



Special paper No.3

The case for index-linked

Inflation-linked bonds in the US and UK are currently yielding a little below zero in real terms. This means that you are locking in a slightly negative real return if you hold them to maturity. As at the beginning of November, the Trojan Fund's index-linked duration is 5.3 years. Theoretically¹, on current real yields, holding this collection of bonds to maturity would generate a negative real return of -1.4% per annum over the next 5.3 years.

Should we be happy with this? Have we considered this holding in the context of all the alternatives (within our scope of experience and understanding) and have we considered how index-linked bonds will behave relative to those alternatives in all possible futures? The following analysis attempts to assess the relative merits of the choices available.

The operative word is relative; in absolute terms, US Treasury Inflation Protected Securities (TIPS) at today's real yields will provide an approximately zero real return to maturity (see appendix figure 4). UK linkers' yield to maturity is more negative but there are reasons to expect higher UK inflation in the short term. Nominal returns will clearly vary depending on inflation. Returns will also

vary if index-linked bonds are sold before maturity.

GMO's seven-year asset class return forecasts (see figure 1, appendix) provide a good starting point from which to assess the relative attractiveness of index-linked bonds. In a scenario of average inflation (c. 2%), GMO estimates that US large caps will generate an annualised real return of -3.1% over the next seven years. If this is correct, that puts US equities' prospective real returns on an inferior pegging to US TIPS. Other developed market asset classes are a little higher.

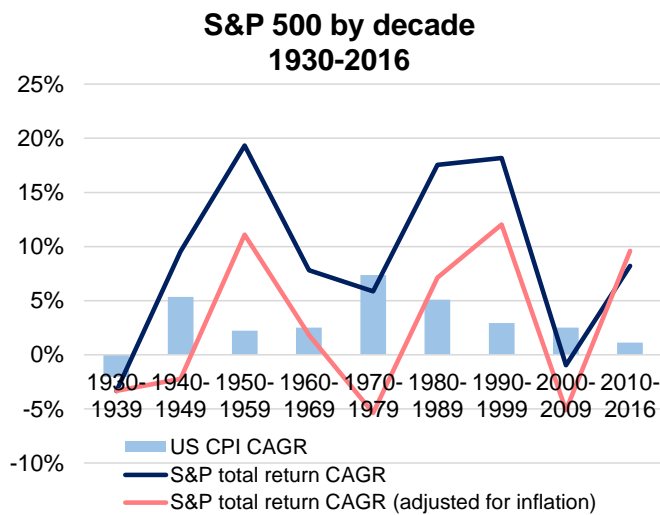
Thus, in a 'normal' environment of 2% inflation, US index-linked bonds look like a better bet than US equities. However, what happens if the next few years are not normal? At the risk of being reductive, let us consider what our main options of cash, equities and index-linked bonds should do in the following, 'non-normal' monetary environments of 1) very low inflation/ deflation, 2) inflation above 2% but less than 5%, 3) inflation above 5% and 4) deflation followed by inflation. In reality, the scenario and asset class opportunity sets are more complex. Conventional bonds are conspicuous by their absence for the reasons that yields are already low and the securities offer no

¹ Since this implies reinvesting all cash flows at the same rate of return.



protection against inflation. Another imperfect aspect of the following analysis is that all scenarios work on the assumption (which we believe to be probable but which is far from certain) that governments keep rates near-zero because prospects for growth are muted. An awareness of the fallibility of assumptions could lead us to erase or add colour as events unfold. For now, this is the sketch:

Figure 1



Source: Bloomberg, www.econ.yale.edu/~shiller/data.htm
4 November 2016

1) Deflation: TIPS outperform equities but could underperform cash. In a deflationary environment, where growth is inherently elusive, the returns from equities will likely be worse than GMO's assumptions, i.e. US equities will generate a negative real return worse than -2%. TIPS on the other hand would likely perform satisfactorily in deflation given the associated decrease in conventional

yields; since the 10-year conventional bond yield peaked in June 2006, the 2025 US TIPS security has returned 55.6%². The risk to this is the already low level of conventional yields; how much further can they fall?

- 2) Inflation 2-5%: TIPS outperform cash and possibly equities. Moderate inflation below 5% has historically been good for equities with the exception of 2000-2009 (figure 1). Thus, a little inflation, with the (arguably ambitious) proviso that it is accompanied by robust growth, could in theory be positive for the asset class. This however looks a lot less likely when one considers where equity valuations are today.
- 3) Inflation >5%: TIPS outperform cash and equities. Inflation of over 5% has tended to lead to negative real returns for equities (figure 2). Moreover, if GMO's expectation for negative real returns with 2% inflation is correct, what chance do we have with 5% inflation? All else equal, one would need to see an additional 3ppts of earnings growth at 5% inflation to ensure that real returns were commensurate with those at 2% inflation. There is the risk of a material de-rating if expected future earnings are reduced by inflation and/or lower-than-expected growth.

