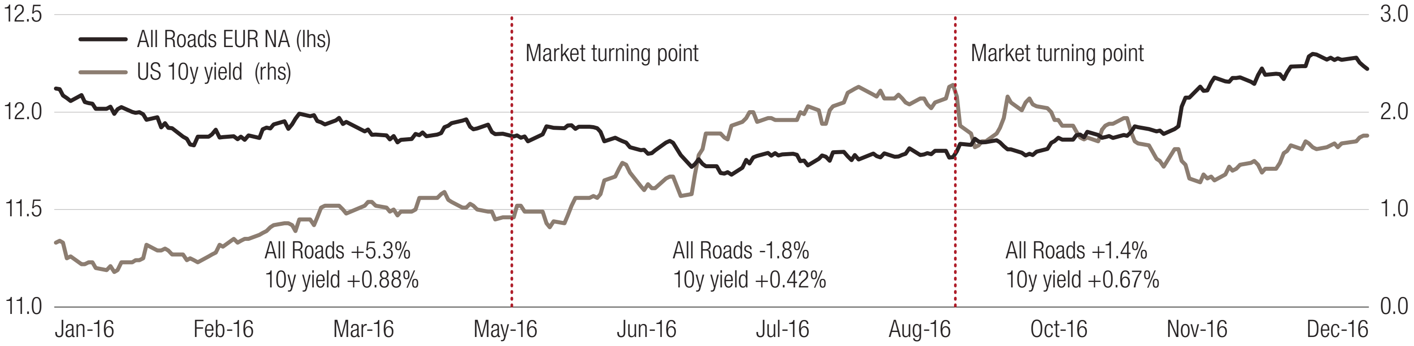
[1] Capital protection/capital preservation represents a portfolio construction goal and cannot be guaranteed.
[2] Target performance/risk represents a portfolio construction goal. It does not represent past performance/risk and may not be representative of actual future performance/risk.

SCENARIO 1: 2016 – A TALE OF TWO HALVES

Figure 2 – All Roads versus 10-year USD rates (actual performance of LO Funds–All Roads)



Source: LOIM, Bloomberg. Date range from 01 January 2016 to 31 December 2016. Past performance is not a guarantee of future results. Net of fees for institutional accumulating share class.

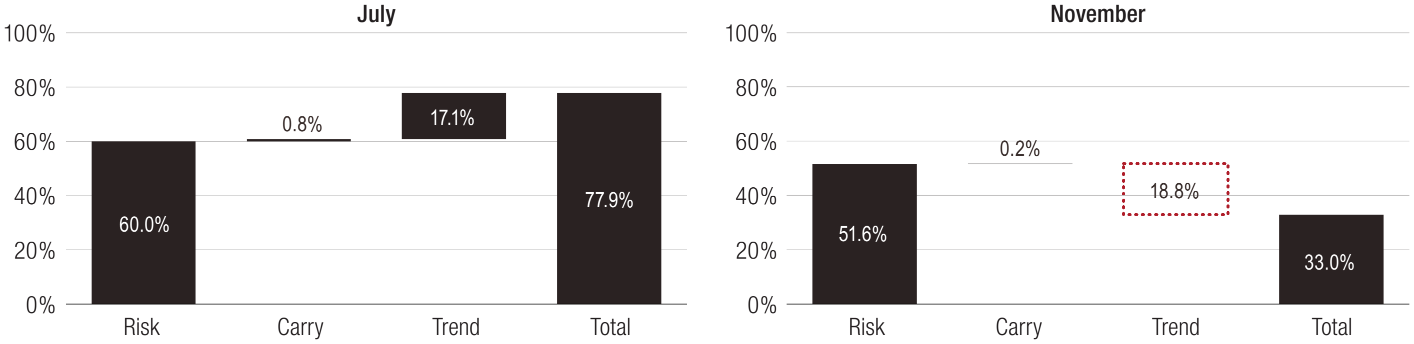
- In a year when US yields rose by 20bps, All Roads posted a return of +4.3% (cash + 3.8%).
- Our duration exposure over the period accounted for +1.9% of the strategy's return; just over half of this resulted from our exposure to a diversified range of bond markets, with the remainder coming from our dynamic adjustments to the bond allocation in response to varying market trends. A long-only US bond exposure would have lost money.
- In the first half of the year, US bond yields fell significantly and some core equity markets were relatively flat. Many unhedged, liability-aware investors would have seen their solvency position deteriorate. Over this period, the trend signals in All Roads led to an increase in the duration exposure (see Figure 3) and this boosted our returns – in effect helping to protect the solvency position of our investors by increasing their hedge position at a time when they needed it the most. Absolute return investors also benefited from the positive bond return.
- The second half of the year was extremely tumultuous. Initially, rates started increasing gradually, accompanied by a slow but steady improvement in equity markets. The rate rise then gathered pace towards the end of the year. The solvency position of many liability-aware investors would have been improving at such a time, due to both potential under-hedged duration exposure and exposure to equities. Over this period, the trend signal in All Roads reversed and led to a material reduction in our overall duration exposure, especially before the rate rise gathered pace after November. This would have helped to ensure that our clients received the appropriate protection. Absolute return investors would also have gained some protection due to this reduction.
- The combination of diversified return sources and dynamic management of risk ensured that All Roads ended the year up by approximately 5%.
- **Equally important was the material improvement in volatility and drawdown over the year:**