² Source: Bloomberg. All figures as at 4 November 2016.



- 4) Deflation followed by inflation: TIPS outperform equities but could underperform cash at first, then TIPS outperform both. See scenario one, followed by two and/or three.

Given powerful deflationary forces at work in the world (excess capacity, demographics, technology and dollar strength to name but four), greater disinflation or indeed deflation cannot be ruled out in the short term. Longer-term however, there are compelling reasons to expect and fear higher inflation. Currently, the supply term of the inflation equation is elevated whilst velocity is depressed. As described in Sebastian's investment report No. 51, the political will to regenerate the latter by means of fiscal stimulus is in evidence. The economic need to do so is overwhelming. 14 of the 15 largest economies in the world have levels of debt to GDP at or near all-time highs. With sufficient growth elusive in most, inflation provides the only reasonable chance

of reducing the real value of the debt (absent an outright default). Policymakers know this well. On balance, inflation-protected securities would appear a sensible place to be. In the absence of an opportunity to sell our index-linked bonds at a higher price before maturity (the greater fool game), we stand to lose around 1% per annum in real terms over the next five years. Substantial weakness in our index-linked bond holdings before then (whether prompted by deflation or inflation-led expectations of higher interest rates) would likely lead us to switch part or all of them into the more attractive of either equities or longer-dated inflation-protected securities. If such a sell-off occurs in both equities and index-linked, shorter-dated index-linked bonds will suffer the least. At a time of famine, this asset class may not sate our hunger but it should keep us from starving.

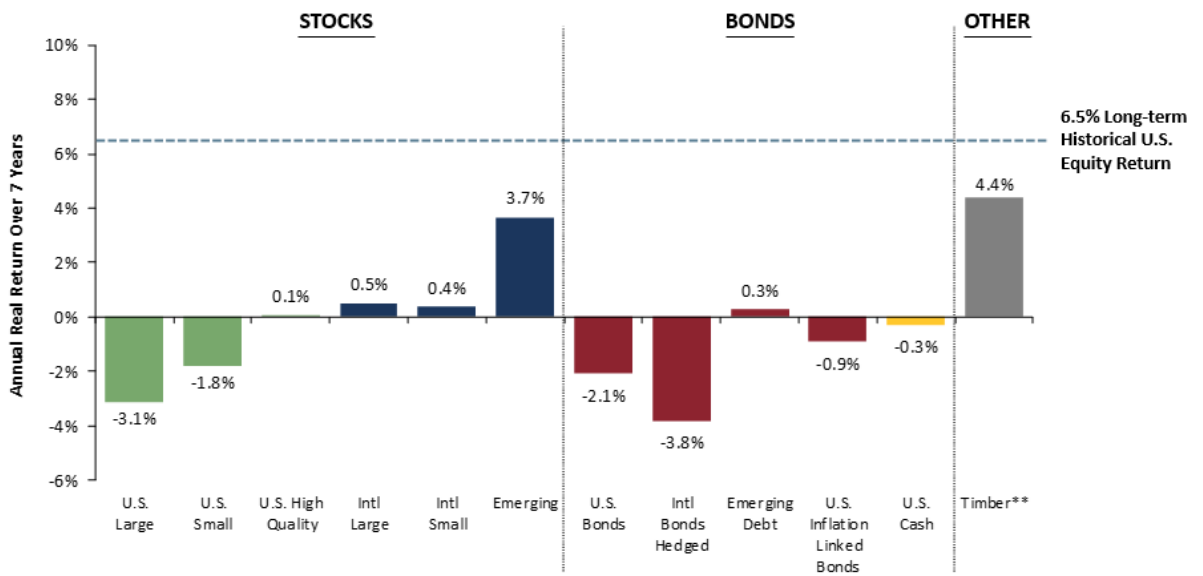
Charlotte Yonge
November 2016



Appendix

Figure 2:

GMO North America | Europe | Asia-Pacific
7-Year Asset Class Real Return Forecasts*
As of September 30, 2016



Source: GMO

*The chart represents real return forecasts for several asset classes and not for any GMO fund or strategy. These forecasts are forward-looking statements based upon the reasonable beliefs of GMO and are not a guarantee of future performance. Forward-looking statements speak only as of the date they are made, and GMO assumes no duty to and does not undertake to update forward-looking statements. Forward-looking statements are subject to numerous assumptions, risks, and uncertainties, which change over time. Actual results may differ materially from those anticipated in forward-looking statements. U.S. inflation is assumed to mean revert to long-term inflation of 2.2% over 15 years.

**We are revising our Timber forecast this month from 4.8% to 4.4% real. Changes in the forecast represent both an update to methodology (for example, an adjustment to what types of assets are considered to be representative of South/Central America timber) and GMORR team's view on global timberland market.

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Figure 3:

Trojan Fund index-linked holdings	% Fund	Real duration*	Real yield
TREASURY I/L 1.875 22 Nov 22	4.3%	5.8	-2.4
TREASURY I/L 0.125% 22 Mar 24	3.9%	7.4	-2.2
TREASURY I/L 2.5% 16 Apr 20	3.6%	3.3	-2.5
US TIPS 0.125 15 Jan 22	8.8%	5.2	-0.3
US TIPS 0.625% 15 Jul 21	2.5%	4.6	-0.4
Total/ weighted average	23.1%	5.3	-1.4
<i>* % change in price for 1ppt change in real yields</i>			

Source: Bloomberg, 4 November 2016



Figure 4:

	Real yield to maturity (%)	Modified Duration (years)	Price	Inflationary scenario (If nominal rates remain positive, negative real rates will only occur with inflation)				Deflationary scenario (If nominal rates remain positive, positive real yields will only occur with deflation)				
				-2% real yield		-5% real yield		2% real yield		5% real yield		
				Price	Change	Price	Change	Price	Change	Price	Change	
US index-linked bonds												
TII Govt 0.125 04/15/20 Govt	-0.39	1.7	104.7	107.6	2.8%	119.5	14.1%	93.8	-10.4%	84.8	-19.0%	
TII Govt 0.125 04/15/21 Govt	-0.29	2.2	103.6	109.9	6.1%	125.8	21.5%	92.1	-11.1%	80.8	-22.0%	
TII Govt 0.125 01/15/22 Govt	-0.25	2.6	108.5	111.7	3.0%	130.8	20.6%	90.8	-16.3%	78.0	-28.1%	
TII Govt 0.125 01/15/23 Govt	-0.12	3.1	105.9	114.1	7.7%	137.7	30.0%	89.1	-15.9%	74.3	-29.9%	
TII Govt 0.625 01/15/24 Govt	0.00	3.5	108.0	120.4	11.5%	149.4	38.3%	90.8	-15.9%	73.9	-31.6%	
TII Govt 0.25 01/15/25 Govt	0.10	4.0	102.9	120.1	16.7%	153.9	49.5%	86.8	-15.7%	68.4	-33.6%	
TII Govt 0.625 01/15/26 Govt	0.17	4.5	105.8	126.6	19.7%	166.6	57.5%	88.5	-16.3%	68.1	-35.6%	
TII Govt 2.375 01/15/27 Govt	0.25	4.6	145.8	149.7	2.7%	199.6	36.9%	103.4	-29.1%	79.2	-45.7%	
TII Govt 1.75 01/15/28 Govt	0.31	5.1	137.1	147.3	7.4%	202.9	48.0%	97.5	-28.9%	72.4	-47.2%	
TII Govt 3.375 04/15/32 Govt	0.39	6.3	145.3	197.8	36.2%	298.5	105.5%	118.2	-18.6%	82.7	-43.1%	
TII Govt 1 02/15/46 Govt	0.73	12.7	108.9	220.2	102.2%	508.3	366.9%	77.9	-28.5%	38.8	-64.4%	
UK index-linked bonds												
UKTI 2.5 04/16/2020 Govt	-2.5	3.3	371.2	365.0	-1.7%	404.1	8.9%	319.6	-13.9%	289.8	-21.9%	
UKTI 1.875 11/22/2022 Govt	-2.4	2.9	127.7	125.0	-2.1%	149.2	16.9%	99.3	-22.2%	83.9	-34.3%	
UKTI 0.125 03/22/2024 Govt	-2.1	3.7	118.1	117.0	-0.9%	146.4	24.0%	87.2	-26.1%	70.2	-40.5%	
UKTI 0.125 03/22/2026 Govt	-1.9	4.7	121.1	122.0	0.8%	162.3	34.1%	84.0	-30.6%	63.9	-47.2%	
UKTI 1.25 11/22/2027 Govt	-1.9	5.3	138.2	140.4	1.6%	193.6	40.1%	92.6	-33.0%	68.5	-50.4%	
UKTI 0.125 03/22/2029 Govt	-1.8	6.2	127.2	130.00	2.2%	189.3	48.8%	79.5	-37.5%	55.4	-56.5%	
UKTI 2 01/26/2035 Govt	-1.8	16.1	271.6	282.9	4.2%	469	72.7%	150	-44.8%	96.5	-64.5%	
UKTI 0.125 03/22/2046 Govt	-1.6	14.6	166.7	185.6	11.3%	451.8	171.0%	58.5	-64.9%	25.3	-84.8%	
UKTI 0.125 03/22/2068 Govt	-1.8	25.5	257.8	292.1	13.3%	1379.3	434.9%	40.0	-84.5%	10.2	-96.0%	

Source: Bloomberg, 4 November 2016

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