	Volatility	Drawdown
Equity market	12.9%	11.5%
USD 10-year bond	6.4%	9.0%
All Roads	**4.5%**	**4.1%**

Source: LOIM, Bloomberg. Date range from 01 January 2016 to 31 December 2016.
Past-performance is not a guarantee of future results.

Figure 3 – Duration exposure in 2016, All Roads

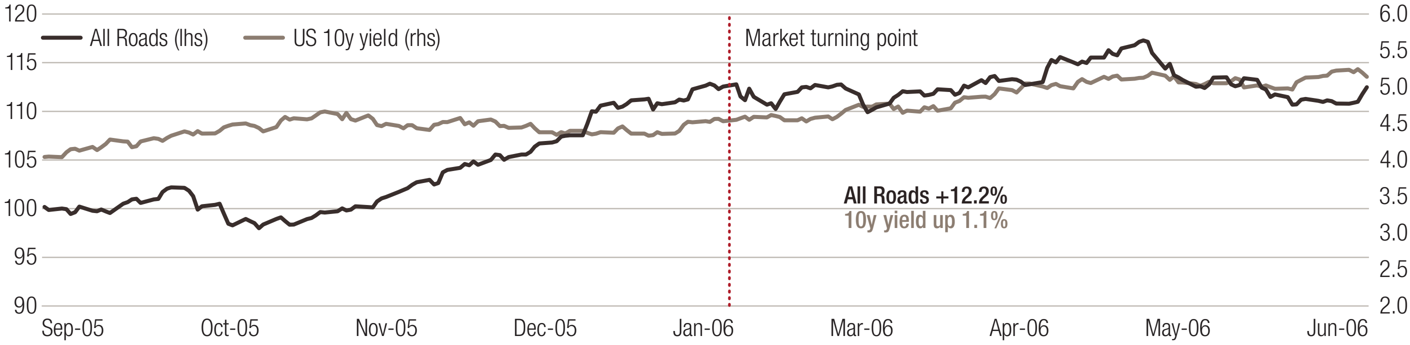
(as a % of total assets)



Source: LOIM. Total duration exposure as at 31 July 2016 and 30 November 2016. Asset allocation/portfolio composition is subject to change. For illustrative purposes only.

SCENARIO 2: RISE IN RATES DURING THE END OF A BULL MARKET (AS IN 2005/2006)

Figure 4 – All Roads versus 10-year USD rates (back-test)



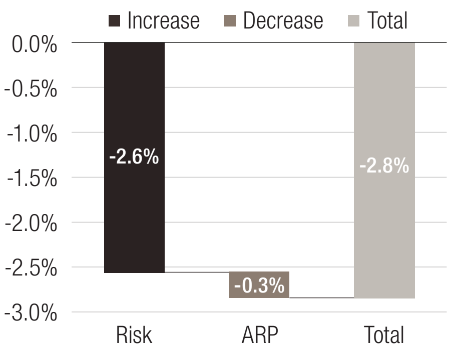
Source: LOIM, Bloomberg. Date range from 01 September 2005 to 30 June 2006.
These performance results are back-tested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any LOIM product and are being shown for informational purposes only. While the results presented are based on certain assumptions that are believed to reflect actual trading conditions, these assumptions may not include all variables that can affect, or have affected in the past, the execution of trades. The hypothetical portfolio results are based on the following assumptions:
[1] The hypothetical portfolio record does not include deductions for brokerage commissions, exchange fees, or slippage.
[2] It assumes purchase and sale prices believed to be attainable. In actual trading, the prices attained may or may not be the same as the assumed order prices.
[3] The portfolio results do not take into account any tax implications arising from the sale or purchase of securities, which in actual trading do have an impact on gains and losses.

- USD rates rose by more than 1% between mid-2005 and mid-2006, accompanied by strong equity market performance. We back-tested our systematic process over this period and estimate All Roads' performance would have been approximately 12% (cash + 7.5%).
- Duration exposure would have caused some drag (approximately 2.8%). However, other return sources in the strategy would have more than compensated for this, resulting in a large positive overall return, according to our analysis. A long-only US bond exposure would have suffered material losses.
- The combination of diversified return sources and dynamic management of risk ensured that All Roads ended the year approximately 12% up, according to our back-test, thereby keeping up with the returns seen in many equity markets.
- In this scenario, All Roads would have increased its risk budget and reduced its duration exposure due to the trend signals (see Figure 5) ensuring that the impact of the rate rise was limited and allowing the strategy to benefit from the bull market.
- Liability-aware investors (in particular the ones who were under-hedged against their liability duration exposure) are likely to have seen material improvement in their solvency position over the period and we estimate All Roads would have supported this improvement. Absolute return investors would also have seen a large positive return, according to our analysis.
- **Equally important was the material improvement in volatility and drawdown over the year:**

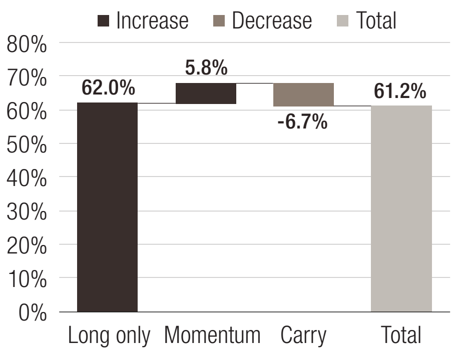
	Volatility	Drawdown
Equity market	10.2%	14.0%
USD 10-year bond	4.0%	7.5%
All Roads	**6.2%**	**5.6%**

Source: LOIM, Bloomberg. Date range from 01 September 2005 to 30 June 2006.
Past performance is not a guarantee of future results.

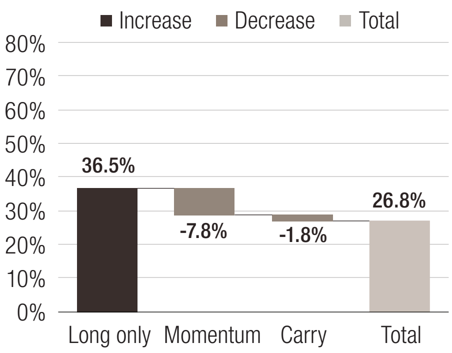
Figure 5 – All Roads' duration performance contribution at end



Duration exposure at start



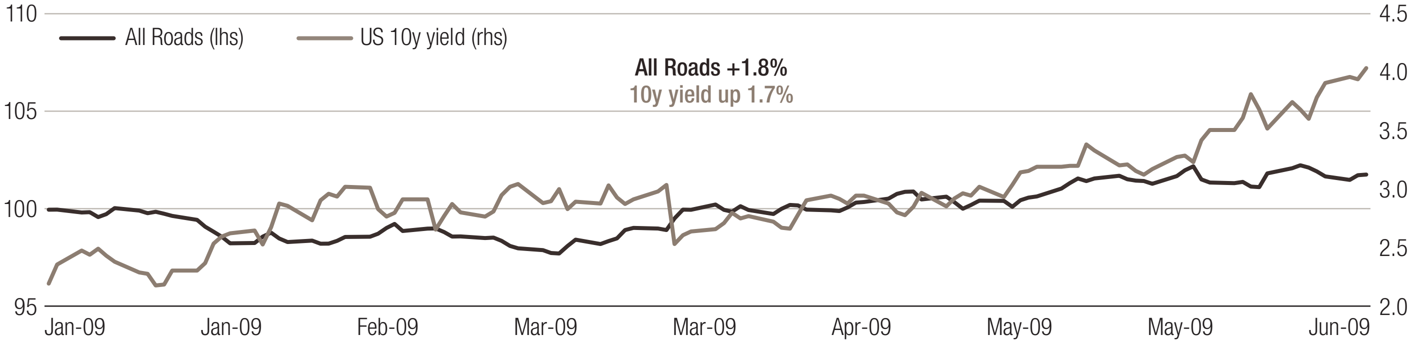
Duration exposure at end of analysis period (01 Sep 2005 to 30 Jun 2006)



Source: LOIM.
Note: ARP = Alternative Risk Premia.

SCENARIO 3: RISE IN RATES DURING THE END OF A BEAR MARKET (AS IN 2009)

Figure 6 – All Roads versus 10-year USD rates (back-test)



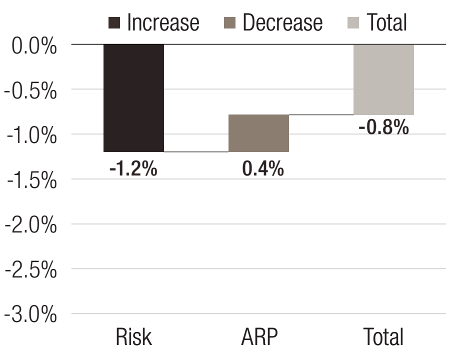
Source: LOIM, Bloomberg. Date range from 01 January 2009 to 30 June 2009.
These performance results are back-tested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any LOIM product and are being shown for informational purposes only. While the results presented are based on certain assumptions that are believed to reflect actual trading conditions, these assumptions may not include all variables that can affect, or have affected in the past, the execution of trades. The hypothetical portfolio results are based on the following assumptions:
1 The hypothetical portfolio record does not include deductions for brokerage commissions, exchange fees, or slippage.
2 It assumes purchase and sale prices believed to be attainable. In actual trading, the prices attained may or may not be the same as the assumed order prices.
3 The portfolio results do not take into account any tax implications arising from the sale or purchase of securities, which in actual trading do have an impact on gains and losses.

- USD rates went up by almost 2% in 2009, accompanied by reasonable performance in the equity market. We back-tested our systematic process over this period and estimate that All Roads would have returned approximately 2% over the period (cash + 1%).
- Duration exposure would have resulted in a loss of approximately 0.7%, which other return drivers would have compensated for, according to our analysis. A long-only US bond exposure would have suffered material losses.
- All Roads would have increased its risk budget and, in particular, increased its equity exposure and reduced its duration exposure due to the trend signals (see Figure 6 above) ensuring that the impact of the bond rise was limited and the return stream of the fund remained stable, according to our analysis.
- Liability-aware investors (in particular the ones who were under-hedged against their liability duration exposure) are likely to have seen material improvement in their solvency position and we estimate that All Roads would have supported this improvement. Absolute return investors would also have seen a positive return.
- We note that All Roads' performance during a very aggressive bull market will not capture the full equity market return – and the strategy is not designed to do so given its objective of providing stable returns and reducing drawdowns.
- **Volatility and drawdown over the year:**

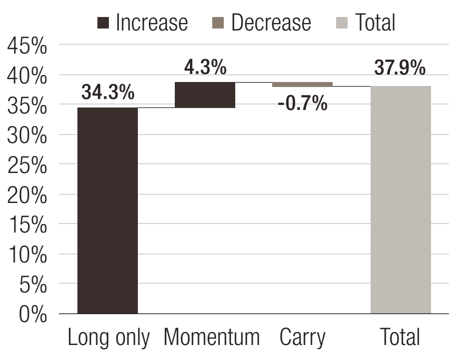
	Volatility	Drawdown
Equity market	19.8%	27.1%
USD 10-year bond	5.0%	6.8%
All Roads	**2.4%**	**2.3%**

Source: LOIM, Bloomberg. Date range from 01 January 2009 to 30 June 2009.
Past performance is not a guarantee of future results.

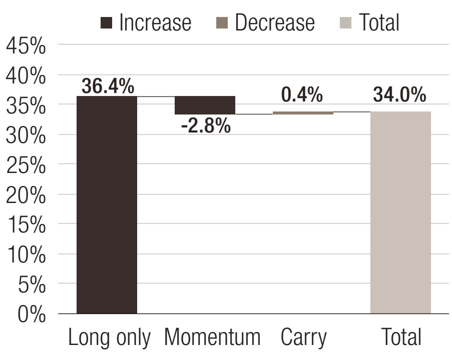
Figure 7 – All Roads' duration performance contribution at end



Duration exposure at start



Duration exposure at end of analysis period (01 Jan 2009 to 30 Jun 2009)

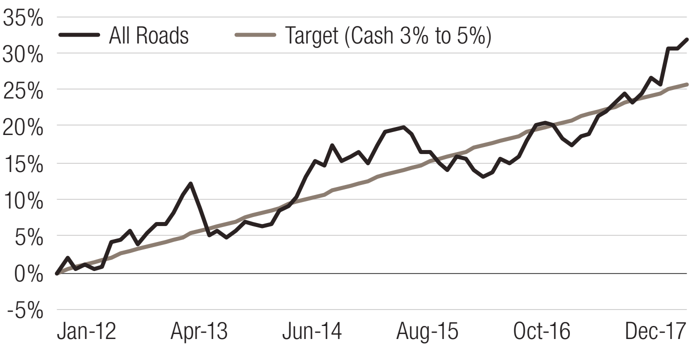


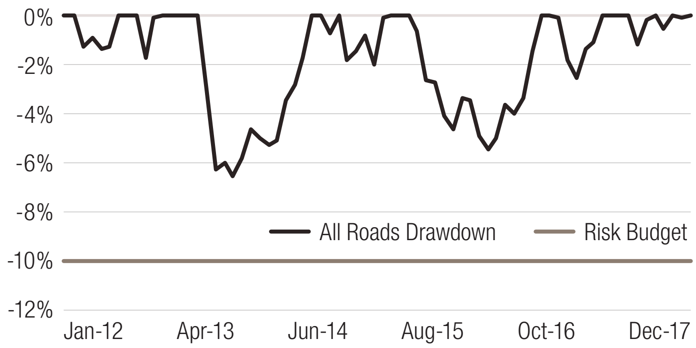
Source: LOIM.
Note: ARP = Alternative Risk Premia.

CONCLUSION

We strongly believe All Roads is better equipped than traditional diversified growth funds and risk-parity funds to navigate volatile market environments such as a variety of rising rate scenarios. The strategy design incorporates a combination of a wide range of risk premia, dynamism due to market opportunities (trends) and an explicit awareness of a drawdown target. The end result, as shown in Figure 8, is a relatively smooth return and lower risk (and in particular, lower drawdown) profile that would benefit institutional investors, in our view.

Figure 8 – LO Funds–All Roads – fund performance since inception[1, 2]





Source: LOIM.
Past performance is not a guarantee of future results.
[1] Fund inception date: 24 January 2012.
[2] Dividend accumulated institutional share class, NA, net performance in EUR. Cash index: EONIA.
Analysis period: 01 January 2012 to 29 December 2017.

IMPORTANT INFORMATION